INCOME GENERATION AND SOCIAL PROTECTION FOR THE POOR

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Manufactured in Mexico City
First Printing: August, 2005

The report include: Urban Poverty in Mexico (Report No. 32869-MX). - México: A Study of Rural Poverty (Report No. 32867-MX). - México: An Overview of Social Protection (Report No. 32929-MX)

Printing and Manufactured in Mexico City / 2005
The World Bank - Mexico
Edition: Jorge Cisneros Morales ; Design: Alejandro Espinosa ; Cover photos: Photo Library, The World Bank
The World Bank - Mexico

World Bank
Income Generation and Social Protection for the Poor. – Mexico
:The World Bank, 2005.
2 vol.. : il.

Contents: Vol. 1.Executive summary. – Vol. 2. Reports
1. Social protection – Mexico. 2. Urban poverty – México. 3.
Rural poverty - México
361.250972 / W67/ 2005

Preface

The collaboration between the Government of Mexico (GOM) and the World Bank on poverty has four objectives: (i) to assist the GOM in improving the effectiveness of its programs in reducing poverty; (ii) to support the analysis and design (or redesign) of specific policy interventions; (iii) to build capacity, especially in evaluation techniques and processes; and (iv) through workshops, to share best practice in poverty reduction policies in a national and international context. The combination of demand-driven analytical work and capacity building is designed to strengthen the government's institutional capacity to implement policies that bring about effective poverty reduction results on the ground.

The results of the first phase of the Programmatic Poverty Work of the World Bank in Mexico were published in 2004: *Poverty in Mexico: an Assessment of Conditions, Trends, and Government Strategy* (World Bank, 2004). This report summarizes and consolidates the findings of three World Bank studies on poverty issues in Mexico written as part of the second phase of this work: Urban Poverty, Rural Poverty, and Social Protection.

The second phase of the Poverty Work was coordinated by Gladys López-Acevedo and Jaime Saavedra. José María Caballero was the task manager of the rural poverty report; Marianne Fay and Anna Wellenstein of the urban poverty report; and Gillette Hall and Laura Rawlings of the social protection report. Marcela Rubio Sánchez, Jonathan Goldberg, and Sara Johansson provided valuable technical assistance. This summary as well as the different studies have greatly benefited from the comments received from SEDESOL, the ministries that form the Social Cabinet, *Presidencia*, peer reviewers of the programmatic poverty work (Rodrigo García Verdú, and Margaret Grosh and Norbert Schady, World Bank), peer reviewers of the individual studies, and participants at the second phase review meetings. Special thanks to Mike Walton and Andrew Mason for their insightful comments on this summary and in the overall design of the 2nd Phase of the Programmatic Poverty Work. This report exclusively represents the views of the World Bank team.

The Vice President for Latin America and the Caribbean is Pamela Cox; the Country Director for the Mexico and Colombia Unit is Isabel Guerrero; the Sector Director for Poverty Reduction and Economic Management in Latin America and the Caribbean is Ernesto May; Sector Leader for PREM in the Mexico and Colombia Unit is David Rosenblat; the Poverty Cluster Leader is Miguel López-Bakovic; and the Task Managers are Jaime Saavedra and Gladys López-Acevedo.

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Acknowledgements

The Urban Poverty report was managed by Marianne Fay and Anna Wellenstein. Other team members include Caridad Araujo, Magdalena Bendini, Sara Johansson, Gabriel Montes, Mary Morrison, Caterina Ruggeri Laderchi, Mauricio Santamaría, and Jesus Torres Mendoza. The team is grateful to the peer reviewers Emmanuel Jiménez and Christine Kessides, and to Gladys López-Acevedo for their comments.

The team benefited from inputs and suggestions from counterparts in the mexican government, notably Rodrigo García Verdú of *Banco de México;* Claudia Acuña, Craig Davis, Cristian Muñoz and José Luis Ramos y Fusther of *Subsecretaría de Desarrollo Urbano y Ordenación del Territorio*, SEDESOL, and Carlos Maldonado Valera, of the *Subsecretaría de Prospectiva, Planeación y Evaluación,* also of SEDESOL. We are grateful to Lic. Concepción Steta Gándara for documentation and insights on the expansion of *Oportunidades* in urban areas. We thank SEDESOL for sharing the results of the survey of poor *barrios*, and Jorge Santibañez and Alejandro García of the *Colegio de la Frontera Norte* for their help in accessing the data.

The Urban Poverty report is part of an overall analytical program on poverty in México managed by Gladys Lopez-Acevedo, Michael Walton and Jaime Saavedra, that included an initial Poverty Assessment (*Poverty in México: An Assessment of Conditions, Trends and Government Strategy*), and companion reports on rural poverty (*A study of Rural Poverty in México*) and social safety nets (*México: An Overview of Social Protection*), in addition to the present report on urban poverty. The team thanks Marcela Rubio Sanchez for her efforts in ensuring consistency of data and data sources across the various reports.

Vice President: Pamela Cox
Country Director: Isabel Guerrero
Sector Director: John Henry Stein
Sector Leader: Anna Wellenstein
Task Manager: Marianne Fay, Anna Wellenstein

The Rural Poverty report was prepared by a team comprising José María Caballero (LCSER, Team Leader), Fernando Barceinas (consultant), Tania Carrasco (LCSHE), Jorge Franco (LCSES), Sara Johansson (consultant), Salomón Nahmad (consultant), Fernando Rello (consultant), Mario Torres (consultant), Dorte Verner (LCSEO), and Antonio Yúnez-Naude (consultant).

The Rural Poverty report is part of the Second Phase of the "Mexico: Programmatic Poverty Work", which is being carried out by the World Bank in collaboration with the Government of Mexico. The report benefited from comments by

Benjamin Davis and Alain de Janvry (peer reviewers), Mauricio Bellon (CIMMYT), and Bank staff Mark Cackler (LCSER), Marianne Fay (LCSFP), Ricardo Hernández (LCSEN), John Kellenberg (LCSES), Gladys López-Acevedo (LCSPP), Miguel López (LCC1C), Pedro Olinto (LCSPP), Jaime Saavedra (LCSPP), Emmanuel Skoufias (LCSPP), Michael Walton (LCRCE), and Anna Wellenstein (LCSFP). Feedback was received from Government officials and poverty analysis experts at a brainstorming meeting held in Mexico City on June 10-11 2004, and from high-level staff of the *Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación* (SAGARPA) during a presentation of preliminary results in August 2004. Special thanks are due Antonio Ruiz García (Subsecreatry SAGARPA), Armando Ríos Píter (Subsecretary SRA), José Antonio Mendoza Zazueta (Director FIRCO), Iván Cossio (FAO) and Edgardo Moscardi (IICA).

Vice President	:	Pamela Cox
Country Director	:	Isabel Guerrero
Sector Director	:	John Redwood
Sector Manager	:	Mark Cackler
Sector Leader	:	Ethel Sennhauser
Task Manager	:	José María Caballero

In preparing this report the team benefited from discussions and input from counterparts in Mexico, including Rafael Freyre (Gabinete Social), Jose Antonio Gonzalez (SHCP), Santiago Levy (IMSS), Evelyn Rodríguez (IMSS), Deborah Schlam (Hacienda), and Miguel Szekely, Gonzalo Hernandez, Erica Ramirez and Alvaro Melendez (Sedesol). Very helpful comments were also received from World Bank colleagues including peer reviewers Margaret Grosh and Edmundo Murrugarra, as well as Cristian Baeza, Ariel Fiszbein, Isabel Guerrero, Gladys López-Acevedo, Andy Mason, Jaime Saavedra, Guillermo Perry, Helena Ribe, Michael Walton, and Steve Webb. Many thanks to Gabriela Falconí for editing and formatting this report.

Vice President: Pamela Cox
Country Director: Isabel Guerrero
Sector Director: Ana-Maria Arriagada
Sector Manager: Helena Ribe
Country Sector Leader: Mark Hagerstrom

Task Team: Gillette Hall, Laura Rawlings (co-task managers), Jaime Saavedra, Gladys López-Acevedo, Marcela Rubio, Trine Lunde, Carlos Noriega (consultants) and Maria Guadalupe Toscano (research assistant)

Acronyms and Abbreviations

AGROSTAT	Agriculture Statistics On-Line from FAO
ARD	Agriculture and Rural Development
ASERCA	Support and Services to Agricultural Trade
BAAC	Bank for Agriculture and Agricultural Cooperatives
BANRURAL	National Bank for Rural Credit
BANSEFI	National Savings and Financial Services Bank
BRI	Banco Rayat Indonesia
CAP	Common Agricultural Policy
CBO	Community Based Organization
CBTA	Agricultural Studies Tech Center
CBTIS	Industrial and Services Studies Tech Center
CETIS	Centre for Educational Technology Interoperability Standards
CGAP	Consultative Group to Assist the Poor
CIESAS	Social Anthropology Research and Studies Center
CIMMYT	International Maize and Wheat Improvement Center
CLAD	Latin American Center for Development Administration
CMDS	Mexican Council on Rural Sustainable Development
CNBV	National Banking and Securities Commission
CONACYT	National Council on Science and Technology
CONAFOVI	National Housing Commission
CONAPO	National Population Council
CONASUPO	National Company for Popular Subsistence

COPLADE	Development Planning Council
CSO	Central Statistics Office
CTMP	Poverty Measurement Technical Committee
ECLAC	Economic Commission for Latin America and the Caribbean
EMBRAPA	Brazilian Agricultural Research Corporation
ENCASEH	Household Economic Characteristics Survey
ENCEL	Household Assessment Survey
ENE	National Employment Survey
ENET	National Quarterly Employment Survey
ENEU	National Urban Employment Survey
ENHRUM	Mexico Rural Households National Survey
ENIGH	National Survey on Household Income and Expenditure
FAIS	Social Infrastructure Fund
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investment
FGT	Foster, Greer and Thorbecke Poverty Indicators
FIRA	Agriculture Trust Funds
FIRCO	Trust Fund for Shared Risk
FISM	Municipal Social Infrastructure Fund
FONAEVI	National Fund for Housing Economic Support
FONDEN	Natural Disasters Fund
FUPROVI	Foundation for Housing Promotion
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product

GE	Generalized Enthropy
GGAVATT	Livestock Groups for Technology Validation and Transference
GP	Gross Profit
GVO	Gross Value of Output
IICA	Inter-American Institute for Cooperation on Agriculture
IMR	Infant Mortality Rate
IMSS	Mexican Social Security Institute
INDAP	Agricultural Development Institute (Chile)
INDESOL	National Social Development Institute
INEGI	National Statistics, Geography and Informatics Institute
INFONAVIT	National Institute of the Housing Development
INIFAP	National Institute of Forestry, Agriculture and Livestock Research
INTA	National Institute of Agricultural Technology
ISSSTE	Social Security and Services for the State Workers Institute
LAC	Latin America and the Caribbean
LAG	Local Action Group
M&E	Monitoring and Evaluation
MXP	Mexican Pesos
NAFTA	North America Free Trade Agreement
NBFI	Non-Bank Financial Institutions
NGOs	Non-Governmental Organizations
O&M	Organization and Management
OECD	Organization for Economic Cooperation and Development
PAC	Work Training Program

PAHNAL	National Savings Council
PAPIR	Program for the Support of Investment Projects
PEC	Special Concurrent Program
PEMEX	Mexican Oil Company
PET	Temporary Employment Program
PITT	Technology Research and Transference Program
PROCAMPO	Program for Direct Support to Agriculture
PROCEDE	Program for Ejido Rights Certification
PRODESCA	Program for Rural Capacity Development
PROFEMOR	Program for Rural Enterprises and Organization Strengthening
PROMAP	Program for the Modernization of Public Administration
PRONAF	National Program of Family Agriculture
PROSAVI	Special Program for Housing Credits and Subsidies
PSP	Professional Services Provider
RD	Rural Development
RDS	Mexico's Sustainable Development Network
RNF	Rural Non-Farm
ROA	Roles of Agricultura
SAEBE	Economic Support System for Job Seekers
SAGARPA	Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food
SCT	Ministry of Communications and Transportation
SE	Ministry of Economy
SEDESOL	Ministry of Social Development
SEGOB	Ministry of the Interior

SEMARNAT	Ministry of Environment and Natural Resources
SEP	Ministry of Education
SFP	Ministry of Public Management
SHCP	Ministry of Finance
SHF	Federal Mortgage Society
SIACON	Agricultural Consultation System
SICAT	Work Training System
SINDER	National System of Rural Extension
SRA	Ministry of Agrarian Reform
ST	Ministry of Tourism
STDs	Sexually Transmitted Diseases
STPS	Ministry of Labor and Social Prevision
TFP	Total Factor Productivity
UNAM	Mexico's National Autonomous University
USD	United States Dollars
EU	European Union
VA	Value Added
WB	The World Bank
WHO	World Health Organization

URBAN POVERTY IN MEXICO

1. THE MANY FACES OF URBAN POVERTY[1]

Half of the moderately poor and one third of the extremely poor now live in urban areas. Mexico is now a mature urban society with nearly three quarters of its population living in urban areas, mostly in large cities of more than 100,000 people. Although poverty incidence is substantially lower in urban than in rural areas, the high urbanization rate means that half of the moderately poor and one third of the extremely poor now live in urban areas. And the demographic trends are likely to urbanize poverty further since urban population is expected to continue to increase faster than the rural population (Table 1.1).

Table 1.1 Poverty is becoming urbanized in Mexico

Year	Total Population		Moderately poor		Extremely poor	
	Rural	Urban	Rural	Urban	Rural	Urban
	(million)					
2002	39.7	63.4	26.8	26.6	13.8	7.2
2005	*40.5*	*65.9*	*27.3*	*27.7*	*14.1*	*7.5*
2010	*41.5*	*70.2*	*28.0*	*29.5*	*14.4*	*8.0*
2015	*42.3*	*74.1*	*28.5*	*31.1*	*14.7*	*8.5*
2020	*43.0*	*77.6*	*29.0*	*32.6*	*15.0*	*8.9*

Source: Own calculations using population projections from Consejo Nacional de Población (CONAPO) and poverty estimates from World Bank (2004a). Note: CONAPO's population numbers differ slightly from those of the household survey (ENIGH) and so the two will not yield exactly the same number of poor. Rural settlements are defined as settlements with less than 15,000 inhabitants.

Cities offer a number of opportunities and specific challenges for the poor. Compared to rural areas, urban areas provide deeper labor markets, higher access to services and for some, freedom from oppressive social traditions and discrimination. This is reflected in lower poverty incidence and higher average incomes. But the urban poor also face specific challenges. They must generate cash for survival, which in turn means that they must get wage-paying jobs or employ themselves. Though there are more jobs available in cities, the urban poor may face difficulties in securing decently paid employment in the formal sector, for lack of skills, childcare, transportation, or because of stigma associated with where they live.

[1] This chapter was written by Marianne Fay and Sara Johansson and benefited from comments from Anna Wellenstein.

Low quality and high costs restricts real access to basic public services. Services such as electricity or running water are also more widely available in cities; the incidence of health providers is higher. However, the quality and reliability of those services may be very low in poor neighborhoods or they may be unaffordable. Also, because of higher population density, the negative health externalities of unclean water, patchy sanitation and solid waste management are very serious. Within cities the poor are often confined to living in unsafe (because of crime but also vulnerability to natural disasters) and/or unhealthy locations. And precisely because the incidence of poverty is relatively low in cities, urban-wide statistics tell us little about the situation of the urban poor. A better understanding of such location-specific challenges for the poor can help the government of Mexico design more efficient and cost-effective anti-poverty interventions.

Yet, the urban-rural distinctions need to be seen as a continuum where depth and characteristics of poverty vary with settlement size. For analytical and policy design purposes, the urban-rural dichotomy can be misleading. In what follows, "urban" is generally defined as all settlements with more than 15,000 people, which still covers very heterogeneous types of urban centers. Yet, the difficulties facing poor people living in a town of 15,000 people may be much more similar to those living in rural areas than those living in Mexico's larger towns – and policy interventions need to reflect this. Where possible, we therefore attempt to disaggregate the concept of "urban" into a more nuanced pattern of settlements by size, in order to better illustrate what is really a continuum from most rural to most urban. This task is complicated by the fact that the Income and Expenditures National Survey (*Encuesta Nacional de Ingresos y Gastos de los Hogares, ENIGH*) – the household survey which is a key instrument for determining poverty levels and analyzing its correlates – is not designed to be representative at a disaggregated stratum level. As a result, there is a risk of large measurement errors which needs to be kept in mind for disaggregated statistics.

The objective of this report is to inform the design of urban poverty interventions. Thereby responding to the concerns and requests of the social cabinet and Social Development Ministry (*Secretaría de Desarrollo Social*, *SEDESOL* on Spanish abbreviation) and specifically, the Sub-secretariat for Urban Affairs, which is in charge of developing anti-poverty programs targeted at the urban poor. Formulating the requested policy advice requires answering a number of questions: what is specifically urban about poor people living in cities?; are there different determinants of poverty in urban areas?; is the type of deprivation suffered by the poor in cities different from what happens in the countryside?; and, most importantly, are the instruments to help the poor different between rural and urban areas?

This document is organized as follows. The first section – comprising three chapters- examines what we know about the urban poor, seeking to understand better the dimensions of urban poverty. The present chapter sets the stage in reviewing trends in urban poverty, the characteristics of urban poor and the heterogeneity of urban

poverty. Chapter 2 considers the relationship between urban poverty and macroeconomic trends and examines the poor's coping mechanisms as well as the principal public programs available to them. Chapter 3 relies on a recent survey conducted by *SEDESOL* to look in more depth at life in Mexico's poor urban *barrios*. Section two of the report discusses some of the key challenges facing the urban poor, namely how to integrate labor markets and access "good" jobs (chapter 4), and how to protect themselves against income shocks by accumulating assets or accessing financial services (chapter 5). Companion reports discuss the country's rural poverty (*A A Study of Rural Poverty in Mexico*) and social safety nets (*Mexico: an Overview of Social Protection*).

TRENDS IN URBAN POVERTY

Poverty incidence has yet to fully recover from the peso crisis

In 2002, some 11 percent of Mexico's urban population was estimated to be extremely poor and around 42 percent moderately poor. These incidences compare favorably with rural areas, where poverty incidence reached 35 and 68 percent respectively (see Annex Table 1-A for more details). But with a large urban population, a relatively low poverty incidence still translates into large numbers of poor people: 27 million urban poor, of which 7 million are extremely poor (Figure 1.1).

Urban poverty has not yet recovered fully from the peso crisis of the mid-1990s. The number of urban poor is still some five million higher than it was in 1992 although incidence has actually fallen somewhat. Moderate and extreme urban poverty largely display the same development between 1992-2002, whether poverty is based on income or consumption measures (for a discussion of the effects of using consumption vs. income to calculate poverty, see Box 1.1) Poverty improved in the early 1990s, but increased sharply with the 1994-95 macro-economic crisis, and has only slowly recovered since. The depth and severity of poverty follow the same pattern as the poverty headcount index.

Box 1.1. Urban poverty: Some definitions

There are two definition of "urban" in Mexico. The Instituto Nacional de Estadística, Geografía e Informática (INEGI) and most Government institutions classify as urban any settlement with population greater than 2,500. This implies an urbanization rate of 75 percent. Instead, Population National Council (*Consejo Nacional de Población*, *CONAPO*) the government agency in charge of demographic analysis and projections, instead relies on an analytically more appealing cut-off of 15,000. This yield an urbanization rate of 61.5 percent, which is used throughout this report.

Unless otherwise stated, the poverty and inequality indicators reported in this document are based on World Bank's estimates using *SEDESOL*'s official poverty lines

for income in order to be consistent with official poverty lines. However, it is generally preferable to use consumption expenditure instead of income to measure poverty. Consumption is a better measure of actual well-being, and consumption expenditure is also less likely than income to be mis- or under-reported in surveys. For comparison, consumption poverty rates were calculated, fixing these for one year to yield the same poverty rates as the official (income) poverty line in 2000. Fortunately, the levels and trends in poverty are fairly similar whether income or consumption is used (Box Table 1).

Table 1. Poverty Trends for Extreme and Moderate Urban Poverty using Income and Consumption

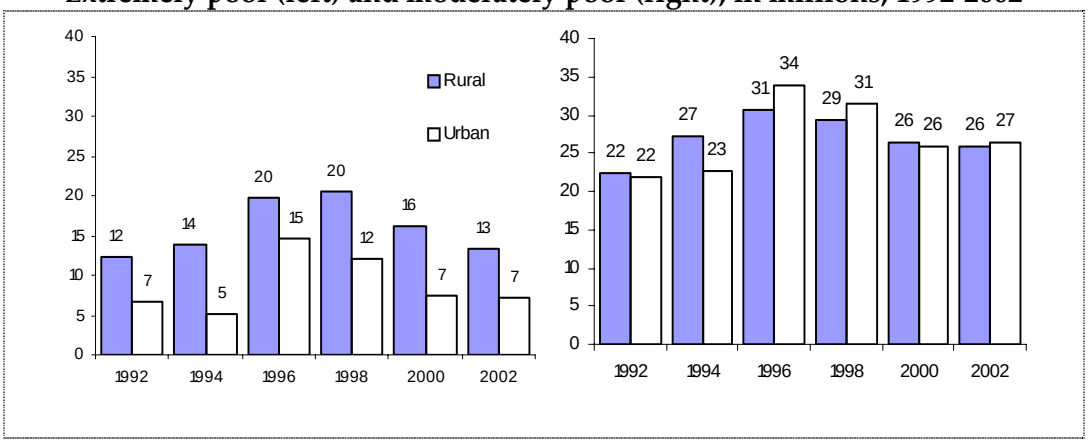
	1992	1994	1996	1998	2000	2002
Extreme Poverty						
Income	13	10	27	21	13	11
Consumption	13	10	25	21	13	11
Moderate Poverty						
Income	44	44	62	56	44	42
Consumption	39	37	55	50	44	42

Source: World Bank (2004a)

In general, these trends are consistent with those for rural areas, with two exceptions. First, while both rural and urban areas suffered from the peso crisis, the number of urban poor increased by 11 million between 1994 and 1996, tipping the balance so that most of Mexico's poor were now in urban, not rural areas. Moreover, the poverty increase was largely driven by a tripling of the number of extremely poor. Second, the pace of recovery was quicker in urban than in rural areas (Figure 1.1). However, neither has extreme poverty recovered to above 1994 levels (the relationship between urban poverty and economic growth is examined more closely in chapter 2).

Figure 1.1 Urban poverty was strongly affected by macro-economic instability in the mid-1990s

Extremely poor (left) and moderately poor (right), in millions, 1992-2002



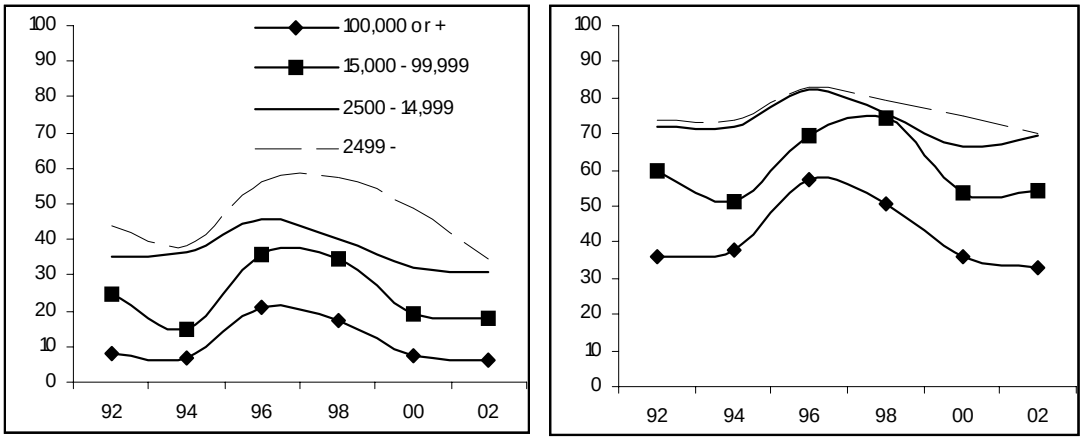
Source: Own calculations based on ENIGH, 1992-2002.

Poverty incidence increases as settlement size decreases[2]

The incidence of poverty falls along the rural-urban continuum. Urban areas form a very heterogeneous group, which is reflected in variations in poverty between different types of urban areas: it is lowest in cities of more than 100,000 inhabitants and highest in small rural communities of 2,500 inhabitants or less. The prevalence of extreme poverty is three times higher in small cities than in big ones; the share of people in moderate poverty is 60 percent higher. But a third of the poor – some 16 million people – still live in large cities, because of the concentration of population in bigger urban centers.

The impact of macro-economic turbulence in the mid-1990s, is much more visible in cities, both smaller and larger, than in small rural or semi-urban areas. However, across urban areas, the crisis-driven increase in poverty incidence was at least as sharp in small towns as in larger ones and recovery was slower (Figure 1.2). Indeed, in 1998, the moderate poverty incidence was as high in small cities as in semi-urban settlements.

Figure 1.2 Poverty incidence increases as settlement size decreases, 1992-2002
Extreme poverty incidence (left) and moderate poverty incidence (right)



Source: Own calculations based on ENIGH. Note: ENIGH is only designed to be representative at a national, rural and urban level and not at stratum level. These results should therefore be considered indicative.

Poverty incidence also shows large regional variations

Mexico's regions display vast differences in poverty rates and the geographical location of urban areas is consequently a strong determinant of poverty levels. In 2002, extreme poverty rates for urban areas ranged from 32 percent in the Southern

[2] We remind the reader that ENIGH – the basis for poverty estimates - is only designed to be representative at a national, rural and urban level, not at stratum level, nor at regional level, which in turn may introduce large measurement errors in the analysis.

Pacific region to less than three percent in Mexico City, and the differences are huge also for moderate poverty. As seen in Annex Figure 1.A, there is a very strong correlation between urban and rural poverty rates within regions. Looking at trends, moreover, urban areas in the Southern Pacific and the Southern Gulf and Caribbean regions saw the sharpest increases in extreme poverty after 1994 and have subsequently recovered much more slowly than the center region, for example.

In all this suggests a regional divergence in urban (as well as rural) poverty rates. Interpreting these stylized facts should be done carefully. First, part of what drives these regional differences may in fact be their urbanization patterns (Southern cities tend to be quite small as opposed to Central region where there are many larger towns).[3] Second, the household survey is not in fact designed to be representative at regional level so that these results should be seen as indicative. Note however that the fact that region matters more than the rural/urban dichotomy is one that has been found in all countries where this analysis has been done (Brazil is a notable example).

Table 1.2 Urban poverty trends vary enormously across regions[4]

Region	1992	1994	1996	1998	2000	2002
	Extreme Poverty Incidence (% of population)					
North	8	8	19	14	7	5
Center	18	18	33	26	16	14
South-Pacific	37	23	47	44	29	32
South-Gulf and Caribbean	18	19	34	25	28	24
Mexico City	5	3	13	10	3	3
	Moderate Poverty Incidence (% of population)					
North	35	38	55	45	30	31
Center	52	53	70	63	52	48
South-Pacific	76	59	78	74	61	67
South-Gulf and Caribbean	48	55	71	59	60	58
Mexico City	31	26	47	42	24	26

Source: Own calculations based on ENIGH, using income poverty lines. 1. ENIGH is only designed to be representative at a national, rural and urban level and not at regional level. These results should therefore be considered indicative.

[3] Especially in the South Pacific region, there are relatively more small urban agglomerations (size 15,000-30,000) and less very large agglomerations (size 100,000+). The regional differences are not remarkable, however.

[4] This follows CONAPO's (Consejo Nacional de Población) classifications of Mexico into four regions, plus Mexico City: North (Baja California, Baja California Sur, Chihuahua, Coahuila, Durango, Nuevo León, Sinaloa, Sonora, Tamaulipas, and Zacatecas) Center (Aguascalientes, Colima, Guanajuato, Hidalgo, Jalisco, Edo. de México, Michoacán, Morelos, Nayarit, Puebla, Querétaro, San Luis Potosí and Tlaxcala) South-Pacific (Chiapas, Guerrero, and Oaxaca), and South--Gulf and Caribbean, (Campeche, Quintana Roo, Tabasco, Veracruz and Yucatán).

CHARACTERISTICS OF URBAN POVERTY

Urban poor have more children, worse housing conditions and less education than the non-poor

Poor urban households share many characteristics with poor rural households. Most of them are located in the Central region of Mexico, they tend to consist of larger families with more children – and thus higher dependency rates – and live in more modest housing conditions. Poor urban households are also disproportionately headed by less-educated people. Unlike income poverty, some of these indicators improved over the 1990s. So, for example, the proportion of urban extremely poor living in dwellings with dirt floors has fallen from 25 to 18 percent since 1992. The percentage living in households whose head has not completed primary education has fallen from 69 to 57 percent. On the other hand it is not clear that human capital gaps between – in particular- extremely poor and non-poor have narrowed significantly over time (see chapter 4).

Table 1.3 The urban poor have more children, worse housing conditions, less education than the non-poor

	Extremely poor	Moderately poor	Non-poor
Average household size	5.8	4.6	3.6
Average number of children under 12	2.6	1.8	1.5
% of population living in dwellings with dirt floor	18.4	8.2	1.0
% of population in dwellings that are:			
borrowed	16.8	15.4	11.5
rented	14.0	17.7	16.5
own property	66.2	64.2	70.4
other	3.0	2.7	1.5
% of population living in households where:			
The household head is illiterate	22.0	14.1	3.7
The household head has			
no education, primary incomplete	56.7	43.4	18.9
primary complete	26.6	28.6	21.7
secondary complete	14.2	21.6	25.1
The household head works in the informal sector	41.6	34.3	21.6

Source: Own calculations based on ENIGH 2002.

Consumption patterns do not differ markedly between the poor in rural and urban areas, however, with two exceptions (Table 1-4). First, food expenses make up a smaller share of urban poor households' consumption share, but this difference may

simply reflect that poverty is deeper in rural areas. Second, housing expenses account for a larger share of total consumption in urban areas – indeed urban poor spend a fifth of their income on housing. This is a direct implication of higher congestion cost in urban areas which results in much higher land prices than in rural areas (low income housing markets are dominated by land markets.). In fact, access to affordable housing is one of the key challenges facing the urban poor. The poor, particularly moderate poor, also tend to spend somewhat more on education.

Table 1.4 Urban poor spend less on food and more on housing than rural poor

	Urban			Rural		
	Extreme Poor	Moderate Poor	Non-Poor	Extreme Poor	Moderate Poor	Non-Poor
Food, Beverage and Tobacco	42%	37%	24%	48%	42%	32%
Clothing	4%	5%	5%	6%	6%	5%
Housing	19%	22%	23%	14%	16%	19%
Health	4%	4%	4%	4%	5%	4%
Transport and Communications	10%	13%	16%	7%	13%	16%
Education and recreation	8%	9%	14%	7%	7%	10%
Other	12%	11%	13%	13%	12%	14%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Note: Includes household articles and hygiene.
Source: Own calculations based on ENIGH 2002.

More of urban poor work in agriculture are self-employed or in informal occupations than non-poor

Employment characteristics of household head are also a key poverty correlate. Compared with non-poor, a higher share of poor individuals live in households where the household head is self-employed or working in the informal sector (Table 1-5). Note that significant share of rural laborers among urban extreme poor is similar to what has been found in other countries and is indicative of an "urban agriculture" at cities periphery. On the other hand the share working in manufacturing in urban areas is fairly similar across income levels.

Table 1.5 The labor-market characteristics of the urban poor compared with non-poor

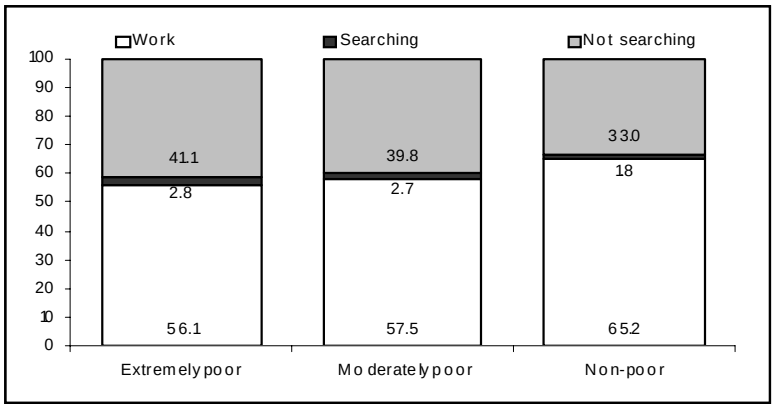
	Extreme Poor		Moderate Poor		Non-Poor	
	Urban	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**
Proportion in the population	11.4	34.8	30.6	32.7	58.0	32.6
Rural-urban composition	35.0	65.0	60.6	39.4	74.5	25.5
Profile by education						
No Education – Primary Incomplete	50.1	73.0	33.6	64.4	17.5	47.3
Primary Complete	26.8	20.4	29.4	21.8	21.0	21.3
L Secondary Complete	18.4	5.4	27.8	12.1	25.1	15.5
U Secondary Complete	3.7	1.0	8.0	1.5	19.6	8.0
University Complete	1.0	0.2	1.3	0.3	16.8	8.0
Total	100	100	100	100	100	100
Profile by employment						
Non-agricultural Laborer	57.0	17.2	70.6	36.0	69.8	43.0
Agricultural Laborer	8.7	32.1	1.8	22.4	0.5	9.6
Employer (under 5 employees)	1.3	2.6	2.6	3.8	7.3	9.1
Employer (5 or + employees)	0.0	0.5	0.1	0.1	2.4	0.8
Self-Employed	33.0	47.6	25.0	37.7	20.0	37.4
Total	100	100	100	100	100	100
Profile by sector of activity						
Agriculture	11.5	70.5	3.0	49.7	1.2	30.9
Extraction	0.1	0.1	0.3	0.8	0.8	0.4
Manufacturing	35.0	9.7	42.9	18.4	39.7	29.7
Utilities	17.1	9.4	13.0	11.6	7.8	7.4
Construction	0.3	0.0	0.7	0.1	0.9	0.5
Commerce	4.6	0.7	5.3	1.5	4.8	3.5
Transportation	8.3	1.6	7.8	5.4	8.0	4.2
Financial Services	0.7	0.2	1.2	0.1	1.8	0.1
Services	22.5	7.9	25.9	12.4	35.0	23.3
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Own calculations based on ENIGH 2002.

Labor-market access is clearly linked to the poverty status of the individual (Figure 1.3). Employment rates – the share of population aged 15-64 that is currently employed – are similar for the extremely poor and moderately poor, but much lower for both groups than for non-poor. This is largely because a higher share of the poor is inactive in the labor market but also because a higher share is unemployed. Unemployment rates – as calculated from the household survey – are nearly twice as

high for the poor as for non-poor. In rural areas, unemployment rates are in fact lower for the poor than for non-poor.[5]

Figure 1.3 The poor's participation in the labor market is much lower than the non-poor's



Source: Own estimates based on ENIGH 2002.

Higher dependence on labor income

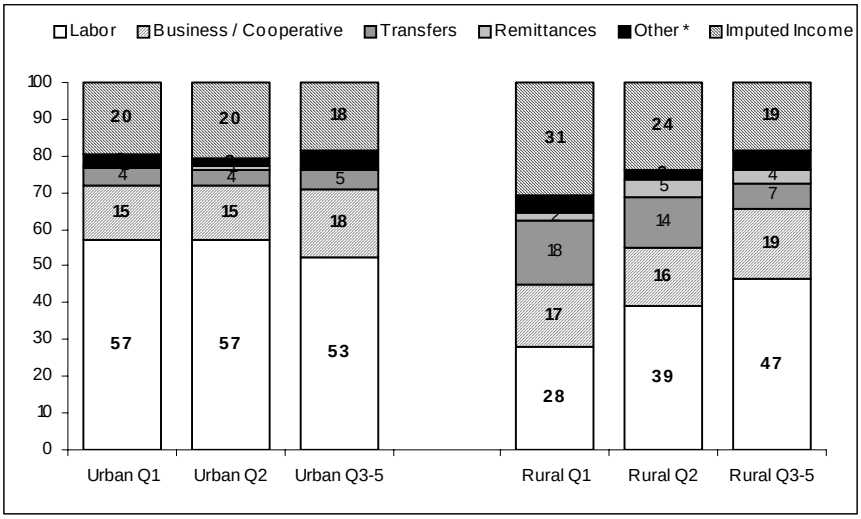
Labor markets are key for urban poor. The importance of labor markets for urban poor – and non-poor – is clearly borne out in Figure 1.4, which shows income by source, location (urban or rural) and for the different income quintiles respectively (using rural and urban quintiles separately). In fact, urban households show great resemblance in the pattern of income sources, irrespective of income level. Compared with richer urban household, the poor rely slightly more on labor income and on in-kind income and receive virtually no income from physical assets like rental or financial income. Urban households receive a similar share of transfers across income levels (about 4 percent).

Urban poor rely much more on labor income and much less on in-kind income and receive fewer transfers. Compared to their rural counterparts, labor income is much more important for urban poor. Another striking difference is that transfers make up a relatively much larger share of rural poor and non-poor household income and remittances contribute virtually nothing to urban poor household income. This being said, transfers received by urban poor remain higher in absolute terms than for rural poor, although they receive considerably less (in absolute and relative terms) from *Oportunidades.* Instead, transfers received by urban households, whether poor or non-

[5] Note that the household survey is not an ideal instrument for analyzing labor market indicators and the unemployment rates are therefore not consistent with official unemployment rates. An in depth study of the labor market situation for low-income groups, based on much richer employment surveys, is provided in chapter 4 of this report.

poor, tend to consist much more of pensions, severance payments, scholarships and gifts from other households[6] (on the other hand, given higher poverty incidence in rural areas, the first quintile in urban area encompasses both urban extremely poor and moderately poor, while the first quintile in rural areas only includes the extremely poor, which makes the comparison difficult).

Figure 1.4 Urban households are much more dependent on labor income than rural ones - income sources, by location and quintiles, 2002



Source: Own calculations based on ENIGH 2002. * Includes rental income, financial income, and other monetary income.

Mexico actually stands out in Latin America for the remarkably low share of income that its urban poor receive from transfers. A recent regional study on urban poverty (World Bank, 2005) shows that while Mexico's urban poor only receive about 3.5 percent of income from transfers the Latin America and Caribbean (LAC) average is more than four times that amount. Only two other countries (Chile and Venezuela), out of 18 comparators, exhibit a similar pattern of lower transfers to urban areas, but even then the difference is much smaller. This is obviously not due to the fact that Mexico transfers less since Mexico's rural poor receive more than the LAC average in transfers. Pensions are about the same as in the rest of the region, significantly higher in urban than rural areas, but not enough to offset the lower levels of transfers in urban areas.

Higher access to services but quality and affordability a problem

Urban areas almost by definition have higher access to basic services than rural areas: electricity can be accessed (illegally or legally), there is often some form of

[6] See World Bank (2004a): Mexico Poverty Assessment: Poverty in Mexico: Conditions, Trends and Government Strategy.

water and sanitary infrastructure network in place, even for the poor, and there is a higher density of education and health services. All of these aspects tend to improve gradually along the urban-rural continuum. Table 1.6 gives some municipality-level characteristics by population size. The larger the municipality, the greater is its average access to basic infrastructure, and the higher are literacy rates.

Table 1.6 Urban municipalities have more services and higher education and wage levels

Characteristics	Rural	Semi-urban	Small urban	Medium urban	Large urban	Very large urban	Urban total
% of persons in dwellings							
with no piped water	26.4	29.2	30.1	26.4	22.4	13.6	25.1
with no sanitary drain	66.5	55.3	47.6	39.5	32.4	16.1	37.8
with no electricity	10.3	13.2	11.6	9.4	7.0	3.2	8.9
% of persons 15 and older							
that is illiterate	20.7	20.4	19.4	16.1	13.5	7.3	15.6
with incomplete elementary school	32.2	30.2	27.9	25.4	23.1	15.6	24.4
% of persons employed							
earning ≤ two min. wages	83.3	77.2	72.4	67.2	62.1	46.8	65.2
employed in manufacturing	10.7	12.6	13.6	15.1	16.7	19.3	15.5
employed in services	28.8	34.8	40.3	46.5	52.5	66.4	48.2
Observations	381	998	430	239	183	165	1,017

Source: Own estimates based on census 2000. Population cut-offs are: rural: 2,500 inhabitants or less; semi-urban: 2502-15,000; small urban: 15,001-30,000; medium urban: 30,001-50,000; large urban: 50,001-100,000; very large urban: more than 100,000 inhabitants.

However, average municipality characteristics do not distinguish the situation of poor from that of non-poor. Since population size is also inversely correlated with the incidence of poverty, these average characteristics become increasingly irrelevant for understanding how the urban poor fare as one moves along the urban spectrum. Precisely because income poverty is lower the more urban the area the poor will tend to be further away from the average and the gaps between poor and non-poor often more pronounced.

The main infrastructure issue facing urban poor is more likely to be the quality and affordability of services rather than actual lack of service.[7] Nevertheless, a full 15 percent of extreme poor in urban areas and 9 percent of moderate poor do not have access to piped water and access to sewerage remains low. This, combined with the

[7] Note that some forms of network infrastructure services, such as sewerage, are only appropriate above a certain population density. As a result, their absence may not necessarily indicate as serious a deprivation in rural as in urban areas.

fact that water service is intermittent and unreliable in many poor neighborhoods, has severe environmental and public health consequences in densely populated areas (see below).

Table 1.7 The urban poor have more access to infrastructure services than the rural poor

	Urban			Rural		
% individuals living in households	Extremely poor	Moderately poor	Non-poor	Extremely Poor	Moderately poor	Non-poor
Without electricity	2.6	1.1	0.0	10.5	8.2	2.3
Without running water or by pipe track	15.0	9.0	1.3	42.8	36.4	14.6
Without sewerage	29.4	16.8	2.8	86.1	76.7	40.1

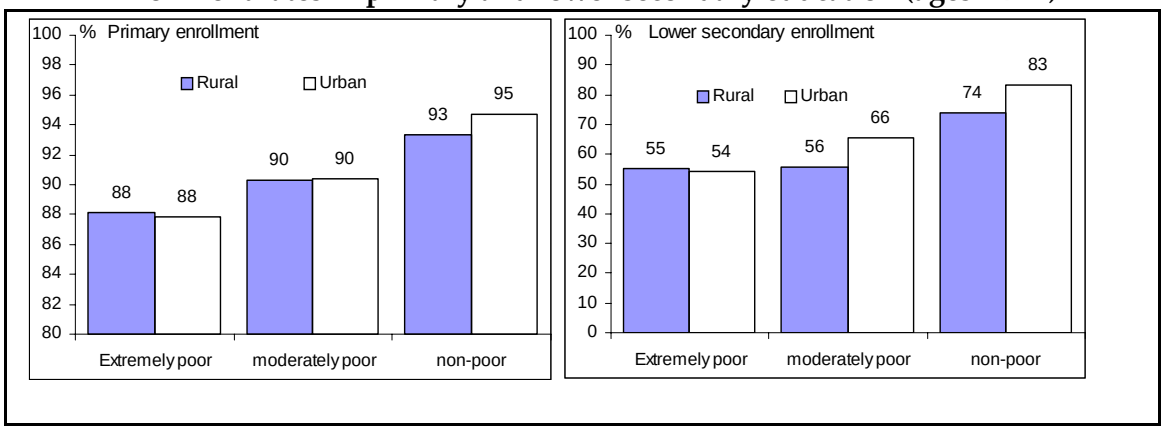
Source: Own calculations based on ENIGH 2002.

Within urban areas, access to services is also higher for older settlements. This is particularly true for the poor because of the way in which they acquire housing – often settling in undeveloped areas where land can be acquired cheap and gradually building houses. Thus, data from a survey of poor *barrios* carried out by *SEDESOL* in 2002 shows that the share of dwellings with walls of the best materials goes from 57 percent for houses less than a year old, to 84 percent for houses more than 10 years old. As discussed in chapter 3, similar pattern is found for piped water where both the age of a settlement and the age of a house matter in determining access, as well as for electricity and solid waste removal. The only service for which this was not the case was sewerage.

Similarly, although education and health services are more widely available in urban areas, overcrowded – rather than absent – facilities limit effective access. In addition, poor are much more likely to receive low-quality services than non-poor.[8] As a result, actual health and education outcomes are more similar between urban and rural areas than would be expected. In particular, primary enrollment is the same for rural and urban poor children. In fact, urban extreme poor do somewhat worse than rural extreme poor in terms of secondary enrollment (Figure 1.5). Thus, the key determinant for access to education appears to be income, rather than location, although this changes for higher levels of education. In particular, rural-urban differences are significant at higher secondary education but enrollment rates of the extremely urban poor are still only one half those of non-poor urban children.

[8] The qualitative evaluation made at the time of *Oportunidades'* expansion into semi-rural and urban areas reports complaints with saturation of clinics in semi-rural areas (15,000 and 50,000 person settlements) and with the poor quality of schools in urban areas (Escobar Latapí and González de la Rocha, 2002 and 2004).

Figure 1.5 Education: poverty rather than location is what matters
Enrollment rates in primary and lower secondary education (ages 12-14)



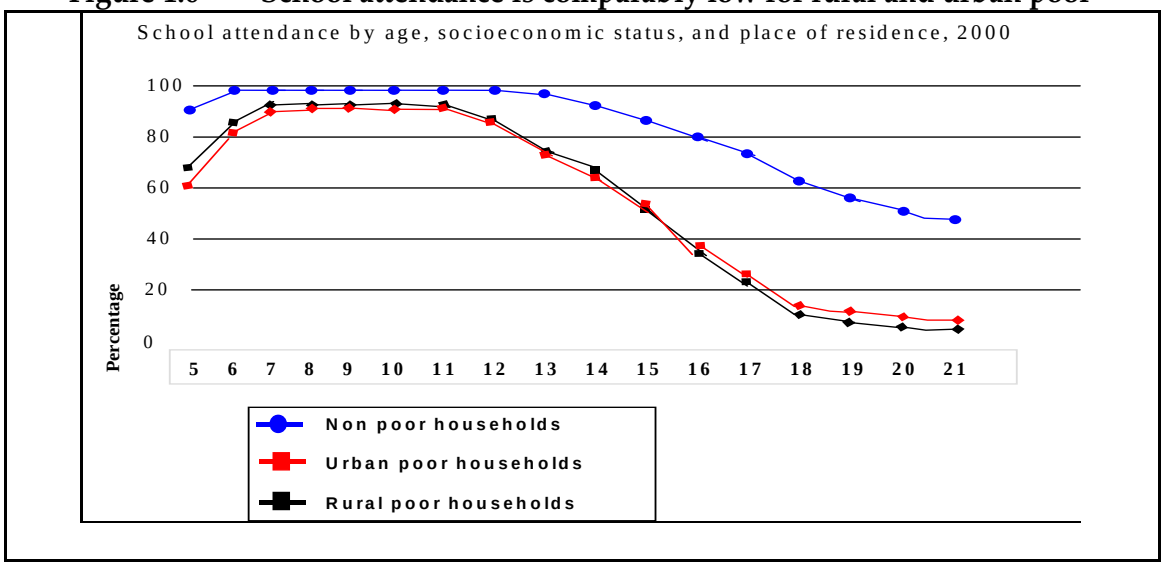
Source: Own calculations based on ENIGH 2002.

This rather surprising finding is confirmed by analysis conducted by *SEDESOL* using census data. Using intermediate poverty line (*pobreza de capacidades*) which lies between the thresholds for extreme and moderate poverty, *SEDESOL* findings confirm that rural and urban poor enrollments are almost the same, with urban poor children somewhat worse off at lower grades and somewhat better off at higher grades (Figure 1.6). Whether this is due to *Oportunidades* -which has had significant impact on enrollment in rural areas but not in cities – is unclear.

Limited health data available also suggests that there is not much difference in health status of the rural and urban poor, at least when it comes to infectious diseases (Table 1-9)**.** This is remarkable, given urban poor's much higher physical access to infrastructure and health services -about one in three rural people has to travel more than 30 minutes to a health facility, compared with one in six in urban areas.[9] On the other hand, data suggests a close link between income level and health status in both urban and rural areas. In 1999, incidences of diarrhea and respiratory diseases for children under 5 years of age were much higher for the first quintile than for richer income groups.

[9] SEDESOL, Programa Nacional de Desarollo Social, 2001-06

Figure 1.6 School attendance is comparably low for rural and urban poor



Source: SEDESOL, 2003.

However, data suggests that within urban areas location may matter even more than income. The 2002 survey of poor urban *barrios* discussed in chapter 3 finds an even higher incidence of diarrhea and severe respiratory diseases in the *barrios* (which are somewhat heterogeneous in terms of income and so would include a group whose average income is probably higher than the poorest quintile) than among the poorest quintile of population (Table 1.8).[10]

Table 1.8 Income or location? Poor children are equally at risk from infectious diseases in rural and urban areas

	SEDESOL Barrio Survey, 2002	National Health Survey, 1999.			
	Poor barrios	Poorest	Qr2	Qr3	Richest
Diarrhea					
Urban	22	15	10	10	6
Rural	--	14	11	8	-
Severe respiratory diseases					
Urban	48	21	19	16	13
Rural	--	24	22	10	-

Source: Adapted from SEDESOL, Programa Nacional de Desarrollo Social 2001-2006 and own calculations.

In sum, it does appear as if services (infrastructure, health and education) are failing, urban poor, despite the relatively high coverage... In relation to water and sanitation sector, this is due to a combination of the usual gradual way in which poor

[10] An in-depth analysis of the barrio surveys is provided in Chapter 3 of this report.

urban neighborhoods acquire services and a sector that is generally dysfunctional, except in a few municipalities with well-run utilities (for a discussion on water sector see World Bank, forthcoming 2005c). Concerning education, quality remains an issue and one that is central to poor's ability to escape poverty through the labor markets (chapter 4). As to health, the key issues concern environmental health issues (high density living, combined with pollution and poor sanitation) and saturation of clinics. However, these are part of a broader set of public health question related to the epidemiological transition that occurs with urbanization and that affects the urban poor worst (Box 1.2).

Box 1.2. Public health issues for the urban poor

Across Latin America, a number of key health indicators for poor urban children are as bad or close to what they are for poor rural children, despite the much higher availability of services. This suggests an "urban penalty" due to high density living in unhealthy environments.[1]

The urbanization of Latin America has contributed to a dramatic change in its epidemiological profile: infectious diseases are being replaced by chronic, degenerative and cardiovascular diseases and violence as the leading causes of death. Although there has been little systematic research on the different incidence in pathologies between urban and rural areas, certain pathologies like obesity, nutritional problems, sexually transmitted diseases (STDs) and HIV/AIDS, injuries from accidents, violence, drug addiction and mental health problems seem to be more prevalent in urban areas. In addition, they seem to hit the poor harder. In particular, obesity is more prevalent among the urban poor, possibly due to the lower price of high calorie processed food.

In addition to the well documented effect of inadequate water and sanitation services, some criticism is emerging as to the fact that health care in Latin America have been slow to adapt to the epidemiological transition. Certainly, health issues of the urban poor are an understudied issue, particularly in Latin America.

The term "urban penalty" was coined in 19th century England when urban mortality rates, particularly from tuberculosis, were much higher than rural ones. Public health measures, improved water and sanitation, and socio-economic change led to declines in infant mortality rates (IMR) so that by 1905 rural and urban IMRs were similar (See www.Urbanobservatrory.org for more details).

Source: Based on Monkkonen, 2004.

What about the indigenous poor?[11]

> "*Cuando uno llega aquí la ciudad te come. No te comes a la ciudad, ella te come y no te deja salir. Cuando llegas aquí todo te sabe sabroso, ves la luz del día, de día y de noche; en el pueblo, no, ahí con pura velita, con petróleo, y llegas aquí, haz de cuenta que todo estaba oscuro y se prende la luz, así es la ciudad, todo es*

[11] This section is a summary of Molnar, Carrasco and Johns-Swartz (2003) unless otherwise specified.

bonito pero no sabes lo que te va a pasar, no sabes los golpes que después te va a dar por el trasero, esta ciudad te come y así como te come luego te tira y te desecha".

Mazahuas Indian, Mexico City, August 2000, as quoted in Molnar, Carrasco and Johns-Swarts (2003)

A recent study sheds some light on the situation of indigenous urban dwellers in Mexico. There is not a lot of information about the specific conditions of indigenous people in the cities of Latin America, although there are a few studies that shed light on the topic. A recent such study done in Mexico by Molnar, Carrasco and Johns-Swartz (2003), is particularly relevant for the present report since it actually asks the indigenous communities interviewed about differences in living conditions between rural and urban areas). The study is based on focus groups and a survey of about 860 indigenous households in three cities - Mexico City, Cancún and Coatzacoalcos-Minatitlán, a traditional industrial center. Indigenous households include people from five different indigenous groups and included both first generation migrants, as well as second and third generation. Most households live in poverty or extreme poverty in urban areas. The studies show a wide variety of experiences and situation across cities, indigenous groups and even individuals. However, some stylized facts emerge, summarized below.

Our understanding of the indigenous dimension of urban poverty is limited by data limitations. According to 2000 census, about 40 percent of people speaking indigenous language live in urban areas, representing about 1.3 million individuals (INEGI, 2001). However, this seriously underestimates the urban indigenous population since many second and third generation indigenous migrants maintain their cultural identity but not necessarily their language. In addition, it appears as if official statistics about indigenous people in cities are biased downwards because of their lack of fixed address and legal residence – this is particularly common in large cities, touristic centers with seasonal employment and frontier cities with fluctuating population. In the study, this was particularly complex in Mexico City, but less so in Cancún and Coatzacoalcos-Minatitlán.

Indigenous groups are characterized by strong social networks – but these are not so useful to get out of poverty. Indigenous migrants typically have very strong community organizations which provide a safety net and help negotiate access to services. However, most urban indigenous communities continue to live on the margin of society, suggesting a lack of vertical relations from the communities to service providers (municipality, federal or state administration in charge of particular programs). This may in part be due to the fact that most recent immigrants come from situations of extreme poverty and get to the city with low level of social or even human capital. In addition, community organizations do not seem to help get out of poverty.

Those looking to get ahead seem to rely more on education and the use of Spanish language and Spanish culture, than on traditional indigenous means.

There is significant discrimination. The perception of discrimination exists particularly with respect to outward signs of indigenous culture, such as traditional clothing and language. As a result, many abandon indigenous costume in urban centers. Nevertheless, about 75 percent of people interviewed felt that they had the same work opportunities as non-indigenous (although this varied significantly among ethnic groups). Between half and three-quarters of the interviewed felt their salary was fair. Those who spoke an indigenous language were more likely to rate their salary as unfair. Finally, informal workers felt more at liberty to publicly express their cultural identity.

Gender discrimination is less prevalent than in rural communities, however. Across all five ethnic group included in the study, women declared that, contrary to what happened in rural communities, they participated in important family decisions. The majority (54 percent) declared that they themselves chose their work, when to visit their parents, whether to work outside home or use contraceptives. Inter-generational differences emerged however, with the second generation reporting higher levels of autonomy, higher levels of education, more formal employment (as well as less use of their indigenous language or link with the village of origin). In contrast with rural areas, the vast majority (three quarters and above, depending on the particular indigenous group) of households consider it important to invest in girls' education.

The main reason for migration is a push factor. The impossibility in rural community of origin of ensuring access to education and a job with minimum income, or, sometimes, to access to property. And whereas most indigenous migrant workers performs in the informal sector and earn little, they report earning more and having steadier, more secure work than in rural areas. The general opinion is that even if wages are indeed low in the city it is possible to secure a steady stream of income -as long as illness does not hit. Traditional indigenous activities remain important sources of earnings in the cities, particularly for women, who often combine the production of traditional handicraft with housework.

Access to services is elusive. Better access to services is a powerful motivation for migration to the cities and many perceive urban life positively for the opportunities it offers to their children. In particular, education is perceived as the most important mean to get ahead and is much higher among youths or second generation than among first generations of migrants or older people. Nevertheless, many children abandon school before finishing primary school and many repeat grades due to economic duress, the impossibility to attend regularly or the lack of parental help for homework.

Access to health services varies widely across ethnic groups – from a low of 7 percent among the Mazahuas to a high of 57 percent among the Zapotecas (who are mostly employed in the formal sector Coatzacoalcos-Minatitlán, a traditional industrial

center). In addition, about 25 percent of those with access to health services report not using them – due to their poor quality, a fear of discrimination and poor treatment, or to limited Spanish language skills. Overall, only about half of pregnant indigenous women get pre-natal care although the majority gave birth in clinics or hospitals.

City life has advantages and disadvantages for the indigenous poor. People surveyed felt life is better in cities in terms of work, education, health, justice and housing, but worse in terms of security and environment. Answering the question of what was the most serious problem confronting the community, commonly used answer was crime and violence (35 percent) followed by lack of services (20 percent), with men more likely to worry about crime and women more concerned about services.[12] Unemployment was mentioned by 9 percent and housing 6 percent. Interestingly, poverty was reported as a problem for the community in only 2.7 percent but with a range from 1.4 percent among the Mazahuas to 17 percent among the Zapotecas. Interviews showed the variance of concerns across social groups. Women were more likely to worry about the excess of work; time lost in transit and spent helping sick relatives. In contrast, youths complained about the lack of supervision from parents, conflicts with alcoholic parents, time spent in the streets after school, and culture of drug and violence. Finally, although cities are perceived as places of greater opportunities they are not seen positively: about 46 percent think that city people are "worse" than country people.

In sum, poverty incidence and symptoms clearly differ between urban and rural areas, as well as among urban areas of different size and location. But how important are differences in well-being within cities? The fact that urban poor in many cases have more in common with their rural counterparts than with other urban dwellers hints at substantial heterogeneity within urban centers as well.

INEQUALITY AND HETEROGENEITY

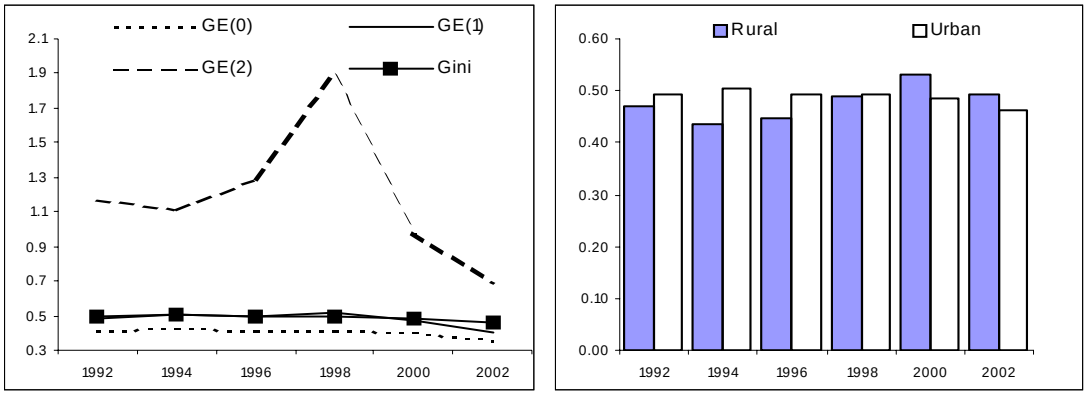
High inequality tends to dampen the effect of growth on poverty.[13] Below we use four indicators of inequality to illustrate patterns and trends in urban inequality: the Gini index, and three indices that are part of the generalized enthropy (GE) class of indices, and which can be varied so as to pay more attention to inequality at different segments of income distribution. The GE(0) index (also known as the Theil index) gives more weight to inequality at the bottom of the income distribution (i.e. among the poor), the GE(1) index gives equal importance to inequality along the distribution, and the GE(2) index, finally, gives more weight to inequality among the richer groups.

[12] "Services" seems to refer to infrastructure services, since "education" was a separate answer.
[13] See Ravallion (1997) for a discussion

Inequality now lower in urban than rural areas

Inequality indicators suggest an increase in inequality between 1992 and 1994, a fall in inequality connected with the macroeconomic crisis and a flattening out during the recovery period. As Figure 1.7 shows, the four indices had roughly similar trends for inequality in the 1990s. However, inequality within the top income distribution (GE(2)) has been somewhat more volatile than other indices and also increased in the recent period. The trends in inequality are consistent with findings in the previous section on income vulnerability: although the mid-1990s crisis increased absolute poverty, it was in fact progressive as it affected households in the top of the income distribution relatively more than those at the bottom. The decrease in inequality in urban areas coincided with a rapid increase in inequality in rural areas, especially between 1998 and 2000. As a result of these disparate trends, inequality is now higher in rural areas than in urban ones – the right panel of Figure 1.7 shows the Gini index only, but in 2000, rural inequality was also higher for all the GE indices.

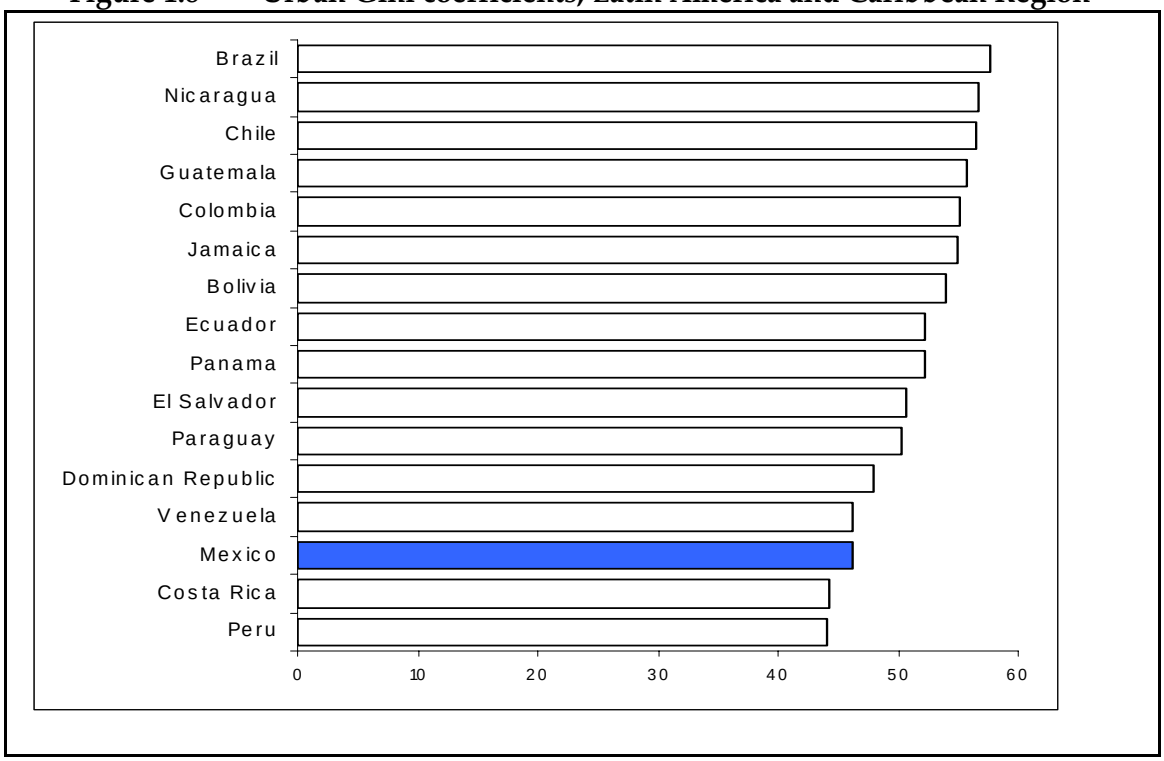
Figure 1.7 Urban inequality has fallen and is now below rural inequality
Urban areas: Gini and GE indices, 1992-2002. Urban and Rural areas: Gini index, 1992-2002



Source: Own estimates based on ENIGH (2002).

Mexico's urban areas display fairly low inequality, at least by Latin American standards, where inequality is notoriously high. As shown in Figure 1.8 below for the Gini index and in Annex Table A-4 for other measures of inequality, Mexico has among the lowest urban inequality for all indices discussed above. Regardless of inequality measure used, urban areas are less unequal than rural ones, although differences are slight – except for the GE (2) measure that gives more weight to inequality among the rich and for which Mexico exhibits the highest rural-urban difference in the LAC region.

Figure 1.8 Urban Gini coefficients, Latin America and Caribbean Region



Source: For Mexico, own calculations based on ENIGH 2002. Other countries: World Bank (2004a).

Very heterogeneous cities[14]

Since cities are very diverse socio-economically, urban poor are part of a much more diversified economy. Land and rental markets result in some sorting by neighborhood yet, in Mexico at least, considerable heterogeneity persists within neighborhoods. Thus it was found, in the context of *Oportunidades*, that while 77 percent of urban extreme poor live in "marginal" neighborhoods, extreme poverty rate in such neighborhoods is only 26 percent (Gutiérrez, Bertozzi and Gertler, 2003). Even the poorest *barrios*, such as the ones that were selected for *SEDESOL* survey discussed in chapter 3, only exhibit an average poverty rate of 36 percent (in contrast, rural average for extreme poverty rate is almost 40 percent). This complicates targeting for social safety-net programs; in particular geographic targeting is likely to involve high errors of both inclusion and exclusion.

We look at heterogeneity within and between municipalities that belong to same metropolitan area, using municipality-level census data for 1990 and 2000 (large Mexican cities are composed of several municipalities). As a proxy for "well-being", two different indices of marginality are presented in order to distinguish between well-being factors whose provision is of public nature (access to water, sanitation, electricity and

[14] Based on Araujo (2004)

literacy) and those which are privately determined (crowdedness and floor material of the dwelling, as well as wage levels). Since these are indicators of marginality, a low level is a good outcome.

Within cities, municipalities differ considerably in terms of marginality (annex Figures 2-A and 3-A). Many metropolitan areas display relatively low levels of marginality (i.e. high levels of well-being) for both private and public indicators, but the range among municipalities within each of these zones is large.[15] The ranking of these zones also differs between private and public indicators. The three largest cities of Mexico – Mexico City, Guadalajara, and Monterrey – tend to have low average levels of marginality for both private and public indicators, but these cities are also characterized by high inequality among municipalities, especially Monterrey. For each zone, the dispersion in the public marginality index is generally higher than dispersion in private marginality, suggesting that there are larger within-city differences in well-being related to public provision of services. This is consistent with the findings of Boltvinik's (1997) study of four *colonias* around Mexico City which showed much greater heterogeneity in unsatisfied basic needs than in terms of income.[16] In addition, there is also a weak tendency for cities with higher levels of public marginality to exhibit greater degrees of dispersion – in other words, poor cities are also more unequal – but no clear relationship exists for private marginality.

Unequal cities tend stay that way

What do we know about the dynamics of spatial heterogeneity within cities? The decline in urban inequality discussed above does not necessarily mean that inequality among people living in the same city has fallen, however. A key issue is therefore whether cities have tended to grow jointly or disjointly, i.e. whether there has been convergence in well-being over time in metropolitan areas between 1990 and 2000.

First, have poorer cities – i.e. with high marginality – fared better on average than more affluent ones? There seems to have been some convergence between cities for average levels of marginality related to public provision, but there is no clear pattern for private-level deprivation (Figure 1.9 and Annex Figures 5.A and 6.A). That is, less well-off cities saw a faster improvement (larger reductions) in public marginality but private deprivation levels did not fall faster than for richer cities. Good news emerges from Figure 1.9 since all cities experienced a reduction in their average level of private marginality. Most cities also improved public marginality, although a few relatively well-off cities (including Monterrey) actually saw an increase in the average public marginality index.

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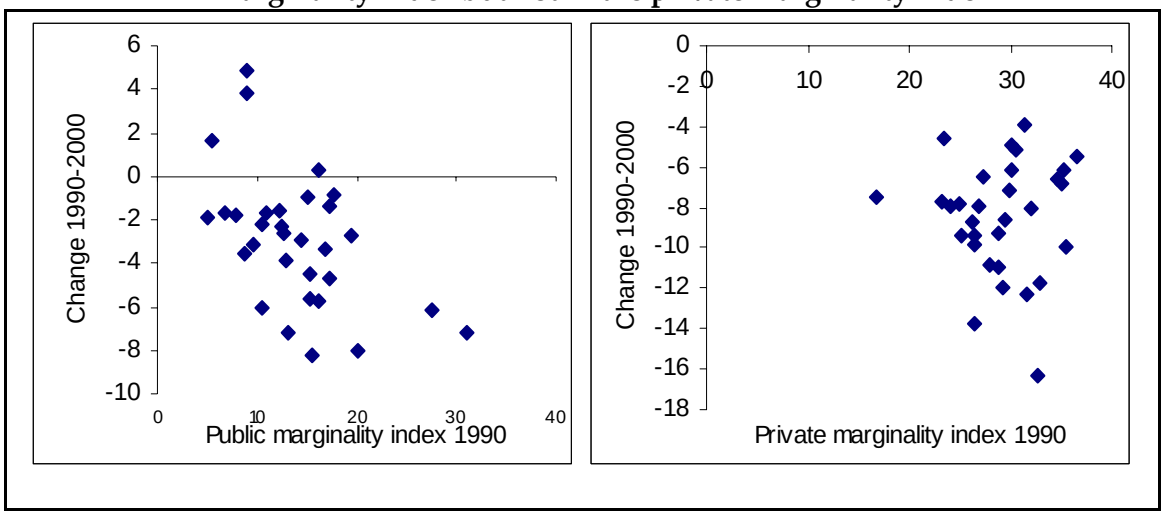
[15] Note that average levels of well-being for each metropolitan zone is calculated as the mean of municipal averages – and thus does not take into account population weights.

[16] The indicator that varied most within *colonias* was access to health services.

Figure 1.9 There has been some convergence in the city average public marginality index but not in the private marginality index

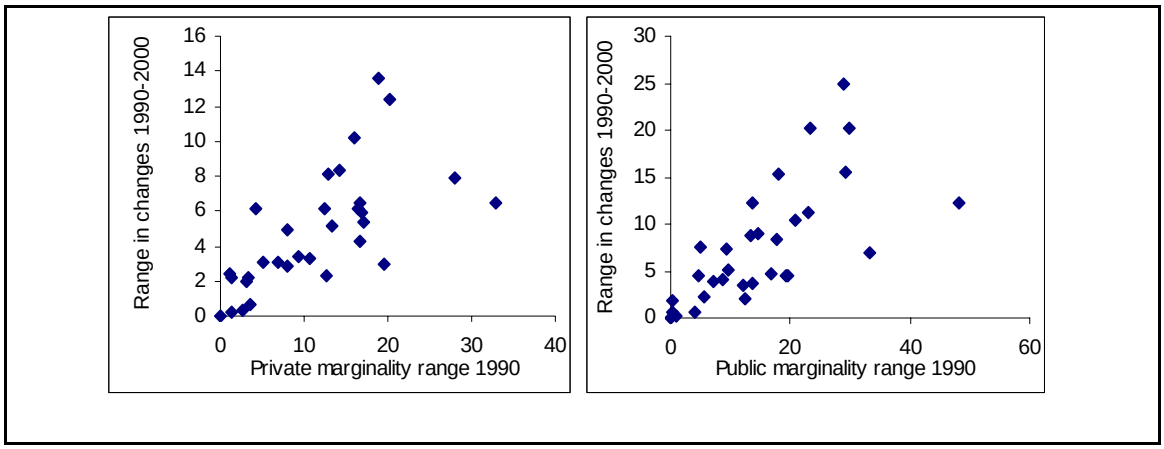


Source: Adapted from Araujo (2004) based on census data 1990 and 2000.

Second, has inequality in well-being rising within cities? The range of municipal marginality indices, whether private or public, has indeed fallen for almost all cities. Though range admittedly is a very crude measure of variance, this indicates that within cities there was less inequality between municipalities in 2000 than in 1990. Yet, the ranking appears to be more or less preserved: cities that were relatively unequal in 1990, whether with high or low average levels of well-being have in general stayed relatively unequal regarding private and public marginality. These include, notably, Mexico City and Monterrey (Annex Table 3-A).

A third question relates to the extent to which growth – here meaning the change in marginality – differs within cities. Generally, cities that in 1990 had a high dispersion of public or private marginality also saw widely differing rates of reduction in marginality across their municipalities (Figure 1.10). An interpretation is that relatively unequal cities tend also to grow disjointly, thus supporting the observation that unequal cities generally have stayed unequal.

Figure 1.10 Unequal cities grow disjointly
Municipality marginality in 1990 vs. changes of municipality marginality between 1990-2000



Source: Adapted from Araujo (2004) based on census data 1990 and 2000.

To sum up, there is clearly great variation in the dynamics of changes in marginality over time. Importantly, cities that on average were less well-off in 1990 have seen a relatively faster reduction in public marginality, but there is no similar catch-up process for private marginality. Inequality, finally, seems to persist over time, suggesting that unequal cities also grow disjointly, with different sub-areas improving at very different speed.

SUMMARY AND CONCLUSION

Location is a key element for understanding the structure and trends in deprivation and therefore for formulating the policy interventions needed to reduce it. However, there is a continuum between rural and urban areas in terms of poverty and its characteristics. Also, regional differences may matter more than rural/urban ones. As such, one should exercise caution in using the rural/urban dichotomy.

Income sources in particular differ between urban and rural poor, with the former more dependent on labor income and less dependent on transfers. Urban poor share many household characteristics with rural poor – they have larger families, less education and less access to services than the rich. However there are some notable differences. In terms of consumption patterns, they spend relatively more on housing (twice the share), transport and education, but relatively less on food, clothing and health. They are much more dependent on labor market for income. The most remarkable difference is the surprisingly low share of urban income that is derived from transfers. In fact, this is the only dimension on which the situation of urban poor in Mexico is substantially different from the rest of Latin America. Clearly, this is not due to low overall expenditure on social safety nets, since rural poor's share of income derived from transfers is actually higher than regional average.

Public services are more available in cities but tend to fail for poor due to low quality and reliability. Another notable difference is urban poor's greater access to infrastructure and other public services. But here again there are some worrisome caveats. First, despite much higher access to infrastructure and health services in urban areas, infectious diseases such as diarrhea and acute respiratory infections are equally common among urban and rural poor children. This suggests that water and sanitation systems have remarkably poor quality. While much attention is being paid to expanding coverage quality is not keeping up, making the improved access only nominal. It also implies that using access to services as a targeting instrument may lead to misleading conclusions about well-being in urban areas. Second, school enrollment rates are equally low among urban and rural poor. This may reflect the positive impact of *Oportunidades* in rural areas, but it does also show an urgent need for assessing the educational situation of urban areas.

Urban areas have become less unequal but remain highly heterogeneous. Urban areas today are somewhat less unequal than rural areas. However, they are highly heterogeneous, within cities and even within poor neighborhoods. This is true for income, whether measured in pesos or through an asset index. Heterogeneity in terms of access to services is however greater than in terms of household characteristics such as wage levels or house quality.

The incidence and manifestation of poverty varies enormously between and within different urban areas, and even within particular neighborhoods. This has important implications for the targeting mechanisms of social safety-net programs: in particular that geographic targeting is likely to involve high error rates for both inclusion and exclusion.

2. POVERTY, GROWTH AND PUBLIC PROGRAMS FOR THE URBAN POOR[17]

Urban poverty in Mexico is highly sensitive to macroeconomic trends. The peso crisis and its aftermath triggered a sharper rise in poverty in urban areas compared with rural ones, but urban levels fell back again more quickly in the subsequent economic recovery, as shown in chapter 1. This higher sensitivity to growth implies both good and bad news for Mexico's urban poor: on one hand, they may be better able to take advantage of periods of high growth than those in rural areas where poverty is more stubborn. On the other, more people are likely to fall into poverty during negative macroeconomic shocks.

This chapter examines the relationship between urban poverty and growth. It explores the link between household characteristics and income variability and discussing the coping strategies that urban poor uses to protect themselves from the effects of economic shocks. It then reviews the programs specifically designed to help urban poor.

URBAN POVERTY - MORE RESPONSIVE TO GROWTH THAN RURAL POVERTY

Urban poverty response to overall growth is strong, more so than rural poverty. Mexico's example is consistent with international evidence that urban poverty generally reacts more strongly to macroeconomic swings – whether positive or negative – than rural poverty. A potential explanation for higher sensitivity to growth is that urban residents tend to be more closely connected to the overall economy than their rural counterparts, through deeper integration into the labor market, reliance on a cash economy, etc.

These differences in elasticity largely disappear if one considers relevant sectors of growth only: rural poverty is highly elastic in comparison to agricultural growth. This is driven by the fact that growth in general is more closely related to non-agricultural growth, however. The companion study on rural poverty finds, perhaps unsurprisingly, that rural poverty's response to agricultural growth is pretty much the same as urban poverty's responsiveness to non-agricultural growth. Estimates of poverty elasticity to growth for Latin America from Siaens and Wodon (2003) are

[17] This chapter was written by Marianne Fay and benefited from input from Anna Wellenstein.

around -1.3 for urban poverty and -0.7 for rural poverty. Work by Soloaga and Torres (2003) for Mexico shows that the relationship between urban poverty and "urban" (non-agricultural) growth is very similar to that between rural poverty and rural (agricultural) growth (Table 2-1). In both cases, extreme poverty is much more sensitive to growth than overall poverty.

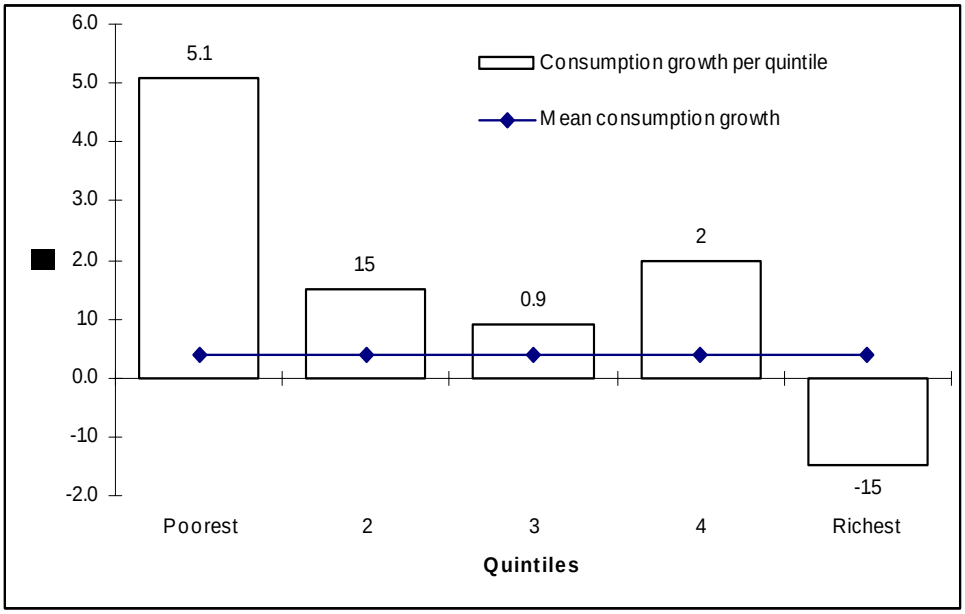
Table 2.1 Urban poverty is very responsive to non-agricultural growth

	Total	Urban	Rural
Extreme Poverty			
Agricultural growth	-1.3	n.s.	-1.5
Non-agricultural growth	-0.9	-1.6	n.s.
Poverty			
Agricultural growth	-0.6	n.s.	-0.8
Non-agricultural growth	-0.5	-0.7	n.s.

Note: Elasticity is defined as the percentage change in poverty headcount given a percentage change in output.
Source: adapted from Table 4 in Soloaga and Torres (2003), as quoted in World Bank, 2004a.

The distribution of growth among consumption quintiles can explain why the growth elasticity of urban poverty was high (Figure 2.1). In fact, only the poorest quintile saw a statistically significant increase in consumption.

Figure 2.1 The pattern of growth between 2000 and 2002 was pro-poor in urban areas



Note: Only consumption growth for the poorest quintile is statistically significant.
Source: WB staff calculations based on ENIGH.

Income vulnerability depends on household characteristics, not just poverty

What household characteristics affect vulnerability to shocks? As mentioned above, the downside of high growth elasticity is that negative income shocks have a devastating impact on low income households. From the perspective of policy interventions and, especially, the design of safety nets, it is important to know how certain household characteristics affect vulnerability to shocks and, in particular, whether some low-income households experience much larger income cuts than others. Moreover, it is important to know whether income shocks (to which households are always exposed, e.g. income loss due to illness or loss of job) are distributed differently during turbulent times. Maloney, Bosch, Moreno and Tinajero (2003) look at the magnitude and distribution of income shocks in Mexico's urban areas, comparing a period of normal times (1992 to end-1994) with one of intense macroeconomic turbulence (end 1994 to end-1995).[18] This analysis focuses on the entire distribution of shocks and not only on average changes as it is more common in the literature. This is important as it might be that on average a particular category of household does not see large falls in income, but that some households within this category are disproportionately affected. Annex Table 5-A presents estimation results for the pre-crisis and crisis periods. Results relate the performance of different households to a base case of a typical high-income household, in this case a household headed by a married middle-aged college-educated male working in the formal sector with a smaller family. What do these estimations tell us about income vulnerability for low-income groups?

First, even during normal times different types of urban households experience very different income variability depending on their characteristics. Households whose head was less educated generally had less variability in income than their more educated counterparts. Upwards, this may be because they have fewer opportunities for income growth. Downwards, these households may lack savings or other means to smooth consumption and so are forced to smooth income, possibly by working more or putting additional workers into the labor market.

Another important determinant of variability is the employment category: households whose head was self-employed or employed in the informal sector had higher income variability than the formally employed or employers. This finding is consistent with the typical behavior of a dynamic small-firm sector, where some firms do much better or much worse than the average salaried worker.[19] Household heads with no earnings at the beginning of the period generally saw higher median income growth as well as higher variance, suggesting that some of them find jobs during the

[18] This section relies on panel data from the ENEU.

[19] This higher variability may still be consistent with overall welfare gains, however, since entry into self-employment generally tends to be voluntary. However, recent research discussed in chapter 4 suggests that Mexico's recent expansion of informality may have been largely involuntary or induced by labor market distortions.

next period, while those that do not end up decidedly worse off.[20] Age also seems to matter, with older workers experiencing less income growth and larger income drops than the base case. Single women – possibly approximating youth – appear to have both few possibilities for income gains and greater possibilities for lay-offs (income losses), while single mothers appeared not to be worse affected by shocks than the typical high-income family.

Poor households did not experience more variability in income during the macro-crisis compared with normal times

Secondly, and perhaps surprisingly, when looking at the crisis period, it appears that macroeconomic crisis did not substantially change the distribution of shocks for different types of households. In particular, it did not disproportionately increase the risks (as measured by income variability) faced by more vulnerable groups such as the self-employed and informally salaried, single parents families, young and old workers. This may be explained by the fact that Mexican households greatly benefited from increased remittances from abroad as a coping strategy (McKenzie 2003a).

There are two important exceptions to this finding: households whose head earned no income at the beginning of the period, which were decidedly worse off during the crisis probably because the increased difficulty of securing a job then; and the less-educated who in fact did better than in normal periods, experiencing smaller negative income shocks and greater positive income shocks. This suggests an equalizing effect of the crisis which is consistent with the finding for Mexico and for other Latin American countries that the premium to higher education tends to fall during macroeconomic crisis (see chapter 4 on labor markets for more details).[21]

It appears that urban and rural households have fairly similar patterns of income variability. One exception is that in rural areas workers with no education seem to experience deeper negative shocks than their urban counterparts. At the same time, rural households endured on average lesser shocks and the differential would likely be even higher if their greater reliance on self-consumption than urban households was factored in.

In sum, low-income families were not disproportionately hit by the macroeconomic shock, exception made of household heads with no income. Their susceptibility to income shocks did not change markedly during crisis compared with normal times. Some caveats are needed, however:

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[20] When estimated on 2000-2002 data, very similar results were obtained, suggesting that these findings are robust.

[21] See e.g. World Bank (2004a) and Schady and Sánchez-Paramo (2003).

- *First, low-income households may be less able than others at smoothing consumption to avoid drastic swings in welfare.* In particular, very poor households may lack savings or other insurance mechanisms against, for example, loss in employment.[22] As a result, even if they face smaller income shocks these could translate into higher consumption shocks than for other groups. Also, poor households, for lack of other means, might adopt coping strategies which undermine their long-term well-being. Much attention has been given to taking children out of school issue – but households can also adopt other strategies with possible long-term deleterious effects, such as postponing spending on primary healthcare (McKenzie 2003b).

- *Second, low-income households will be much more severely affected in absolute terms* even if they experience proportionally smaller changes in income and especially if they live close to the minimum subsistence level. The tripling of the number of extreme poor in urban areas during the peso crisis is in fact evidence of how income falls for low-income groups can push a large number of people under an absolute minimum welfare standard.

- *Third, macroeconomic crisis may have widely differing causes, consequences and policy responses*, and their impact across the distribution of households can therefore vary considerably. Analysis based on the particular trajectory of the peso crisis, while informative, will therefore not necessarily apply to all macroeconomic shocks.

Labor markets, source of vulnerability but also a key coping mechanism

Idiosyncratic shocks are the major source of risk for households. Work done for this report looked at the sources of vulnerability of the urban poor as well as some of their coping mechanisms, contrasting them with those of the rural poor (Skoufias, 2004). One key finding is that the more common types of shocks in urban areas are those transmitted through the labor markets – instead the rural poor are more vulnerable to weather-related shocks. Interestingly however, in both rural and urban areas, idiosyncratic shocks – those specific to a particular household, such as ill health or loss of employment- are the major source of risk for households.

Households resort to a variety of risk mitigating (ex ante) and risk-coping strategies (ex post), due to these large idiosyncratic risks combined with the absence of formal insurance markets and credit constraints. These strategies include the accumulation of assets, income diversification, sending women and children to work,

[22] Indeed, an analysis of rural consumption vulnerability showed that younger and better educated workers – who generally experienced larger income swings - tended to have better mechanisms to smooth consumption than other groups.

withdrawing children from school, migration, marriage and other informal risk-sharing arrangements. Understanding the coping strategies that households adopt and designing social programs that help them refrain from using the coping strategies that are detrimental to their future welfare should be among the primary objectives of a proper social protection policy aimed at reducing household vulnerability as well as poverty.

A key finding in this matter is that urban households have very effective income-smoothing strategies, mostly through an "added worker" effect, whereby the spouse, and sometime the children, enter the labor market if household head becomes unemployed. This added worker effect is specific to urban areas and is not found in rural areas, with the implication that labor markets' dual role as a source of risk and as a form of reducing risk is an urban phenomenon. Note however that how much labor markets can reduce household vulnerability to shocks depends on the household's demographic composition (whether it includes a non-working spouse or teenage descendent). In addition, labor markets may be less effective at protecting households from specific shocks (sickness, death, divorce) than from wage or employment shocks.

PUBLIC PROGRAMS FOR THE URBAN POOR

Many public programs are relevant for the urban poor – several of which are discussed in the context of the analysis of labor markets (chapter 4) **and asset building strategies** (chapter 5). However, there are two that are most directly relevant and that are discussed here: *Oportunidades*, the government's flagship anti-poverty program that was recently rolled out to cities and is confronting some challenges in adapting to urban environment, and *Hábitat*, a new program that offers urban upgrading for poor neighborhoods and is at the heart of government's strategy to fight urban poverty.

Oportunidades

Human Development Program Opportunities (*Programa de Desarrollo Humano, Oportunidades***) was the first large scale conditional cash transfer program in Latin America and is one of most successful according to several external evaluations**. Its main objectives are to promote the development capacity of extremely poor households in the areas of education, health and nutrition. Monetary benefits are conditioned on human capital investment by its beneficiary families (school enrollment of children/youth and regular attendance at health clinics). *Oportunidades* only targeted the rural poor until a gradual roll-out to urban areas begun in 2002. The main challenges of this expansion into urban areas relate to the targeting strategy and to adapting the program to urban needs.

Oportunidades **retains the basic principle of geographic and household targeting used in rural areas, but adjusted the mechanisms to recognize the greater**

difficulty and cost of targeting in urban areas. Census information is first used to identify poor neighborhoods where modules are set up and advertising is carried out to let households know they can apply for benefits. Applicants can also come from outside the neighborhood. Individuals arriving at the module are administered a questionnaire about their socio-economic conditions, the answers to which are immediately entered into a computer to determine the household's eligibility. Households deemed eligible then receive a verification visit generally within the following two weeks. A recent evaluation estimates that this approach captures about 65 percent of eligible households, as opposed to 77 percent in the first year of the urban roll-out when all households in eligible areas were administered a questionnaire. On the other hand, the cost of the module approach is about one third less than that of the administration of the questionnaire to all households in the poor neighborhood (Gutiérrez, Bertozzi and Gertler, 2003).

Evaluations suggest that the impact is smaller in urban than in rural areas. As of the end of 2003 the package of benefits offered was the same in urban and rural areas, but evaluations show rather different results. In particular, the impact on school enrollments, graduation and dropout rates are much smaller than in rural areas (Parker and 2004). This is more likely to be due to the fact that opportunity costs are higher in urban areas than in differences in enrollment between rural and urban poor – which, as discussed in chapter 1, are remarkably similar. In addition, street violence and distance from schools makes it necessary for children and youth to take a bus to school, the cost of which is reported to absorb as much as 80 percent of the school grant (Escobar Latapí and González de la Rocha, 2004).

Unexpectedly, one of the most obvious and strongest impacts of *Oportunidades* **on urban households has been home improvements, which occurred to a much greater degree among beneficiary than non-beneficiary households – improvements include payments for regularization or acquisition of infrastructure services or improved construction materials**. The evaluation study argues that this is because the irregular status of a home or its poor quality is perceived as an obstacle to overcome or a source of vulnerability to a much greater extent than in rural settings (Escobar Latapí and González de la Rocha, 2004).

The need to adapt the requirements imposed on participants to urban work reality has been a particular difficulty encountered during the urban expansion of the program. In particular, a number of working mothers did not join or dropped out of the program because they cannot attend medical appointments or educational talks which are held during working hours. An additional problem is saturation of clinics in poor urban areas which poses a significant problem since regular medical check-ups are a program requirement (Escobar Latapí and González de la Rocha, 2004). In addition, program administrators mention the need to adjust the content of the educational talks on public health issues the urban reality – coping with drug use and street violence rather than boiling water etc.

Hábitat

Until recently slum upgrading was occurring – if at all – without planning, neighborhood participation, sequencing of investments or integration of physical and social improvements. The fragmentation of these functions within different areas of *SEDESOL* – the government ministry in charge of urban development – also impeded an integrated approach that responds more precisely to the social physical and economic needs of the poor (e.g. actions that help households' earning capacity such as more reliable access roads or day care centers).

Recognizing this problem, the government began a series of diagnostic and strategic studies in 2000 and 2001 which lead *SEDESOL* **to launching its** *Hábitat* **program in 2002.** The program's goal is to help improve living conditions in marginal urban neighborhoods by addressing both infrastructure and social needs, as well as improve the overall quality of cities. *Hábitat* supplements local resources and aims to create incentives for increased and more effective investment by local government and beneficiaries: it channels federal funds (under *Ramo 20*) as matching grants to municipalities for programs benefiting families earning up to 1 minimum wage per family member. The grants are approximately US$ 500 per family and are meant to service as an incentive for more effective municipal and beneficiary expenditures in this area, rather than financing for the total costs of the activities.[23]

Municipalities access *Hábitat* **through states and can request funding for the following activities:** i) neighborhood upgrading through the provision of basic infrastructure such as water and sanitation network expansion, paving of roads, sanitation, public lighting, etc.; ii) access to land through land purchasing reserves; iii) prevention of natural disasters through risk mapping and planning and investment for vulnerability reduction; iv) community development through community facilities, day-care centers for working mothers, job training among other activities; v) support to women head of households through job training, child care and health education; vi) support to local development agencies for training and the undertaking of strategic studies and investments in partnerships with communities and the private sector; and vii) urban equipment and improvement including protection and restoration of historic neighborhoods. In 2004, *SEDESOL* added the option of using *Hábitat* support for property titling.

Hábitat **includes several design innovations to improve targeting and program impact:**

- *Capacity. Hábitat* aims to create local capacity among municipal authorities, Non-governmental organizations (NGOs) and community based

[23] The $500 grant per family grant amount does not apply to *Hábitat* land reserve and urban development agency activities. Instead, these activities are financed based on a matching basis, with maximum contribution from *Hábitat* of approximately US$250 thousand.

organizations (CBOs) related agencies. A capacity building program run by *SEDESOL* has been initiated.

- *Poverty Targeting and Eligibility Criteria.* Recent progress by *SEDESOL* in poverty mapping is crucial to furthering our understanding of the challenges faced by the urban poor and in better targeting public support. *SEDESOL* has developed detailed geo-referenced poverty data down to the block level for eligible municipalities that allows for accurately allocating *Ramo 20* funds. Eligibility criteria for priority neighborhoods for investment include at least 50 percent of the families earning less than the asset poverty line level (or 30 percent in special cases as specified in Program's regulations), density of occupation (80 percent of lots occupied at least 35 households per hectare of land) and deficits in urban infrastructure, equipment and services.

- *Multiyear program of improvement.* The program supports the development and execution of multi-year plans for neighborhood improvement, helping to overcome some of transaction costs and capacity limitations of progressive investment. In the absence of such a strategy, investments tend to be driven by political and social pressures and often with a shorter-term perspective.

- *Labor market participation*. *Hábitat*'s efforts in terms of training, physical access to jobs (e.g. paving roads) and supporting social services (e.g. child care which is crucial for women) may go a long way to overcoming the barriers faced by the urban poor in terms of access to quality employment.

To date, *Hábitat* **has shown a strong performance, rapidly moving to scale with support to 400** *barrios* **in 2003 totaling MX$ 781 million**. With the focus on working on implementation issues in 2004, 760 *barrios* were targeted with a total funding increased to MX$ 1,730 million.

Although an important advance, *Hábitat* **requires further action for the program to fulfill its potential.** The program design stipulates important procedures essential to its performance such as community participation, neighborhood investment plans and an appropriate level and sequencing of investment in each community. However, rapid expansion of the program in its first years and the urgency of meeting investment goals have sometimes taken precedence over these other aspects. Specific areas for further work include the following:

- *Possible addition of assistance for job search. Hábitat's* efforts in *Superación de Pobreza* and *Mujeres Jefes de Hogares* include child care and training, all of which should facilitate the poor's participation in labor markets. An additional possibility could be for the program to include labor intermediation services, such as job-search programs, to increase the access of poor, low-skilled workers to labor market information. As discussed in

chapter 4, current programs (*Chambatel*, *Chambanet*, *Sistema de Apoyo Económico a Buscadores de Empleo -SAEBE-*) tend to favor higher skilled workers or the unemployed who used to work in the formal sector. Any effort from *Hábitat* to include job-search program should of course be coordinated with existing programs of Labor Ministry *(Secretaría de Trabajo y Previsión Social, STPS*).

- *Greater efforts to provide multi-year support.* The amount of annual federal subsidy limits the scope of the project. The US$500 per family subsidy, matched by local funds for a total of US$1,000 per family is sufficient for investment in minor infrastructure in a spatially well structured neighborhood. It is not sufficient, however, for major restructuring (relocation, stabilization works) for neighborhoods located in high risk areas and of poor layout with insufficient public access for infrastructure and right of ways and overcrowding. A recent review of upgrading programs in Brazil found an average cost per family closer to US$ 3,400.

- *Strategic use of local funds.* According to *Hábitat* regulations, the federal subsidy can be dedicated to the same families for a maximum of three years, in which case the total amount of resources would be sufficient to address most upgrading needs. However, given the high turnover in municipal staff, and the lack of poverty and upgrading planning, there is likely to be a tendency for funds to be spread throughout the city rather than focused on upgrading particular neighborhoods over multiple years. In order to fulfill the programs goals of promoting more strategic use of local funds, rather than discrete one off investments, subsidy amounts should be increased or greater weight placed on investing in the same neighborhood over several years.

- *Increase emphasis on medium term upgrading strategies.* A major benefit of neighborhood upgrading is how the process supports the poor's own approach of gradually improving their neighborhood. To realize the impact of the public funds dedicated to upgrading, the gradual investment should fit within a medium term strategy for that neighborhood and an overall poverty reduction and urban development strategy for the city. Moreover, the operating rules for *Hábitat* state that a neighborhood plan and participation in previous years (but not more than the three year limit) are factors in classifying neighborhoods as 'priority' for investment. However, the weight of this factor in resource assignment is not clear.[24]

- *Budget figures from 2003 and 2004 indicate that Hábitat may not be spending enough on strategies.* During the first two years of program implementation,

[24] See *Hábitat* Reglas de Operación, pp. 31-32.

approximately 2 percent of resources were dedicated to Urban Agency activities, for which poverty strategies and slum upgrading plans are only one of several eligible activities. Summing this 2 percent with *SEDESOL* administrative costs of 13 percent, the program funds dedicated to software is low compared to other programs of lesser scope and geographic scale in the region.[25] These experiences point to the need to increase the funds dedicated to neighborhood plans and city poverty strategies and to place greater weight on the process of approving and prioritizing investments.

- *Review capacity-building plans and/or bring in external partners for training.* Municipalities are already investing in neighborhood upgrading via funds from *Ramo 33* (see below). One of key goals of *Hábitat* should therefore be to encourage a better use of *Ramo 33* investment funds – through a medium term vision that includes a better link to social needs of neighborhoods and to the overall needs and development potential of a city. This will only occur if *Hábitat* can help boost the capacity of local governments to foster greater poverty and strategic planning. The *Hábitat* operating rules state that National Institute for Social Development (*Instituto Nacional de Desarrollo Social, INDESOL*) will train *SEDESOL* state level offices *(delegaciones),* which in turn will train municipalities and communities. Given the level of staffing in the *delegaciones* and the fact that they must support all *SEDESOL* programs to the state, they are unlikely to have the necessary number of staff with the appropriate skills to foster a major change in local capacity or practice in urban upgrading. External partners – *INDESOL* could be a good candidate- may therefore need to be brought in for the capacity-building objective.

In addition, *Hábitat* is a geographically targeted instrument which therefore cannot help the poor that do not live in marginal neighborhoods. As discussed in chapter 1, cities are very heterogeneous with large differences in welfare also at neighborhood level. It is unclear what share of the moderate poor live outside neighborhoods eligible for *Hábitat*, but it is likely to be substantial.[26] One first step might be to estimate this share. Another is to examine the possibility of non-residents benefiting from the programs offered (such as training, job placement, and childcare).

Overall, while the approach of *Hábitat* is promising, careful evaluation and follow-up on progress and impact will be important to further strengthening the program. At this time, there is little data available on the outcomes or development

[25] In San Jose, Costa Rica, the cost of *Fundación Promotora de Vivienda's* (FUPROVI) services as a percentage of the actual costs of the houses it helps people build ranges between 16 and 23 percent, depending on location, size of the units and complexity of the project. In a similar project in Sao Paulo, Brazil, the cost of project software was about 20 percent for upgrading projects that cost $2,500 per households.

[26] Work done in the context of *Oportunidades*, it was found that 77 percent of the urban extreme poor (*pobreza de alimentación*) live in "marginal" neighborhoods. No such data was available for moderate poverty (*pobreza patrimonial*) that determines eligibility for *Hábitat*.

impact of the program. Developing a comprehensive evaluation system to track implementation and impact issues should be a priority.

Finally, while *Hábitat's* support for land reserves provides a useful short term response, broader urban land strategy is needed. This is discussed in more details in chapter 5 in the context of the broader debate on housing policy for low-income housing.

DECENTRALIZATION OF SOCIAL INFRASTRUCTURE SPENDING UNDER RAMO 33- FAIS

The Contributions Fund for Social Infrastructure (*Fondo de Aportaciones para la Infraestructura Social, FAIS***)** provides federal funding to the states to improve the basic social infrastructure of marginalized areas. A key feature in Mexico is that most social service delivery responsibilities are decentralized to the state level - for example, close to 74% of basic education spending and 75% of public health spending for the non-insured population is decentralized. Most of the resources for physical capital of poor areas are distributed through *FAIS* under the budgetary branch *Ramo 33*. [27] This is the result of a series of decentralization reforms initiated at the beginning of Zedillo administration in 1995 under the title of New Federalism (*Nuevo Federalismo*). In addition to various fiscal reforms providing new sources of revenue for the states, these included the creation in 1998 of a new modality of federal transfers implemented through the budgetary branch 33, *Ramo 33* (*R33*), that comprises seven funds[28]. Of these, the education fund (FAEB) and health fund together absorb some 76 percent of the total R33 budget, while *FAIS*, the social infrastructure fund, accounts for about 9 percent of the total envelope.

***FAIS* has been considered an important improvement over previous methods.** *FAIS* funds are intended to strengthen basic infrastructure: clean water, sewerage, drain, municipal urbanization, electricity for rural and poor urban areas, basic health and education infrastructure, housing, rural roads and rural productive infrastructure. The allocation of resources is partly based on a poverty-weighted formula, using indicators such as illiteracy, education, drainage, electricity, housing, and income as eligibility criteria (Scott, 2000).

However, *FAIS* still faces important challenges in terms of transparency of how resources are assigned, in terms of a compact that promotes accountability from

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[27] See World Bank (2004a).

[28] *Fondo de Aportaciones para la Educación Básica y Normal* (FAEB); *Fondo de Aportaciones para los Servicios de Salud* (FASSA); *Fondo de Aportaciones para la Infraestructura Social* (FAIS): *Fondo para la Infraestructura Social Estatal* (FISE) and *Fondo para la Infraestructura Social Municipal* (FISM); *Fondo de Aportaciones para el Fortalecimiento Municipal* (FORTAMUN); *Fondo de Aportaciones Múltiples* (FAM); *Fondo de Aportaciones para la Educación Tecnológica y de Adultos* (FAETA); and *Fondo de Aportaciones para la Seguridad Pública de los Estados y el Distrito Federal* (FASP).

operators to beneficiaries and in terms of developing spatially neutral targeting between urban and rural areas. Thus, some important issues relating to transparency and incentives remain in evaluating whether *FAIS* constitutes a real improvement over its predecessor *PRONASOL*:

- *Not all resources within FAIS have been distributed through poverty formulas*, though part of the fund has been distributed on the basis of a so-called "equity criteria," guaranteeing every state a fixed and equal proportion of the fund, independently of population size or poverty mass. This can be interpreted as a transitional mechanism, which responds to political constraints by protecting the smaller and richer states (and municipalities within these states) from a sudden loss of resources.

- *There is limited transparency in the use of funds at sub-national level.* The decentralization process was not accompanied by mechanism to monitor the effectiveness of the allocated resources. As a result, there is no clear accountability at different levels of government. Recent efforts to improve transparency at the federal level (the Federal Law of Transparency and Access to the Governmental Public Information have yet to be fully implemented at sub-national levels.

- *Resource trickle-down from state to municipality level may be flawed.* States are required to distribute only the municipal component of *FAIS* (FISM) through a federal formula called Municipal Mass of Lacks (*Masa Carencial Municipal*) or through a simpler formula that is utilized when household level data is not available. The *MCM* formula has a number of important technical and political limitations. Some technical limitations are associated with the weights and variables chosen to structure the formula.[29]

- *There are adverse incentives inherent in the allocation process.* If a state performs better in terms of poverty it gets fewer resources in the next budget cycle leading to adverse incentives for the improvement of state programs.

- *The targeting criteria are biased against urban areas.* The criteria – the proportion of the population that is illiterate, lives in houses without sanitary drain, does not have electricity and who earns less than two minimum salaries – are systematically lower in urban areas. Electricity connections in urban slums are usually illegal and as such are not a good measure of an individual's needs or living conditions. Similarly, access to drainage in urban and rural areas measure different things – urban neighborhoods that do not have piped sewerage, or at least some form of sanitary drainage are in seriously dismal

[29] For a more extensive analysis see Scott, 2000. For example, the author argues that there is ambiguity in the construction of the weights in the formula that are meant to reflect the costs to families of accessing the service.

conditions. Intervention is justified on public health criteria alone. On the other hand, having piped sewerage is not generally appropriate in low density areas (less than 25 persons per hectare) where on-site systems such as septic tanks are better. More generally, when comparing two areas without sanitary drainage or sewerage priority should be given to the area with greater population density. As to illiteracy rate it is always much higher in rural areas, in part because the illiterate are less likely to migrate. Better indicators that capture well the needs and living conditions of a population group regardless of whether they reside in urban or rural areas are: access to piped water, quality of houses (durable material on roof or walls), and for education infrastructure, school rooms to school-age children ratios.

More work is needed to assess the allocation and uses of *FAIS* at the municipal level in order to evaluate whether truly represents an improvement over *PRONASOL*. This forms part of the third phase of the World Bank programmatic work on poverty in Mexico, which concentrates on service delivery in the context of decentralization. More specifically this work will concentrate on (i) incentives and accountability in the use of resources, (ii) incentives generated by the formula, and (iii) allocation of resources at the local level.

SUMMARY AND CONCLUSIONS

Urban poverty is more responsive to growth -the flip side of this is that the urban poor are very vulnerable to macroeconomic crisis. Household characteristics condition income vulnerability – in particular self-employment or employment in the informal sector and a younger household head are associated with greater variations in income. The recent macroeconomic crisis did not change the risk distribution for the poor, although it certainly led to a massive increase in urban extreme poor number, which tripled between 1994 and 1996.

The analysis of vulnerability highlighted the importance of large idiosyncratic risks and the crucial role of labor markets in household coping strategies. Even though it is through labor markets (job losses, pay cuts) that poor urban households are most vulnerable to macro-shocks.

The main implication of this chapter is that growth is key. Urban poverty will decrease if Mexico grows and jobs are created in urban centers. But safety nets are needed. As such the recent expansion of *Oportunidades* to urban areas is opportune. The program is struggling somewhat with the need to adapt to the urban reality, although evaluations suggest it is having a positive, although somewhat unexpected, effect. The key challenges confronting it concerns increasing coverage while keeping targeting costs to a reasonable share of overall program costs; and adapting co-responsibilities to the schedule of urban working parents.

In addition, the recent creation of *Hábitat***, a program focused on urban upgrading with a careful emphasis on social issues is a very positive development.** The program is innovative, although it could benefit from further action to enhance its impact.

3. PLACES OF THE POOR: THE CASE OF MEXICAN POOR BARRIOS[30]

Many poor people are disadvantaged and endangered by the places and physical conditions where they live and work. … Most poor people can find only "places of the poor" in which to live. These places keep them poor.

[Voices of the Poor]

The quote above from *Voices of the Poor* **draws attention to the fact that where the poor live shapes the opportunities they face and the challenges they encounter in daily life**. This chapter looks more closely at some important features of the "places of the poor" in urban areas and provides insights on how these affect poor people's lives and coping strategies. Places of the poor -which we will also refer to as poor *barrios* or *colonias* to use a common terminology in Mexico- are places where the majority of inhabitants are poor though by no means they exhaust the areas where poor people live.

Looking at life in these *barrios* **gives us insights on how disaggregated urban categories are useful to understand the challenges that poor face in urban contexts**. Within cities location makes a difference above and beyond individual characteristics, though individuals and their characteristics, alone or through their interactions, contribute to shape the environment they live in. In particular, we will emphasize the role played by a special set of non-market relationships between individuals – their social interactions – in shaping that environment. The social capital literature emphasizes the role of social interactions as an asset on which individuals can draw upon, but in many other areas the potential for social interactions, information flows and the importance of civic attitudes have been highlighted.

This chapter analyzes some of the salient features of the places of the poor in cities, the differences among them and the inequalities within them by using the first round of a new survey collected by *SEDESOL* **in 2002**. The survey was fielded in one poor *barrio* in the capital cities of every Mexican state, exception made of the nation's capital. The *barrios* were identified on the basis of a lack of basic infrastructure and amenities as well as of the characteristics of people who live in them. All are areas with

[30] This chapter was written by Caterina Ruggeri Laderchi. The author is grateful to Michael Woolcock and Berk Ozler for their comments.

indices of marginalization of 5 and 4, although there are substantial differences among them: the extreme poverty rate, for example, varies between 18 percent and 55 percent for an average of 36 percent (in contrast the overall urban extreme poverty rate is 11 percent); and the proportion of houses with access to piped water varies from 17 percent to 93 percent.[31]

The survey provides a unique opportunity to look in depth at the livelihoods of poor in urban areas across the country. At the same time, however, the sample design makes it more representative of poor places across the country, rather than of poor people themselves. This can complicate the comparison with quantitative evidence offered by the census data discussed in chapter 1.

WHY "PLACES OF THE POOR" MATTER

Interest in disaggregated urban poverty analysis stems from two different sets of concerns. The first is that urban subunits and how they are identified become relevant for policymaking, either because of decentralized decision-making and/or because of targeted interventions. Related to this, the interest in smaller urban areas is essentially descriptive – certain neighborhoods appear to be correlated with high concentration of poverty independently of why this is the case, though different causal explanations might be put forward to explain the poverty of certain areas.

This seems to be behind Mexico's focus on small area characteristics highlighted by the computation of the *marginación* index, recently extended to measuring marginalization at the local level so as to be able to classify census tracts/localities "according to global impact of the shortfalls suffered by the population residing there." (p.11, *CONAPO* 2002) A composite indicator of marginalization (comprising measures of "some forms, intensity and demographic and territorial implications" of marginalization) had already been computed for Mexican states and municipalities since 1990. A new index has been calculated to better reflect *barrio* level characteristics.[32]

A different motivation is that some inherent characteristics of the location may shape opportunities and constraints of the poor.[33] Literature rooted in economics of

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[31] Selection was a two-step process. First, *barrios* with marginalization index of 4 or 5 (the highest) were identified in each of the state capitals (except for Mexico City) based on *SEDESOL*'s poverty map. Second, local authorities were selected for their views as to which of the eligible *barrios* should be selected and what exactly were the boundaries of the barrio (since that includes more than one census tract, the basis of the SEDESOL poverty map).

[32] The ten indicators on which the index is based relate to different aspects of health (access to health services, child mortality), education (school attendance, lack of secondary), housing (access to water, access to sanitation, material of the roof, lack of a refrigerator, overcrowding), incomes (share of population on with low paying jobs), and gender (rate of teen-age pregnancy).

[33] The US literature has been very concerned with such effects. "School delinquency and dropout, teen pregnancy, out-of-wedlock childbirth, violent crime and drug abuse are magnified in neighborhoods where

growth has hypothesized the existence of geographical poverty traps, based on differences in technologies across space or alternatively in initial differences in endowments of local public goods if these offer increasing returns (Ravallion and Jalan 1999). Households living in poor areas enjoy lower returns on their factors of production because they are in poor areas. This emphasis on different endowments of local public goods in the case of urban areas can focus for example on the availability of local infrastructure (at least if congestion costs are not an issue).[34] These concerns are also reinforced by evidence, for example, on the role played by transport costs as a barrier to access to jobs and on the problems of network provided services.[35]

A different line of argument has been built on evidence from sociology and social psychology to focus on the concept of group membership, of which inhabiting a poor neighborhood is one example (Durlauf 2001). In this view, the spatial concentration of poverty appears to result in specific cultural and social features which, in turn, can often be linked to the social make-up of the neighborhood itself (e.g. the educational levels of adults in the community or its ethnic composition). Durlauf lists the main mechanisms through which social composition of a group (and more specifically of a neighborhood) can have on individual behavior: (1) peer group effects and role model effects by which choices that some members make -or made- influence the valuation of those choices by others; (2) social learning by which information on some of the choices available is derived from the experiences of some group members; and (3) social complementarities (group members' outcomes are directly affected by each other's outcomes). All these types of interactions fit the typical description of an externality.[36]

Similarly related to the importance of social interactions is the idea of social capital. Such literature builds on the idea that long lasting patterns of relations which are brought about by social interaction constitute a form of "capital" available to individual actors. What defines the asset value of such resource is its productive use, while it also shows public good like features of not being appropriable by a single individual. Around this concept a rich literature has developed, documenting a variety of positive impacts such as the association between quality of public services and participation in "horizontal organizations" (found in the Italian case by Putnam 1993), and the positive impact of trust and civic cooperation on economic performance (Knack

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the majority of residents are poor and, increasingly, minorities." (Goetz 2003). These effects, together with those on access to jobs and employability, often compounded by stigma (see also Perlman, 2003) have led to policy efforts to "deconcentrate" poverty.

[34] Similar arguments could however be developed, for example, with an emphasis on local institutions

[35] *E.g.* detailed discussion of the case of Bogotá in Baker and Lall, 2003

[36] Depending on the characteristics identifying groups, membership may or may not be endogenous. Gender for example, identify groups whose membership is exogenous (arguably ethnicity falls into a similar category), unlike for example location of residence. Even in that case, however, the literature on land markets points out how market mediated choices might be strongly constrained, so that individuals are "sorted" into homogeneous neighborhoods (*e.g.* Alonso, 1964 and Muth, 1969).

and Keefer 1997). As the literature adopts a variety of indicators to capture social capital (ranging from to the individual or to the community, to the resources which are shared through social relations or to the relations themselves, etc.) Grootaert et al. (2003) suggest seeing them as relating to either structural characteristics of social capital in a given context (this includes cognitive aspects such as individual perceptions of trust and solidarity, and structural aspects like the existence of groups and networks) or to its operational aspects (this relates to evidence on collective action and cooperation).

In the case of Mexico, the qualitative studies of the *barrios* which complement the quantitative data gathering point to the importance of bridging the apparent divide between local endowments and social relations. The physical characteristics of neighborhoods such as the type of infrastructure available, regular lighting in the streets etc., seems to influence social interactions, for example, by influencing perceptions of security, participation in communal activities etc. This complements common findings that more closely knit and stable communities are also more conducive to more investment in common resources and public goods.

POOR PEOPLE OR POOR PLACES?

Poor people choose to locate in poor areas. Are people poor because they live in poor area or are deprived places because poor people choose to locate there, or both? This chapter argues that location matters for determining poverty. But as the literature on growth and poverty traps suggests, the geographical concentration of poverty is an endogenous process. Poor people choose to locate in poor areas. They do so because living there is affordable to them and possibly to draw on social capital – they know people who live there and can take advantage of existing networks.

At the same time, the concentration of poor people has some negative externalities which reinforces and reproduces poverty over time. These effects stretch well beyond commuting times and rental values. For example, Durlauf (2001) suggests that the main effects which the social composition of a neighborhood can have on individual behavior can be seen as: *peer group effects* when individual choices are influenced by the choices of others; *role model effects* when the preferences of older members of a neighborhood influence younger members preferences; *social learning* when information on some of the choices available is derived from the experiences of others; and *social complementarities* when group members outcomes are directly affected by each other's outcomes. All these types of interactions fit the typical description of an externality and suggest that policies encouraging socio-economic mixing might have important "social multipliers."

Neighborhood effects might also be compounded by stigma, affecting poor people's access to jobs and other forms of discrimination. For example, in Rio de Janeiro, 85 percent of those sampled in a slum perceived discrimination against anyone

living in a *favela* (Perlman, 2003). A recent study found that residents of Rio's *favelas* earn between 10% and 47% less than other similar individuals (in terms of education, age, and gender) in similar occupations, but living in other neighborhoods (Cardoso, Elias and Pero, 2003). One the other hand, a study of public housing participants in Toronto suggested little or no influence of neighborhood quality on resident's long-run labor market outcomes, while family differences appeared to matter a great deal.

In what follows we will explore two aspects of urban poverty in Mexico. The first will be to look at inequality in urban areas and how it is affected by *barrio* characteristics. The second will be a more specific focus on social interactions within the barrio as one of the specific "structural" characteristics, through which the urban poor themselves contribute to shaping the *barrio* environment.

A CLOSER LOOK AT URBAN INEQUALITIES

It has been found elsewhere (Fay and Ruggeri Laderchi, 2004) that in Mexico, inequality in urban areas is lower than in rural ones. The availability of *barrio* level data allows us however to refine this insight and draw attention to how varied the urban picture is and how important differences are within urban areas.

Inequalities within barrios

Inequality in poor *barrios* varies across different aspects: it is relatively smaller in the income dimension, but high in terms of assets. Living in a poor *barrio* in Mexico might mean very different things and inequality varies across different dimensions. In terms of income, for example, the Gini coefficient for household per capita income varies between a minimum of .24 to a maximum of 30 implying that inequality is fairly similar in all these *barrios* – and lower actually than for urban areas as a whole.[37] On the other hand, greater differences characterize other non-monetary indicators of well-being such as years of schooling of the household head or a composite indicator of household

[37] Income captures consumption opportunities or can be seen as a proxy for consumption levels and hence welfare. As adopted in this paper, it is not strictly comparable with other published national figures as income information in the survey is not fully satisfactory. Shortcomings include the non-comprehensiveness of questionnaire (only income from primary jobs is recorded; the contribution of government programs to household income cannot be estimated due among other reasons to the impossibility of isolating the credit from the subsidy component of some programs; information on food transfers programs is not detailed enough), and the lack of price information at the *barrio* level. Monetary values are therefore transformed in Mexico City constant prices using price indexes from the capital of the state. In order to identify the concentration of poverty at the *barrio* level, the 40th percentile for the aggregate sample has been adopted as a country level poverty line. While not comparable with other poverty lines in the literature, it provides a useful way of identifying the *barrios* in which the "tail" of the income distribution lies. Note also that in order to arrive at some lower bound, but supposedly believable estimate, of inequality of the *barrio* we have first discarded extreme values. We have then further restricted the analysis to the 8 intermediate deciles to further disregard the tails.

ownership of consumer durables and assets.[38] In the case of education for example, the Gini varies between .14 and .31. In order to compare these findings with the differences in terms of durables and assets between more and less equal *barrios*, we calculated relative inequality measures for all of them and found them almost 9 times higher for the asset index than for income.[39]

Inequality is much higher within these poor *barrios* than between them, pointing to the great heterogeneity that exists even within poor neighborhoods. A more formal way of pointing out the differences that characterize the lives of poor people in different *barrios* is to decompose overall inequality in the sample in its between *barrios* and within *barrios* components. As shown in Table 3-1 below income inequality within the barrio is at least 20 times higher in a *barrio* than across *barrios*[40], when decomposing the GE(2) index (an index of the Generalized Enthropy family, where the index denotes a greater sensitivity to inequality at the top of the distribution).

Table 3.1 Inequality is greater within poor neighborhoods than across them

	Income	Years of schooling of household head
Total inequality (GE 2)	0.123	0.128
Within barrio	0.118	0.123
Between barrios	0.006	0.005

Source: WB staff calculations based on SEDESOL survey

Pockets of poverty

One important aspect of inequality within poor areas is that it often translates discontinuities into pockets of poverty. Attention to this phenomenon has been brought by the literature on urban poverty in the US and its emphasis on the concentration of poverty. In order to explore how evenly poverty is distributed across the *barrio*, we looked at differences in poverty incidence in different parts of the *barrio*.

Pockets of extreme poverty exist in the poor *barrios*. Figure 3.1 below documents the variation of headcounts in different census tracts part of the same

[38] The asset index, created following Filmer and Pritchett (2001), can be seen as either a measure of consumption potential in a multiperiod setting where shocks are possible (it amounts therefore to a measure of household resilience) or as a proxy for overall "household economic status" (Filmer and Pritchett 2001). In our case the index was obtained by principal component analysis of a set of 15 variables including household durable goods, ownership of financial and real assets and housing characteristics.

[39] Relative inequality measures such as the standard deviation are needed as it is not possible to compute a Gini coefficient for the asset index as by construction it assumes negative as well as positive values (McKenzie 2003).

[40] See note n. 33.

barrios.[41] The variation is captured by the spread between the minimum and maximum headcounts registered in different census tracts in the *barrio*.[42] Panel (a) adopts the extreme poverty line (food based poverty line) and shows that headcounts of around 40-45 percent are compatible with differences of as much as 20 percentage points in the headcounts of relatively better off and relatively worst off census tracts. Panel (b) replicates the analysis with the highest poverty line adopted in Mexico and shows that while incidence is higher, spreads in general are lower as the majority of the population in each *barrio* is considered poor.

Some *barrios* are more prone than others to having pockets of poverty, but the location of pockets of extreme poverty differs depending on the degree of spatial disaggregation. Three interesting points are made by these graphics: one is that in some *barrios* more than others pockets of poverty exist. These are the *barrios* in Figure 3.1.a with mid-range headcounts but high spreads.[43] Second, depending on where the poverty line is drawn, the diagnosis on the extent of the segmentation of the *barrios* in poor and non-poor areas changes. Third, and directly related to the general point on the heterogeneity of urban areas and the need for disaggregated assessments of poverty, depending on the level of disaggregation adopted (*barrio* level or census tract level in this cases) different assessments of the geographic concentration of poverty and its incidence emerge.

[41] Because of the nature of our data, for each *barrio* we focused on differences in census tracts containing at least 20 percent of the population in order to arrive at some plausible estimate of the census tract level variables.

[42] This way of proceeding is different from the one adopted in the US literature, in which an absolute cut off is used to identify areas of concentrated poverty (*i.e.* census tracts in which at least 40 percent of the inhabitants are poor, National Academy 1990). Using this definition we find that in our sample there are both *barrios* with pockets of concentrated poverty and *barrios* uniformly very poor. Out of 7 *barrios* with poverty incidence between 40 and 60 percent, 2 of them have all their census tracts as areas of concentrated poverty, while the others have a varying proportion of census tracts with concentrated poverty. We do not find, however, examples of *barrios* with low average incidence and pockets of poverty.

[43] By construction in these graphics pockets of poverty are unlikely to be found in *barrios* with very high or very low headcounts; on the other hand, there is no reason for *barrios* with mid-range headcounts to exhibit high variations.

Figure 3.1 Poverty incidence varies within barrios, particularly for extreme poverty

Figure 3-1.a Extreme Poverty

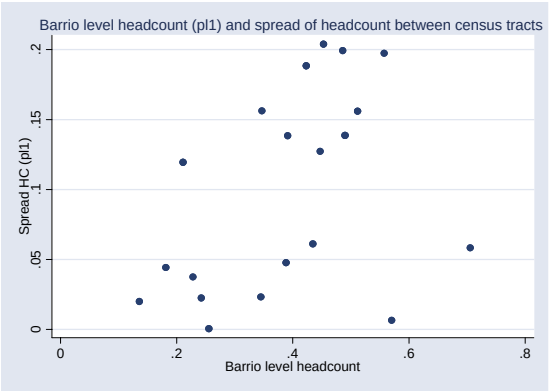
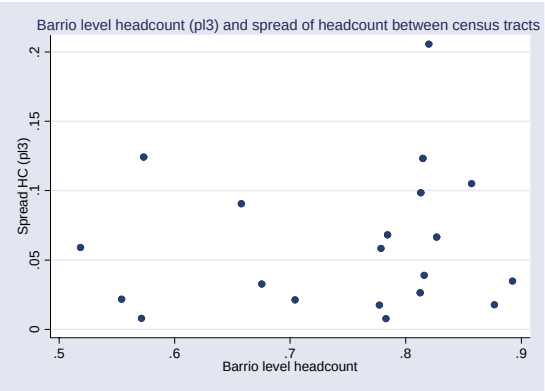


Figure 3-1.b Moderate Poverty



Source: Own calculations based on *Barrio* Survey

Concerns for the concentration of some types of deprivation can be extended to non-monetary dimensions of deprivation – Figure 3.2 plots differences in access to sewerage (panel a) and electricity (panel b). These two types of services are very different in the structural requirements for their delivery, and appropriate sewerage in particular might require high retrofitting costs once some other system has been adopted. Differences in sewerage provision between different areas can be particularly important given the externality element – in terms for example of risk of infectious diseases – that are associated with this utility. Figure 3.2 shows that access to electricity is almost universal and that variations between different parts of a *barrio* are very limited. On the other hand, access to sewerage represents a much larger challenge for many *barrios* and the inverted U shaped pattern which emerges is compatible with the gradual expansion of the network to different parts of the barrio, so that inequality in service provision first increases then decreases.

Figure 3.2 The more common the service, the smaller differences exists within a *barrio*.

Figure 3-2.a Access to sewerage is gradual, implying great differences across census tracts within any given poor neighborhood

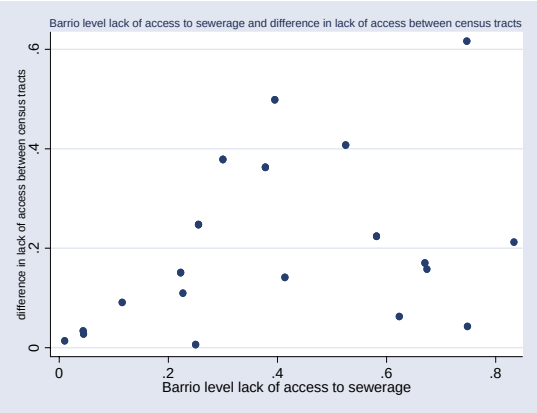
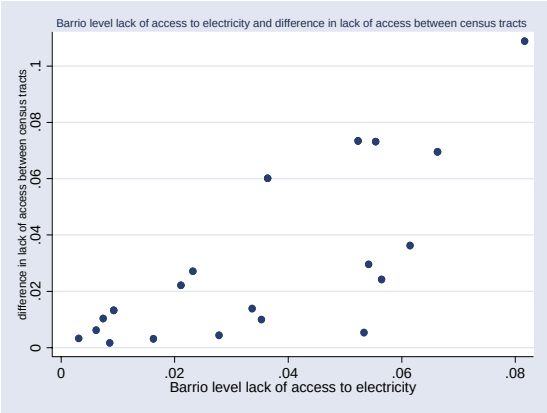


Figure 3-2.b Access to electricity is quasi universal and does not vary much across census tracts, within poor neighborhoods



Source: Own calculations based on *Barrio* Survey

What is driving different outcomes in poor urban neighborhoods?

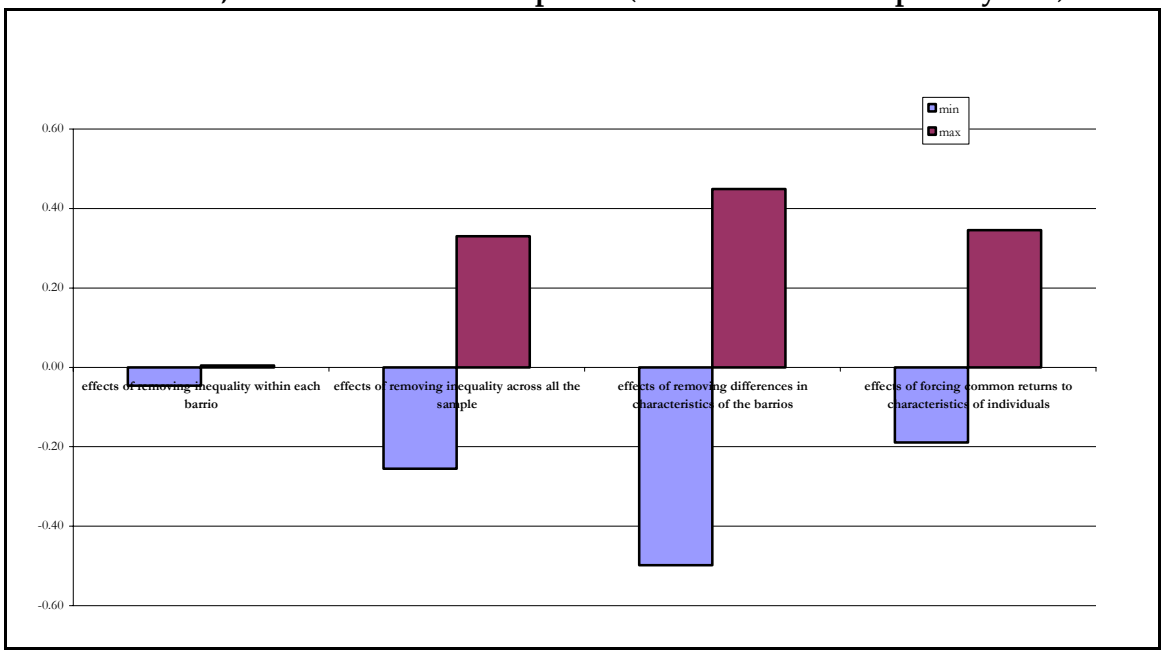
What determines the high inequality in well-being within and across *barrios*? Large variations in indicators of well-being and access to services across poor urban contexts and different degrees of discontinuity across groups within those areas raise the issue of what is determining these different outcomes. Different factors seem to play a role in this issue, linked to the structural and institutional features of poor neighborhoods and their integration with the surrounding economy, or to the interaction between poor people characteristics and those of the areas they live in (regression results are presented in Annex Table A-6).

Several *barrio* level characteristics, as well as those of the municipality the *barrio* belongs to, are significantly linked with the *barrio*'s income level. In particular, more *isolated barrios* as measured by the average time that people in the *barrio* take to get to work, tend to be poorer – though own distance is positively correlated with income (people are willing to travel for better jobs). Similarly the *age of the barrio* measured as the modal age of the existing houses also matters with newer *barrios* exhibiting lower income, all else being equal. *Lower access to public services* in the *barrio* relative to access within the municipality is also associated with lower incomes and so is a higher propensity to *natural disasters* according to self-reported assessments. Among the characteristics of the broader environment in which the *barrio* is situated as captured by municipal level variables, the *structure of the local economy* matters: with higher shares of construction jobs across municipality and lower share in services associated with higher incomes. *Public expenditure per capita* is associated with higher incomes. *Larger cities in*

1990 and *cities which have grown faster* since are also correlated with higher incomes. *High illiteracy* is associated with negative effects.

To assess the relative importance of different sets of factors in determining average living standards at the *barrio* level we have run some simulations. Contrasting the simulations with a baseline based on the real characteristics of the sample provides an estimate of the effects of the various factors we are considering.[44] The detailed results are presented in Annex Table A-6. The range of effects that different factors can have on the *barrios* is presented in Figure 3.3. The results refer respectively to the simulated effects of: removing inequality in household characteristics at the barrio level (i.e. all household have their characteristics equal to the barrio average); removing inequality of household characteristics across the sample; removing inequality across *barrios* in *barrio* characteristics; and forcing returns to household characteristics to be the same across *barrios*.

Figure 3.3 Observed largest positive and negative variations in average income by *barrio*, under different assumptions (as % of food based poverty line)



Source: Own calculations based on *Barrio* Survey

[44] It is important to note that standard decompositions adopting variations of the Oaxaca-Blinder methodology (*e.g.* Ravallion and Wodon 1999) identify the differences due to different characteristics and a residual component, which can be attributed to differences in returns (if the specification of the model seems robust and comprehensive). In this case we have proceeded differently, running separately regressions for each of the *barrios* and contrasting those with a pooled model where by definition the returns are forced to be the same across *barrios*. The difference, therefore, provides a direct estimate of the effect of differences of returns to characteristics across *barrios*.

The largest simulated variations in average income are those obtained simulating the income distributions with equal *barrio* characteristics across the sample, pointing to the importance of factors such as distance from jobs and type of economy in the municipality to which the *barrio* belongs. Also the variation in returns to individual characteristics are substantial, though the span of variation observed was overall less than for changes in concentration of characteristics.

***Barrio* level characteristics are associated not only with differences in average income but also to the availability of services.** The age of the settlement (together with the age of a particular house) is a key determinant of the physical quality of life since infrastructure, both public (water sanitation, transport etc) and private (the housing stock) improves over time in poor neighborhoods. This is due to the way the poor acquire housing, typically in a progressive manner, first building a shack on an unsecured piece of land and gradually improving the house as well as possibly legalizing their tenure status (which conditions access to public infrastructure services).

The process of improving quantity and quality of housing differs according the age of the settlement (defined as the modal age of the houses in the settlement) (Figure 3.4). The availability of water in the house or in the land can vary by as many as 47 percentage points depending on the house age in a given type of settlement and by as many as 34 percentage points for same age houses age across settlements of different ages. Settlement age seems to matter less in the case of sewerage possibly due to high costs of retrofitting any sewerage arrangement the house might have been equipped with already. Differences across *barrios* are not limited, however, settlement age. When grouping *barrios* in broad geographical regions, those in the North are more likely to offer access to water provision, sewerage, and garbage collection.

Figure 3.4 Access to services in poor neighborhoods improves with both settlement age and that of a house

Figure 4a. Access to water

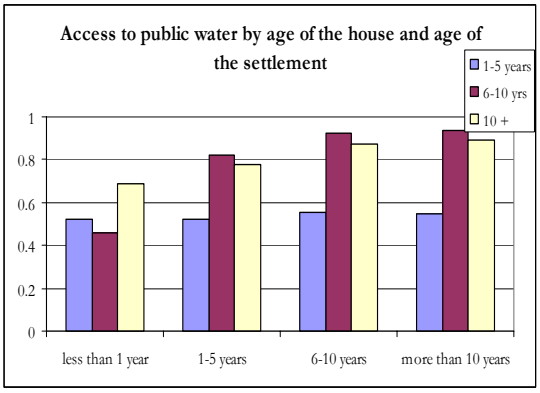
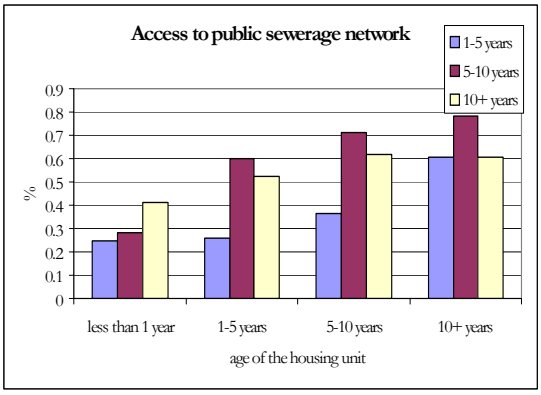


Figure 4b. Access to sewerage



Source: Own calculations based on *Barrio* Survey

Priorities for poor neighborhoods

What are the perceived needs of these *barrios*? In parallel to data collection in these poor neighborhoods, *SEDESOL* commissioned qualitative analysis based on focus groups. The information that emerged was analyzed by the *Centro de Investigaciones y Estudios Superiores en Antropología Social* (CIESAS). In particular, the analysis enabled a hierarchy of needs to emerge.

Access to the city is the most frequently need invoked among the five most pressing priorities, as well as the one that most often emerges as number one.[45] This coincides with findings from a qualitative analysis of *Oportunidades* beneficiaries by Escobar Latapí and González de la Rocha (2004) which argues that people living in Mexico's poor urban neighborhoods live in the city but do not benefit from urbanization *("están en la ciudad pero no gozan de la urbanidad")*. Access to water and sanitation where they are a problem are usually considered the highest priority for those lacking them. Public safety and education infrastructure are also often mentioned as an important need, though rarely as number one.

[45] At the same time, public transportation is rated as a low priority. It is unclear what is behind this seeming contradiction. Perhaps cost or distance, whereby public transportation is deemed adequate, but takes too much time, because of distance and traffic, or is seen as unaffordable.

Table 3.2 Priorities for those living in poor urban neighborhoods – access to the city followed by water, sanitation, education and safety from crime and violence

Need	Priority ranking					Frequency
	1	2	3	4	5	
Access to the city	**16**	**17**	**4**	**3**	**3**	**43**
Water	**15**	**3**	**2**	**2**	**2**	**24**
Drainage	**11**	**6**	**7**	**2**	**1**	**27**
Equipment in Education	7	6	11	5	7	**36**
Public Safety	5	8	4	5	2	**24**
Land tenure	5	3	4	1	2	15
Equipment in health	5	5	5	3	5	23
Pollution	5	5	2	0	5	17
Housing improvement	4	0	0	3	0	7
Electrification	4	5	2	1	0	12
Public lighting	2	2	4	3	0	11
Sidewalks and garnitures	2	4	2	0	2	10
Refuse collection	1	1	1	6	2	11
Recreational spaces and green	1	3	0	5	8	17
areas	1	2	0	1	1	5
Drug Addiction	0	1	0	1	2	4
Equipment in supply	0	0	1	0	5	6
Public transportation						

Source: CIESAS (2004)

SHAPING ONE'S PLACE, THE IMPORTANCE OF SOCIAL CAPITAL

Social interactions have been highlighted in the literature as important characteristics of the environment poor people live in and contribute to shape. In the case of Mexico, attention to these non-market relationships and their role as a resource for the poor in urban areas is not new. Already in the 1950s, Oscar Lewis, for example, noted that urbanization was taking place without the expected breakdown in traditional social ties. Poor newcomers to Mexican towns maintained an intense web of relations with their rural family members, and had close social ties in their new urban location (Beezley 2003).

Social relations within poor barrios

The barrio surveys point to the importance of social capital in poor neighborhoods. Evidence from the *barrio* surveys allows us to analyze at least some of these relations. As many as 31 percent of respondents affirm that they would trust someone in the *colonia* to deal with personal or neighborhood related issues, and 28 percent say that they would resort to the help of this person in case of a crisis such as

illness, need for accommodation or lack of money. The potential for resorting to this type of informal transfers for coping with shocks is clearly high, given the relatively limited coverage of formal insurance systems (for example, only half of our sample is covered by formal medical insurance) – and indeed 15 percent of respondents resorted to this type of help in the last month. These networks are clearly characterized by a high degree of reciprocity, as in 51 percent of cases respondents reveal that they have themselves helped in the last month the individuals whom they consider potential sources of material help.

Aside from informal support networks, formal horizontal organizations exist in the *barrios*. Furthermore, almost 70 percent of the *barrio* inhabitants had attended at least one meeting of one of the 6 major types of organizations listed over the previous year.[46] Effective membership in these groups is somewhat lower. Church or religious groups and parents' school clubs were the most attended social activities and those with widest membership.

Indicators of willingness to participate in communal activities in the neighborhood are high. They differ significantly, however, between activities to create or improve different services in the *colonia* (90 percent would be willing to participate in at least one) and collaborating in activities to improve the environment (less than 70 percent). One possible difference between the two sets of activities is that the latter seems to be more demanding in terms of regular commitment of time as it includes, for example, help in garbage collection, rather than one off types of efforts (e.g. help in create or improving public parks). Overall 95 percent of the household declares that they would want to engage in at least one of those activities.

Informal community organizations do exist to help solving problems related to e.g. public services or conflicts over property rights. Finally, we have information about community informal organizations. 55 percent of respondents declared that in their *colonia* there was either a person or an organization which would solve problems related to public services, or that if there was any problem with public services people would gather to solve them. Even greater emphasis seems to be put in organizing the regulation of property rights as only 28 percent of the respondents reported that no mechanism existed to deal with problems arising in this respect.

But the extent of social capital varies greatly across *barrios*. Data show however a large amount of variation across *barrios* in terms of these non-market relations: the share of households who would trust someone in the *colonia* to help, for example, ranges between 11 percent and 58 percent. Literature provides many pointers to household and community determinants of the different intensity of social capital. Significant effects have been repeatedly found for example for variables such as homeownership which

[46] Parents' school clubs, church or religious group, cultural or social or ethnical organizations, neighborhood or community organization, trade union, political party –in the case of attending meetings/ gatherings there is also a 7th option ie sports club.

can be expected to influence individual incentives to be socially connected and provide local amenities (DiPasquale and Glaeser 1999). Others, more connected to individual experiences such as recent traumatic shocks, belonging to a discriminated group, low income, low education, strong racial division and income inequality can in contrast be seen as determinants of trust (Alesina and la Ferrara 2002; interestingly they do not find religious beliefs and race to matter). Yet another group of variables has been found to be influencing participation in different kinds of groups; these include age, years of schooling, and number of children – supposedly through a time availability mechanism. Of these variables, community heterogeneity along racial, ethnic or income lines appear to have a strong impact, though in the case of participation of different types of social activities in the US it has been found that it matters less for activities with a high degree of exclusion or where interaction is limited.

What determines the access to social capital? Annex Table A-8 presents the results of probit analysis aimed at identifying key correlates associated with the set of social capital indicators available. As these indicators capture different aspects of social capital we would not necessarily expect them to be associated with the same variables. The two indicators relating to informal support networks, in particular, seem to capture an aspect of social interaction quite different from the other indicators, as their correlates show a pattern of associations often at variance with the others.

Owning one's home, having lived in the barrio for some time, and having some level of education increases access to networks. Overall, results presented in Annex Table A-8 are broadly in line with those found in the literature on social capital. Among household characteristics, for example, homeownership significantly affects all indicators but those for informal support networks. Being newcomers in the *barrio* (as captured by the share of household members who moved in the last 5 years) decreases the chances that reliable networks of reciprocity have been established and decreases all types of social activities with the exception of the willingness to participate in activities aimed at building something.[47] A dummy for being catholic (the religion most practiced in our sample) has been introduced and consistent with evidence from other countries we find it is mostly not significant, with the exception of significantly decreasing the likelihood of being a member of an organization. Years of education household head are positively associated with all indicators aside from knowledge on the existence of informal organization, and significant in the case of having used reciprocity networks, willingness to participate in providing services in the community and membership and attendance of organizations.

Gender, age and ethnic patterns emerge in the responses. Women are significantly less likely to have and to use reciprocity networks and to want to build

[47] One can speculate that this might be due to some form of reverse causation, with new comers occupying spaces where more amenities are needed, or, alternatively, pointing to a willingness to create ties within the community.

something. In contrast they are more willing to help in running community services and assist to meeting. Interestingly, they seem also to be less involved or aware of the workings of community organizations or actions to solve public services issues or property rights issues. As far as age is concerned an interesting split emerges: social attitudes are stronger in older people, though social connections through reciprocity networks is less, possibly because older people are less likely to be able to reciprocate for the help received. Finally, indigenous people have less access to reciprocity networks and declare to be less likely to want to collaborate in one off projects for the community. At the same time they are more likely to be part of some group/organization.

What *barrio* characteristics determine the build-up of social capital? As far as *barrio* characteristics are concerned, variability of income in the *barrio* decreases social connections, but increases other form of social activities. The effects of more racially mixed environments are rather similar, while religious heterogeneity in the *barrio* (catholic and non-catholic) increases all forms of social interaction. Older settlements have fewer support networks and, interestingly, while in the oldest settlements social connections and informal organizations are lower, they appear to be higher than in the newer ones in settlements 5-10 years old. We try to capture the overall social integration in the *barrio* using the *barrio* average of the "having someone to help" variable, in order to test whether the social structure of the *barrio* has an independent effect on other aspects of social capital. We find that it is extremely significant and that while it decreases the desire to do one off projects, it increases all other forms of social capital, and in particular informal organizations. Finally, these results highlight also regional differentiations: for example, households in *barrios* located along the Northern border are less likely to ask for help of neighbors while the opposite is true in the South. There are also differences across cities size and growth rates – in large cities there are more informal support networks and less of other indicators of social capital, the latter finding also found in fast growing cities.

Is social capital an important resource for the inhabitants of poor urban *barrios*? As mentioned before, several indicators discussed here have been found to be associated with a variety of positive outcomes in both macro and micro studies. The literature offers however some more specific hypotheses and in what follows we consider the impact of social capital indicators on two variables that are key for poor people -employment and the incidence of crime and violence.

Uses of social capital: finding a job

The role of information flows across social networks in increasing the probability of finding a job has been subjected to increasing scrutiny. US and British studies find that asking friends and relatives is the most effective search mechanism (e.g. Blau and Robins 1990), and the role of networks in finding a job in the context of migration has been well established (see Munshi 2003). A recent paper based on detailed

data from Egypt (Wahba and Zenou 2003) focuses specifically on the characteristics of the network through which information is shared. Crucial in this context are the homogeneity of the network (and in particular whether it extends to individuals with diverse backgrounds), the quality of information which can be passed and the spread of the network itself, which might result in congestion in the use of information.

While we lack the detailed information needed to test these hypotheses, some analysis can be performed focusing on indicators of individual connections as proxies for belonging a network. Note that we cannot use indicators such as involvement in community organizations since the fact they explicitly require a time commitment makes them endogenous (unemployed people are more likely to belong).[48]

Network information (quantity and quality) has an impact on job search Annex Table A-9 details results of our analysis of the effects of access to networks and the probability of being employed. Having someone in the *barrio* whom one would trust to solve a problem or ask for help is found to be positively associated with employment, while the negative coefficient on the *barrio* average of the same variable hints to the possibility of some congestion effects (when everybody is well connected, connections do not help in finding a job). We also control for other indicators of information availability (number of household members in the workforce) and of its quality (the share of the *barrio* labor force which is unemployed). While the latter might well be capturing broader economic factors which are reflected in the individual probability of having employment, it is interesting that the interaction of the indicator of household access to network of reciprocity with the unemployment share leads to a dampening of the effect of the reciprocity network (the coefficients are jointly significant at the 1 percent level). This suggests that, as found elsewhere, the quality of the information available in the network matters – where unemployment is high, the networks are not capable of relaying much information about jobs. Similarly, the effectiveness of network in helping with a job is dampened by its interaction with the household members in the labor force – this could point either to congestion effects within the household or the importance of alternative ways of obtaining information about vacancies.

Exposure to crime and violence

Exposure to crime and violence in urban areas is a key concern in Mexico as in other Latin American countries. Economic theory would suggest that crimes, at least those related with property, should be more frequent in urban areas due to higher concentration of transferable assets found there. And indeed, evidence from the Mexican capital (Distrito Federal) suggests that urbanization, though not in itself responsible for the surge in crime over the 1980s contributed to social and economic changes (lack of

[48] Note the difficulties of identifying plausible identification restrictions

housing, jobs and public services) related to a rise in crime, which the economic crisis exacerbated.

Exposure to crime is high in *barrios*, but few are reported to the authorities. Data from our survey shows high shares of reported crimes: 10 percent of respondents report that a member of their family has been victim of a crime in the last 6 months. Of these crimes, only 32 percent have been reported to the authorities. Theft is the most frequent crime with 8 percent of the respondents reporting one. These data can be put in context by considering the crime incidence by neighborhood, as detailed by Table 3-3, which provides summary statistics on the incidence of different crimes across slums. Comparison with international evidence shows that these neighborhoods suffer from a high density of criminal activities. For example, at 20 per 100,000 persons, the homicide rate is comparable to the LAC average of 30 per 100,000 persons, but is five times higher than the Mexican average of 4 per 100,000. This is reflected in the widespread sense of insecurity reported by the inhabitants of the urban slums (in 21 of the 31 *barrios* the most frequent answer given is that the *colonia* is not very safe, and in 7 more the answer is that the *colonia* is unsafe).

Table 3.3 Crime incidence varies across neighborhoods, but is generally high

	No. of Crimes per 100,000 persons (*)	Min	Max
Total crimes	9852	944	28846
Assault	8194	3226	18453
Injuries	1023	0	2472
Abuse of authority	113	0	806
Threat	296	0	1020
Fraud	27	0	223
Homicide	20	0	219
Breach of confidence	30	0	202
Damage in alien property	454	0	1590
Sexual crime or attacks to the modesty	142	0	674
Abduction (express)	19	0	197
Abduction	18	0	375
Others	94	0	410

(*) Data obtained from questions detailing the nature of the last crime of which one of the household's members was victim – overall numbers might therefore be higher
Source: Own calculation based on *Barrio* survey

We explore the determinants of number of crime reported in each barrio over the last 6 months, testing for the importance of social capital type of variables. A negative relation between social capital type of indicators such as trust and civic attitudes and crime has been found in cross-sectional analysis (e.g. Lederman et al 2000). Most pertinent for the analysis of our barrio data, the importance of "neighborhood ties,

social control, mutual trust, institutional resources …" has been highlighted by literature on urban poverty in the US (Sampson et al 2002). Given the limited number of *barrios* available in the survey, any empirical analysis is somewhat limited in scope and in possible sophistication, but some interesting associations can be highlighted (see results in Annex Table A-10).

Indicators of the social fabric and civic attitude in the *barrio* have a significant impact on crime rates. The density of support networks is negatively related to the number of crimes and so is the share of respondents who would like to participate in activities to improve the infrastructure of the *barrio*. Another interesting finding is that local amenities, such a public lights in the street, decreases the number of reported crimes. Policing is positively associated with crime, suggesting that patrols are more frequent in areas with higher incidence. Finally, income per capita in the slum -a proxy of the amount of transferable assets which exist in the *barrio*- seems to increase the number of crimes though at a decreasing rate. These results are consistent with those found in the literature (Moser, Winton and Moser 2004).

CONCLUSION

This chapter has relied on a recent survey of poor neighborhoods in urban Mexico to discuss characteristics of the places of the poor. What emerges is a picture of great diversity: while the poor are indeed concentrated in poor neighborhoods, not all poor live in them and, most importantly for the topic at hand, poor neighborhoods include both poor and non-poor. Indeed, the incidence of poverty across our sample of poor *barrios* varies from 18 percent to 55 percent, for an average of about 36 percent. And income inequality is much greater within poor *barrios* than across them. Data shows also that within a given poor neighborhood there can be pockets of concentrated poverty.

What matters for barrio income levels? Unsurprisingly, the average income level in a poor neighborhood is found to be negatively correlated to *distance from centers of employment*, the *age of a settlement*, *lower access to public services*, and *propensity to natural disasters*. The characteristics of the city to which the barrio belongs – such as the structure of the local economy, public expenditure per capita, city size and growth- are also found to matter. The gradual way in which the poor acquire housing shows up in a positive correlation between the age of a settlement on one hand and access to services and quality of housing on the other.

What are the most pressing needs perceived by *barrio* residents? An analysis of the needs expressed by the residents of poor neighborhoods shows that *they feel physically isolated from the city they live in* – access to the city is by far the most frequently mentioned need. Other high priority needs that emerge are *water and sanitation*, as well as *education infrastructure* and *public safety*.

Social capital is found to be fairly high in these poor *barrios*, **although great variation exists across** *barrios*. A variety of indicators of individuals' level of social connections and of neighborhood level organizations indicate high levels of social capital. However, these are found to vary significantly across *barrios*. Greater social connections are found to be positively associated with employment, suggesting that social capital does indeed play a role in the economic well-being of poor households.

Greater social capital appears to reduce the incidence of crime and violence – which is high in these poor neighborhoods, much more so than in the rest of Mexico. Other factors that appear significantly associated with crime include higher income per capita (which is a proxy for the amount of transferable assets) and local amenities (with public lights in particular acting as a deterrent). Policing is positively associated with crime.

What then are the implications of this chapter? First, where people live matters in determining their opportunities, as well as the challenge facing them. This implies that the spatial focus of *Hábitat*, the new urban poverty program developed by the Mexican government, is appropriate. Second, the potential negative externalities arising from segregation need to be considered in the context of housing policies which tend to cluster low-income households together. Third, poor neighborhoods are tremendously varied in their structure and composition, which argues in favor of programs that leaves room for self-determination. Finally, social capital and social structures are important in these neighborhoods – indeed *Hábitat* seeks to build on local social structures. It is known from other studies that the benefits of social networks, particularly in terms of procuring employment and securing benefits, are greater when these social networks can span social groups and geographic areas (Woolcock, 2004). This suggest that one a role of public intervention, whether through *Hábitat*, or through other programs active in poor urban *barrios* such as *Oportunidades*, could be to help these networks reach out.

4. POVERTY AND LABOR MARKETS IN URBAN MEXICO[49]

Employment is the main source of income for poor urban families. This dependence accounts for about 57 percent of the income of the poorest urban quintile in 2002.[50] Enhancing the ability of the poor to get and hold better jobs, both in terms of wages and quality is, therefore, central to reducing urban poverty in Mexico.

This chapter explores the role of the labor market in the urban poor's lives. This chapter does not pretend to be a poverty profile. It identifies the constraints and challenges the poor face in order to recommend policies that enable them to better take advantage of the employment opportunities offered. The evidence shows that the urban poor were working more, but for lower wages in 2003 than in 1991, as they found less opportunities in manufacturing and the public sector, and more in the self-employment sectors On the positive side, real wages of the poor showed important growth since 1996, but especially in the later years studied (2000-2003). This, combined with higher employment and participation rates, has eased extreme poverty, but many urban inhabitants still find themselves in moderate poverty. Explanations can be found in the structure of the Mexican economy, such as the type of jobs it offers and its international competitiveness, as well as in the human capital and other characteristics of the urban poor that condition access to better jobs and the labor market in general.

Work done for this chapter relies on the Encuesta Nacional de Empleo Urbano (ENEU), Mexico's main labor survey, which provides a panel of considerable size that includes several Mexican cities for the period 1987-2003.[51] Since this survey appears quarterly, this paper used the second quarter of each year. Official poverty lines, as constructed by the Comité Técnico para la Medición de la Pobreza-CTMP- (2002), are used. Of the three nested poverty lines used by the Mexican Government, we only use two – food poverty (poverty line 1) and asset poverty (line 3), which correspond to

[49] This chapter was written by Gabriel Montes, Mauricio Santamaría and Magdalena Bendini and edited by Mary Morrison. The authors relied on research produced by them as well as by Orlando Gracia, David Kaplan and William Maloney. Marianne Fay provided extensive comments.

[50] Using the methodology proposed by the Technical Committee for Poverty Measurement to calculate income. Urban localities are defined as those with a population of 15,000 or more people. Labor income in the ENIGH includes categories P001-P009.

[51] Despite the fact that the coverage and scope of the Encuesta Nacional de Empleo (ENE) is broader than that of the ENEU, the latter was chosen because it provides longer series, which was necessary to carry out the analysis.

extreme and moderate poverty respectively. Any mention of the poor as a whole refers to all individuals living in asset poverty, i.e. the moderately poor.

At this point, it is important to introduce a key methodological note. Given the fact that the purpose of this chapter is not to provide information about poverty incidence or the number of poor, but rather to explore how the poor fare in the labor market compared to other groups, an adequate way to identify the poor and their personal and labor market characteristics was needed. Thus, the methodology used consisted of considering "poor worker" that who belongs to a household with a per capita labor income lower than the poverty lines defined by the CTMP. This methodological choice is dictated by the fact that the ENEU, which is the instrument that contains the relevant labor market information, only includes data about labor incomes in the main job of the individuals.[52] In any case, given the fact that non-labor incomes are more important among the richer households, we believe (and empirically checked) that the classification of workers according to this method is very accurate.[53] Also and as mentioned above, since the purpose of the chapter is not to provide information about the incidence or evolution of poverty itself, this seemed as the soundest choice. Additionally, it should be noted that since data for the period 1987-2003 are used, to maintain comparability we had to restrict the sample to the 16 cities present in all the surveys. Thus, all the results hold for this universe.

The chapter is organized as follows. The first section presents an overview of the labor situation of the urban poor: where they work, in what condition, and how this has evolved over the last 15 years. Section II builds on this information to discuss the changing capacity of the Mexican economy to provide decent jobs for the urban poor. Section III then examines the characteristics of the urban poor, and how these affect their labor market access and performance. Section IV discusses the structure of Mexico's labor market, looking in particular at how its ability to absorb shocks through lower wages has changed over time, as well as the impact of labor regulations and active labor market policies. The final section summarizes the main findings and presents policy recommendations for improving the labor market performance of the urban poor.

URBAN POOR, WORKING MORE FOR LESS PAY

The analyses below were carried out by the authors of this chapter and are based on academic research or research conducted by them, unless otherwise specified. Methodological details can be found in Bendini, Montes, and Santamaría (2005), which is available upon request.

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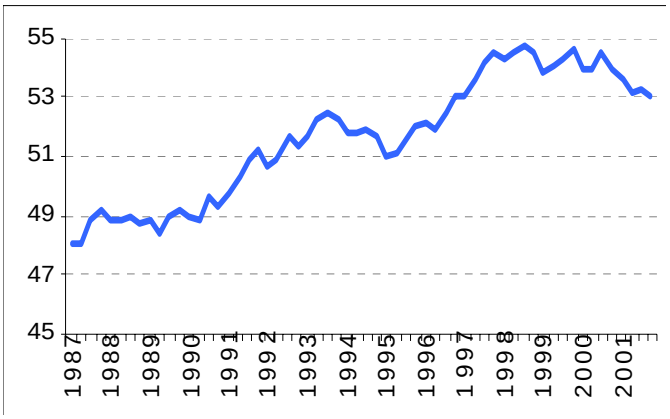
[52] Labor is the most important source of income for the poor in urban areas. As discussed in the companion reports, there are other sources of income and household strategies to complement the labor income of the poor.

[53] This analysis does not pretend to be a poverty profile, only a way to rank households within the ENEU.

Employment rates have risen among urban poor but remain low, especially for women

Employment rates in Mexico have risen fairly steadily in the last 15 years (Figure 4.1). The increase has been particularly large among the poor, whose employment rate rose from 36 percent in 1991 to 48 percent in 2003, largely in response to the crisis of 1994/1995 – indeed most of this increase occurred in 1995 (Table 4.1). This is because, as discussed in Chapter 2, the urban poor tend to rely on an "added worker" strategy, whereby additional household members enter the labor markets to cope with income shocks. While this strategy has helped mitigate the effect of the crisis, particularly the fall in real wages, a negative aspect has been an increase in employment among poor youth. This may imply a curtailing of education, hence a decrease in the probability of a future transition out of poverty. The poor also increased their weekly hours of work by about two hours during the period, (from 42.5 to 44.5), but this was in the same proportion as for the non-poor.

Figure 4.1 The overall employment rate has risen over time, but declined since 2000



Source: ENEU. Employment rate defined as persons employed as a share of persons of working age (12 years and older).

Overall, the poor participate much less in labor markets than the non-poor, although the gap narrowed over the decade. This is the main reason behind the lower rate of employment for the poor (48 percent) than for the non-poor (70 percent). The poor's unemployment rate (5 percent) is low - although higher than that of the non-poor (3 percent).

Table 4.1 Mexican poor have lower employment rates and higher unemployment rates

	1991		1995		1999		2003	
	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor
Employment rate (%)	65.4	35.8	72.0	45.3	73.5	47.1	70.4	47.8
Unemployment rate (%)	1.4	5.0	5.6	9.6	2.3	3.7	3.1	4.7
Participation rate (%)	66.8	40.8	77.6	54.9	75.8	50.8	73.5	52.5
Employment rate (%) for youth aged 14-17	26.0	15.7	25.8	22.8	24.0	23.9	22.7	21.5

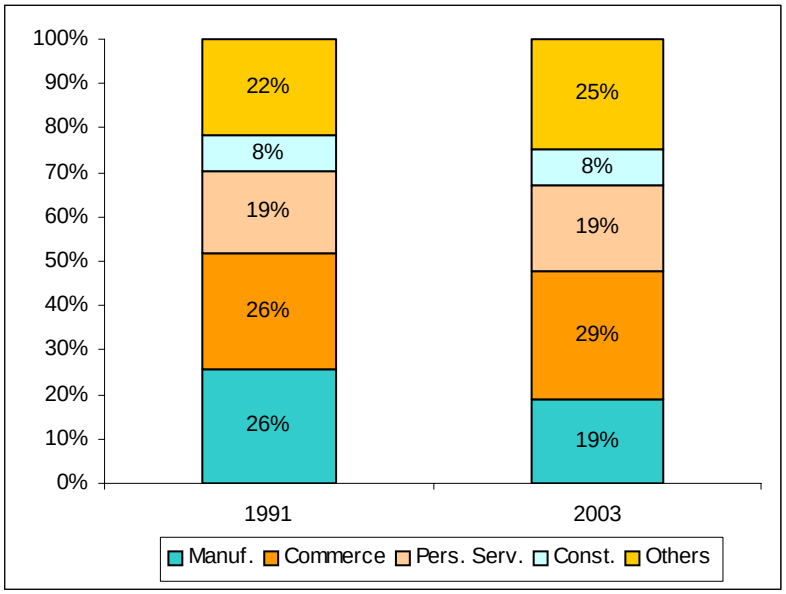
Source: Own calculations based on ENEU.

The increase in female participation rates has been an important factor driving the overall increase in the employment rate over the decade. Female participation rose from 35.6 percent in 1992 to 39 percent in 2003. In contrast, male participation remained constant over the period. Nevertheless, female participation in Mexico remains among the lowest in Latin America (it is higher than 50 percent in most large countries in the region).

The poor's employment opportunities are increasingly concentrated in lower-quality sectors

Access to good jobs has fallen for the poor: lower quality jobs are on the rise. Among the main sectors of employment for the urban poor, manufacturing, which offers relatively good jobs, has ceded ground so that its share in employment of the extreme poor fell from 26 percent in 1991 to 19 percent in 2003 (Figure 4.2). As a result, an increased share of poor workers now work in construction, commerce and personal services – sectors characterized by lower-than-average wages, high informality, slow growth and a tendency to decline sharply in recessions.

Figure 4.2 Because of manufacturing decline, poor are increasingly employed in sectors that offer lower quality employment



Note: the data refers to urban extreme poor (under poverty line 1).
Source: Own calculations based on ENEU.

Similarly, self-employment has increased. Another notable change is the sharp drop in the proportion of the poor employed in the public sector, and the increase in self-employment (Table 4.2). Thus, it appears that the increase in overall employment of the urban poor after 1996 was mostly through self-employment of the lower category (self-employment without investment or SEWI[54]), which is typically precarious and low paid. This was particularly notable for the poorest, 35 percent of which are now self-employed, mostly in the SEWI category. Nevertheless, the majority of the urban poor continue to work as private employees, with the proportion flat at 65 percent for the moderately poor over the period as a whole, but falling to 59 percent from 64 percent for the extremely poor.

[54] This corresponds to what is defined in ENEU as "*cuenta propia sin local.*"

Table 4.2 Self-employment is on the rise for the poor

Employment shares	1991	1995	1999	2003
Total workforce				
Employer	4.7%	4.9%	4.1%	4.2%
Self-employment	16.9%	18.2%	17.3%	19.2%
With Investment	5.4%	5.6%	4.4%	5.2%
Without Investment	11.5%	12.6%	12.9%	14.1%
Public employees	16.8%	14.6%	13.6%	13.8%
Private employees	61.6%	62.3%	65.1%	62.7%
All poor (poverty line 3)				
Employer	2.5%	2.8%	2.8%	2.4%
Self-employment	19.7%	21.9%	20.6%	25.0%
With Investment	5.2%	5.4%	4.6%	5.5%
Without Investment	14.5%	16.5%	16.0%	19.6%
Public employees	12.5%	9.5%	8.0%	7.2%
Private employees	65.3%	65.7%	68.6%	65.3%
Extreme poor (poverty line 1)				
Employer	2.0%	2.3%	2.3%	1.9%
Self-employment	24.3%	28.6%	26.0%	34.8%
With Investment	5.7%	6.4%	5.3%	6.4%
Without Investment	18.6%	22.2%	20.7%	28.4%
Public employees	9.6%	5.9%	5.1%	4.6%
Private employees	64.0%	63.2%	66.6%	58.7%

Note: Consistent sample across periods.
Source: own calculation based on ENEU.

Most jobs seem to pay less as compared to 1991, especially those available to the poor

Wage levels fell most for self-employed poor workers. The impact of this reallocation of employment is reflected in the evolution of wages. Not surprisingly, wage levels fell most in the categories that experienced the highest surge in employment. Thus, although wages plunged across the board after the Tequila crisis, this was strongest for self-employed poor workers. Overall, pay levels have recovered since 1996, although the improvement was not sufficient by 2003 to regain the value lost since 1991. This is particularly true for poor workers, driven by the notable lack of a recovery in wages of the self-employed. Overall, average wages fell by 2 percent over the period, while SEWI wages dropped by 9 percent (Table 4.3). For the poor as a group, wages eroded by 5 percent overall and 8 percent for SEWI, while for the extreme poor the losses were 12 percent and 22 percent respectively.

Real wages also fell by more than the average in the industries in which most of the poor work (construction, commerce and personal services), as job growth in those was outstripped by an expansion of the pool of workers seeking them.

Table 4.3 Real wages have fallen most for the types of employment where poor predominate

Wage trends	1991	1995	1999	2003
Employer	1.00	0.96	0.91	0.98
Self-employment	1.00	0.87	0.84	0.92
With Investment	1.00	0.88	0.88	0.96
Without Investment	1.00	0.86	0.84	0.91
Public employees	1.00	1.01	1.02	1.08
Private employees	1.00	0.93	0.92	1.00
All poor (Poverty Line 3)				
All	1.00	0.91	0.90	0.95
Employer	1.00	0.94	0.91	0.95
Self-employment	1.00	0.87	0.84	0.87
With Investment	1.00	0.87	0.94	0.86
Without Investment	1.00	0.89	0.88	0.92
Public employees	1.00	0.98	0.98	1.01
Private employees	1.00	0.92	0.90	0.97
Extreme poor (Poverty Line 1)				
All	1.00	0.89	0.88	0.88
Employer	1.00	0.94	0.91	0.90
Self-employment	1.00	0.87	0.85	0.79
With Investment	1.00	0.87	0.88	0.88
Without Investment	1.00	0.87	0.85	0.78
Public employees	1.00	0.94	0.94	0.95
Private employees	1.00	0.90	0.89	0.93

Source: own calculation based on ENEU. Note: Consistent sample across periods

A further indication of the falling standards of jobs for the poor is given by the increasing share of the poor who work in small firms. In 2003, firms with less than 5 employees accounted for 65 percent of the very poor's employment, as opposed to 40 percent of total employment. Small firms are less likely to comply with employment regulations or provide benefits or stable longer-term jobs. They also pay less than bigger firms: in 2003, wages in firms with fewer than 10 workers paid below 1991 levels, whereas larger firms saw increases of about 4 percent.

In sum, the situation of the urban poor in Mexico appears to have deteriorated in the 1990s, although a recovery is evident at the end of the period. As a consequence of falling incomes (and growing unemployment during the Tequila crisis), the poor moved to very precarious jobs in sectors and occupations that offer low salaries and slow growth, and are highly vulnerable to recessions. At the end of the period (2003), poverty had declined slightly because the poor were working more, but mostly in those

"low quality" jobs. In this context, it is important to stress that a characterization of households according to their labor market attachment showed that there is a strong correlation between the occupation of the members of the household and the likelihood of that household of being poor, being those with workers in SEWI far worse-off than any other category. We now turn to a discussion of the structural changes in the Mexican economy that may help in explaining these trends.

FEWER GOOD JOBS FOR THE POOR[55]

The country's competitiveness has declined due to weak total productivity growth

Mexico's ability to compete in international markets, especially in the US, has been diminishing. This is largely due to the country's poor performance in improving total factor productivity (TFP), which also constitutes the main engine of economic growth. Loayza, Fajnzylber and Calderón (2005) find that, in the 1990s, TFP growth in Mexico was a low 0.4 percent per year, below the Latin-American average of 0.7 percent, and well below of the 1.1 percent observed among the seven largest countries in the region. In fact, among this latter group Mexico only outperforms Colombia and Venezuela, characterized by a very poor performance during the decade. Additionally, TFP growth rates were above 1.5 percent in the 1960s and 1970s, and then plummeted to negative levels in the 1980s as a result of the profound crises suffered by the country and the region in that decade. Thus, while there is some recovery in the 1990s, the observed levels of TFP growth are still below those observed 30 or 40 years ago. In this context, the authors find a matching trend when analyzing GDP growth: Mexico belongs to a group of countries that experienced an increase in economic growth rates in the 1990s relative 1980s but, if the performance is compared against previous decades (1960s or 70s), the situation is the opposite (Mexico's GDP growth rate in the 1990s was less than half of that observed in the period 1960-80).[56]

In the period 1999-2001, a combination of slow productivity growth and faster rising wages, especially in dollars, has increased unit labor costs. The country's

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[55] This subsection is based on a number of papers or Bank reports, mentioned throughout the text, which mainly constitute a body of analytical research and should not be interpreted as official statements.

[56] It should be noted that Loayza, Fajnzylber and Calderón (2005) constitutes academic research that, by no means, should be considered as providing official estimates of the evolution of TFP. The estimates used in this Report correspond to what Loayza, Fajnzylber and Calderón call "model 1" in their paper, which is a very standard way of estimating TFP trends. This methodology is based on the idea that TFP is the "unexplained" portion of observed GDP growth. That is, the portion that cannot be explained by increments in the factors of production (capital and labor) alone. Thus, the authors econometrically "fit" a production function and subtract from observed GDP growth the observed increments in labor and capital (weighted by their estimated elasticities) and the result constitutes TFP growth. For more methodological details, see the paper at: http ://www-wds.worldbank.org/servlet/ DSContentServer/WDSP/IB/2005/ 4/27/ 000090341_20050427132058/Rendered/PDF/32180.pdf

continued competitiveness abroad in the nineties, can be attributed to low wages, which declined in dollar terms during the Tequila crisis, helping to offset differences in productivity with the US and other competitors. However, since 1999, and intensifying during 2001, unit labor costs for manufacturing have increased in Mexico due to a significant increase in wages (in dollar terms) and relatively slow productivity growth. In comparison, unit labor costs in the US have steadily decreased since 1993 due to the faster expansion of productivity over wages. This trend, however, seems to have reverted since 2003 due to a combination of higher labor productivity growth (see below) and slow growth of mean wages. Labor productivity growth was high in the first half of the 1990s, low in the period 1999-2001, and somewhat picked up after 2002, although it did not reach the levels observed before 1996. As a result, industrial labor productivity increased by 4.8 percent per year in the period 1994-2003 and 3.3 percent in 1999-2004 (INEGI, Encuesta Industrial Mensual). Thus, industrial productivity growth was low when compared to the US in the period (5.8 percent).

Consistent productivity growth is essential for sustained wage increases, especially for the poor. Low productivity growth is a source of concern because, besides the factors mentioned above, productivity has a positive effect on wages in Mexico, as shown by Montes and Santamaría (2004). Greater productivity facilitates sustainable higher wages for more workers, while wage hikes without productivity growth further damage competitiveness and hinder export growth and **employment.**

The slowdown in sectors producing tradable goods (food and manufacturing) – which offer relatively better jobs – is already reflected in a decline in their share in the employment of the urban poor, from 39 percent to 30 percent for extremely poor workers (Table 4.4). This represents a loss of good jobs for the poor, as exports tend to come from manufacturing and larger companies, both of which offer comparatively higher salaries, more benefits and greater security, as discussed above.

Table 4.4 Sectors producing tradable goods are employing a smaller share of urban poor

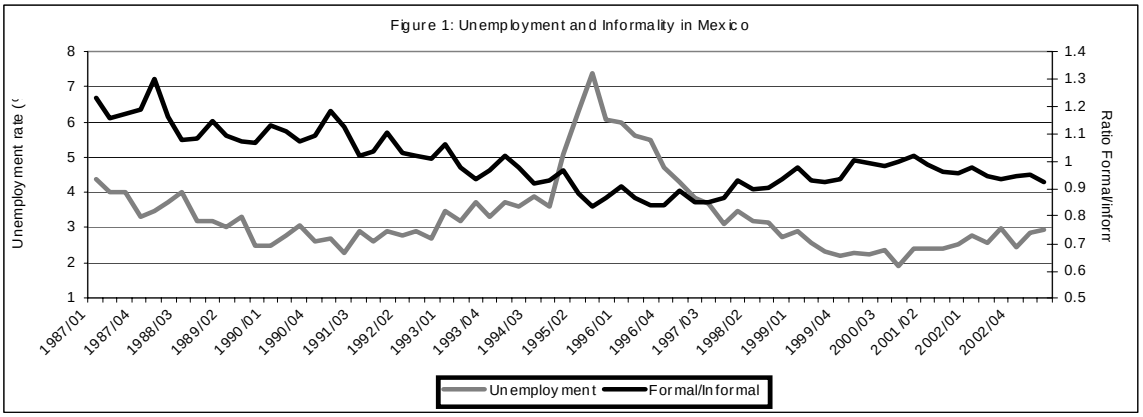
	Extreme Poverty		Moderate Poverty[1]	
	1992	2002	1992	2002
Share of urban poor working in:				
Tradable	39%	30%	24%	22%
Non-tradable	61%	67%	76%	78%

Source: Own estimates using ENIGH 1992, 2002 following SEDESOL's urban/rural definition and the official poverty measurement.

The share of involuntary informal workers may have risen since the mid-1990s. Until the early 1990s, unemployment and informality in urban Mexico were negatively correlated, suggesting that an important share of workers were voluntarily choosing the informal sector, rather than being pushed into it by a lack of formal

opportunities. The trend appears to have reversed (at least partially) after 1992, as informality began to follow a somewhat similar trend to unemployment, more compatible with a conventional pro-cyclical view in which a decline in labor demand results in a growing informal sector (Figure 4.3). This trend was especially evident during the Tequila crisis, when labor demand shrunk in an important fashion. Since 2001, however, the pattern is not so clear, fact that may be indicating somewhat improved conditions in the labor market. Thus, in the period 1994-2000 the informal sector in the Mexican labor market may have become more heterogeneous, with an increasing share of workers joining the informal sector because of deterioration in the demand for formal labor.[57]

Figure 4.3 Since 1991, informality has risen with unemployment



Note: Informality includes both salaried informal workers and self-employed.
Source: Own calculation based on INEGI.

Limited formal employment possibilities during that period pushed poor workers into lower quality employment. Recent research on workers' motivations in becoming self-employed also supports the view that limited formal employment possibilities increased the share of involuntary workers in the informal sector. Academic research by Fajnzylber, Maloney and Montes (2003) find that transitions from salaried to self-employment are determined by education, experience, and wealth. If this is the case, then workers with low education, experience and capital are unlikely to be moving voluntarily into the informal sector, so that high rates of self-employment in poor households may also be considered involuntary or induced by labor market distortions. Furthermore, the fact that significant increments in SEWI were accompanied by a large fall in wages, as shown above, suggests that the involuntary hypothesis regained importance in later periods. Moreover the fact that the share of employment in SEWI increased 30 and 60 percent for the poor and extreme poor, respectively, provides

[57] The definition of informality used in this report usually includes the self-employed plus salaried workers working in small firms with no access to social insurance (typically health). This definition is very close to the one adopted by the ILO and allows some international comparisons. However, it is not the official definition of informality in Mexico, to which reference is made below.

further evidence of the increased segmentation that has taken place in the Mexican labor market, at least among the poor.

These developmennts hurt the poor and the economy

These trends are bad for workers, for whom they may imply lower wages, fewer benefits, little job security and uncertain working conditions. The regressive pattern of Mexico's social security coverage disadvantages even the poor in formal employment, as coverage rates are positively correlated with education and income. But most informal sector workers, who, in any case, are concentrated in the poor, are totally excluded. Both the social security system and the unemployment protection scheme (limited mostly to severance payments) currently in place cover only formal workers (see the companion study, *Mexico: an Overview of Social Protection*).[58]

But informality can also be damaging for the economy as a whole if it hinders productivity growth. Informal firms tend to be less efficient than formal ones as they rarely achieve economies of scale or employ much capital. And they are less likely to exploit or develop new technologies and productive processes. Mexico's share of employed population in firms of less than six employees has hovered around 40 percent in the last five years, which makes it among the highest in the region.[59] Importantly, this percentage is higher among the poor and increased over the 1990s. Traditionally, these smaller firms tend to concentrate in the informal sector. Recent estimates made by the INEGI in Mexico indicate that around 30% of the labor force was employed in "non-structured jobs" in 2000 (*trabajo no estructurado*), which corresponds closely to informality, as defined by ILO. For a country with already low total productivity growth, such high levels of informality are therefore a serious concern.

LIMITED EDUCATION OF THE POOR – AN OBSTACLE TO BETTER JOBS

The methodologies used for this section allow for the estimation of wage differentials across educational levels. Consequently, the sample was divided into several educational cells, corresponding to the main educational levels in the country. In addition, the methodology proposed by Mincer (in various papers produced in the 70s and 80s) and Katz and Murphy (1992), widely used by economists were utilized. The

[58] Though the legal framework does not intend to discriminate between formal and informal workers, in practice, only formal workers receive the benefits established by the law, while informal workers (i.e., self-employed and informal salaried), by the nature of their occupation, are precluded, totally or partially, from receiving severance payments when the job ends. Of course, in the case of salaried informal workers they can recourse to legal suits to obtain what the law establishes, if they consider that they have been unjustly fired. However, this entails a long and complicated legal process that is rarely pursued by these workers.

[59] This was estimated with the sample of 16 cities in the ENEU panel. Though this indicator is not informality *per se*, it is used because it allows for an international comparison.

results are consistent with other estimations produced for the case of Mexico but they do not constitute official estimates.

Low education levels are still a binding constraint for the poor

Despite the recent improvements in Mexico's educational achievements, the poor still have much lower education levels than the non-poor. And while the poor have become better-educated, with the average years of schooling for a household head rising to 8 years in 2003 from 6.6 years in 1991 (Table 4.5), the non-poor have maintained their advantage in education with a similar increase.

The lower education level of the poor remains the main reason for their low relative earnings. Indeed, higher education is associated with a lower probability of being poor, even after controlling for other factors, and a higher probability of having a better job. Higher education in itself may not directly lead to better paying jobs, but highly educated individuals typically have access to information about better jobs or unobservable characteristics that facilitate access to such jobs (e.g., inherited ability, family history, contacts and networks, location) (World Bank, 2004).

Table 4.5 The education level of poor has increased, but non-poor have maintained their advantage

	1991		2003	
	Average level for the poor	Level relative to non-poor	Poor (average)	Relative to non-poor
Years of schooling of poor household head	6.6%	71%	8.0%	70%
Share of poor households with at least one college graduate	9.4%	25%	13%	30%

Source: Own calculation based on **ENEU**.

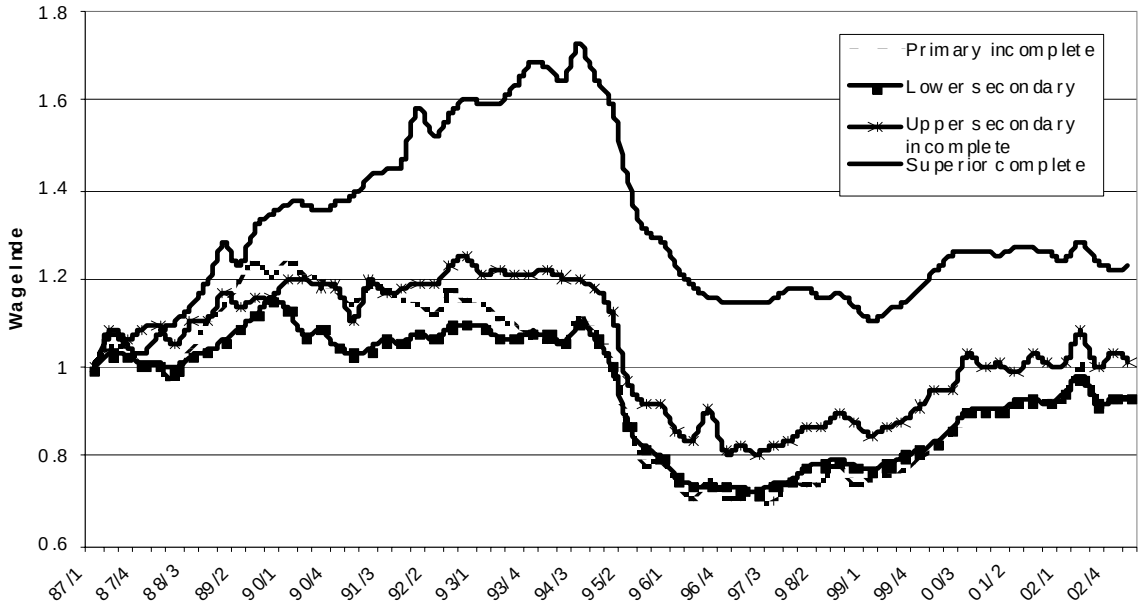
However, education does not fully explain the lower income of the poor. An exercise conducted to evaluate the returns to education in poor households compared with non-poor ones, found that poor households receive lower wages than non-poor households, even after controlling for education and experience. That is, conditional on having the same level of education, poor households still receive lower wages. Moreover, the gap increased over time for all categories, so that in 2003, poor workers with only primary education earn 40 percent less than non-poor workers with the same level of education, while poor workers with college education earn 100 percent less than their non-poor peers. The same patterns are observed after controlling by experience. The non-educational factors that thus curb the earning power of the poor are likely to include inferior social capital, information and resources, the stigma often associated

with slums and other poor areas, lack of connections, ineffective networks, inadequate access to transport, medical and other services and a lack of access to affordable childcare facilities.

But low-skilled wages are up in both real and relative terms since 1997

How much wages reward education – and penalize the lack of it – varies with changes in the economy that affect the supply and (especially) demand for different kinds of labor. Such changes include fluctuations within sectors or jobs, employment reallocation across industries and demographic factors. Figure 4.5 charts the evolution of wages for different educational groups, while Figures 4.5a and 4.5b show relative wages – or skill premia – for high school and college relative to primary workers, and college relative to high school by gender. This second form of presentation controls for the business cycle and highlights changes in inequality, very relevant in the context of this study.

Figure 4.4 Real low-skilled wages up since 1997, but still below their 1991 level



Source: Own calculation based on ENEU.

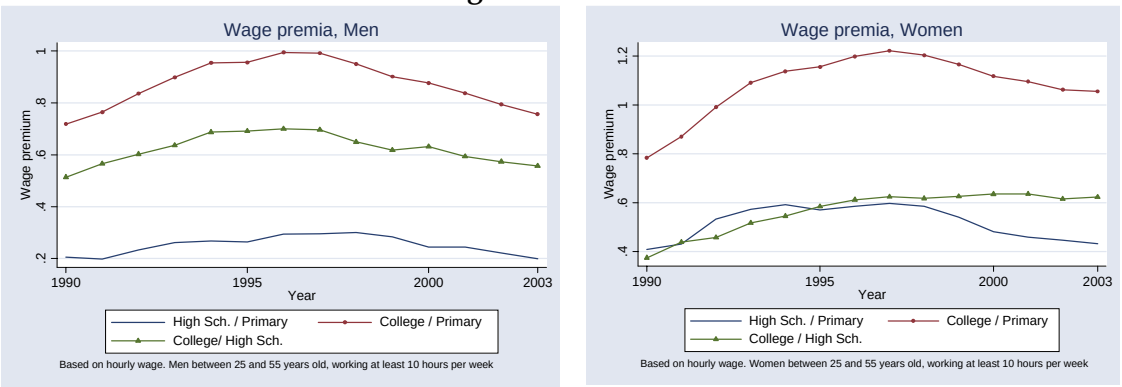
The skill premium fell after the macro-economic crisis. The decomposition of changes of the different wage premia into within and between effects, shows that in the first period (1991-95), the largest increases in wages occurred in sectors with more educated workers (so that the shifts in employment between sectors increased inequality). On the other hand, these same sectors started recruiting more workers with primary education (so that the evolution within sectors was inequality decreasing). This may be the result of biased technological change. A similar pattern is repeated in the

subsequent periods, but with between components loosing importance, making the overall change more favorable to low skilled workers. As a result, the skill premium is increasing in education for the first period, but decreasing during the latter.

Since all wages increased during the 1999-2003 period, this may indicate that a reallocation of resources in favor of low skilled workers actually occurred in that period. That, is the lower skills gained more than the higher ones. In terms of experience, the pattern described above is clearer for younger workers. The North American Free Trade Agreement (NAFTA), thus, may have had a positive impact on the incomes of poor workers, who have a skewed distribution of skills toward primary education.

Real wages are still lower for all groups than in 1991, but the low-skilled gained ground in the economic recovery since 1997. The pay of all educational groups dropped precipitously following the Tequila Crisis and then rebounded after 1996, at a faster rate for less-educated workers (Figure 4.4). The recent equalizing trend in skill premia is more apparent from relative wages (Figure 4.5). After increasing until 1996, the relative wage advantage of men with completed high school or college over those with a lower qualification has been falling (since 1997). The pattern is similar, but less pronounced for women. Both women with high school and college educations saw their wages decline relative to their primary-educated peers. But college-educated women managed to maintain – though not increase their advantage over the secondary group. While for men the different premia had returned to roughly 1991 levels in 2003, college-educated women finished the period earning greater relative wages than both the less-qualified groups. It also seems that the recovery was less equalizing for more-experienced workers than younger ones in the period studied.

Figure 4.5 Relative skill premia have fallen since 1997 to near 1991 levels, except among better-educated women



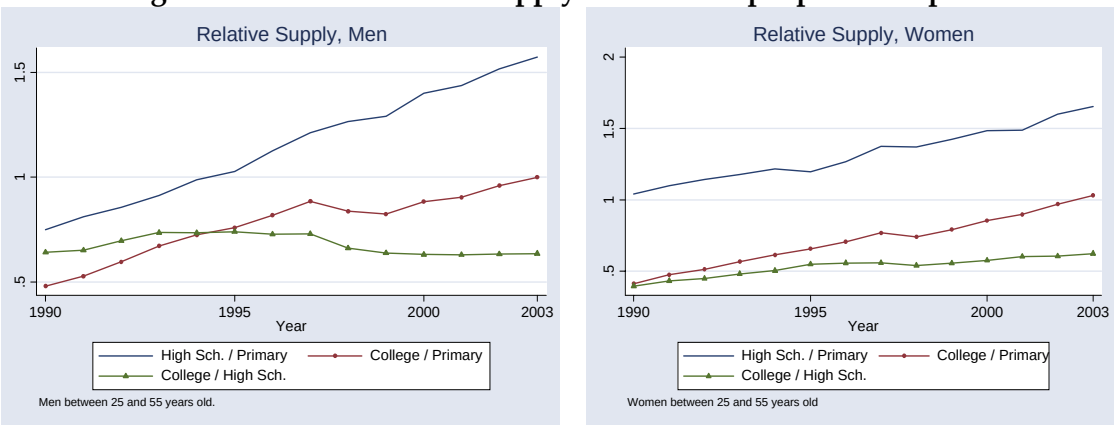
Source: Own calculation based on ENEU.

The change in trends of worker remuneration by skill level can be largely explained by shifts in labor demand before and after 1996. From 1991 to 1996, labor

demand favored high-skilled workers, due to a technological upgrade related to trade liberalization, affecting the entire economy. As a result, the relative wages of low-skilled workers fell, as demand for their labor declined, amid a contraction in the sectors in which they are concentrated. The consensus of many studies on the period (see Revenga 1994, Cortez 2001, and Cragg and Epelbaum, 1996) is that tariff reductions and trade expansion, and their interaction with technical change, caused the increase in premia, which closely follows the pattern observed in the US. Other authors (Feenstra and Hanson, 1997) studied the effect of foreign direct investment (FDI) in the form of maquilas, and they showed that those investments can account for more than 50 percent of the initial increase in wage inequality. After 1996, low-skilled workers saw their relative wages increase amid an expansion of specific sectors which employ them heavily, such as commerce and construction.

Growth in the relative supply of highly educated workers, due to a marked increase in educational attainment, also put downward pressure on the returns to this group, contributing to the equalizing trend after 1996. Figure 4.6 presents the relative supply of high school and college workers with respect to primary workers, as well as the ratio of college to high-school workers, by gender. The trend only falters immediately after the crisis, which prompted the higher employment rate discussed above. For men, the ratio of high school to college actually decreased, while for women it displayed a weaker growth rate. However, the fact that for the first half of the 1990s skill premia and relative supply are positively correlated illustrates the strength of other influences, particularly labor demand, on relative wages. This apparent reallocation of resources in favor of low-skilled workers, especially during the 1999-2003 recovery, is clearer for men, for whom the different premia regained their initial level in 2003. However, for women and overall, the reduction in skill premia in the second period was not enough to offset the increase during the first one.

Figure 4.6 The relative supply of educated people has expanded



Source: Own calculation based on ENEU.

STRUCTURAL ELEMENTS OF THE LABOR MARKET AFFECT THE POOR'S ABILITY TO GET JOBS

Mexican unemployment has historically been low

Unemployment in Mexico has been remarkably low, mainly due to the quick response of real wages to changes in output. Evidence suggests that falling real wages, rather than employment levels, accounted for much of the adjustment after the crisis of 1994/1995. Real wages fell by almost 30 percent (Figure 4.7), with the largest declines experienced by those with low skills.

With the exception of the Tequila crisis in 1995, Mexico's unemployment rate was never over 5 percent during the period, despite constant increases in labor participation. Unemployment rates are in fact very low when compared to those observed in Latin American countries and most developed economies, including Colombia and Chile, which experienced similar or stronger episodes of growth than Mexico. Even when compared to Asian countries, which also heavily compete in the US market, Mexico's unemployment remains low. Moreover, unemployment duration has been also low, with most skilled and unskilled workers finding a job within a six-month period.

Figure 4.7 Real wages fell sharply after crisis, for men and women

Source: Own calculation based on ENEU.

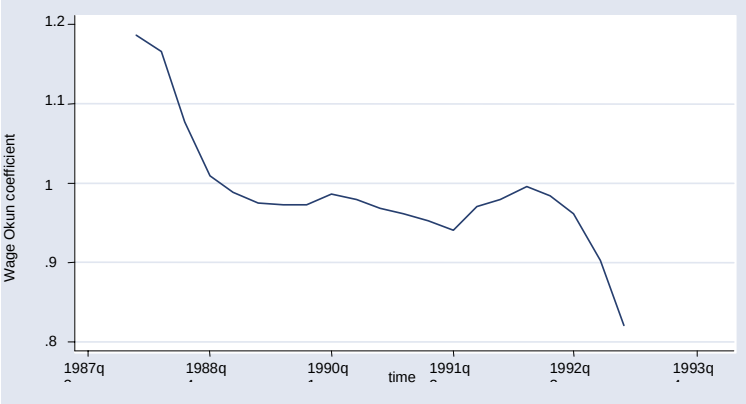
However, lower flexibility may herald higher equilibrium unemployment

The ability of wages to adapt to changes in economic activity and absorb shocks in times of recessions seems to have declined since the late 1990s. While Mexico experienced a decline in both Gross Domestic Product (GDP) and employment growth between 2000 and 2001, mean real remunerations kept increasing. During the period 1987-99 the employment rate increased by about seven percentage points, partly

because households responded to declining incomes by expanding labor supply, as discussed. But after 2000 this trend was reversed. It appears therefore as it wage flexibility had undergone a structural change when inflation declined to single digits in the late 1990s. If it is indeed the case, this will limit the ability of the labor market to keep unemployment as low as during the previous decade. This poses a challenge to policy-making since it could imply labor markets will increasingly adjust via quantities (i.e. by creating unemployment).

This is further supported by an analysis of the "Okun coefficient", which measures the degree of responsiveness of wages and employment to changes in output.[60] Figure 4.8 shows the 8 year moving average of this coefficient to have declined significantly over time, meaning that any given decline in output translates into smaller declines in wages and thus larger falls in employment. More importantly, although the trend is downward throughout the period studied, it becomes steeper around 1999. This suggests that the ability to adjust via wages (represented by the size of the wage Okun coefficient) has diminished during the last decade and, importantly, that an abrupt change occurred around 1998/9 (for details see Bendini, Gracia and Santamaría, 2004).

Figure 4.8 The responsiveness of wages to changes in output has declined sharply



The wage Okun coefficient measures the change in wages associated with a change in output. The dates in the x-axis correspond to the preceding 8-year period as these are 8-year rolling coefficients.
Source: Bendini, Gracia and Santamaría (2004).

Institutional and regulatory constraints further limit poor workers' access to formal jobs

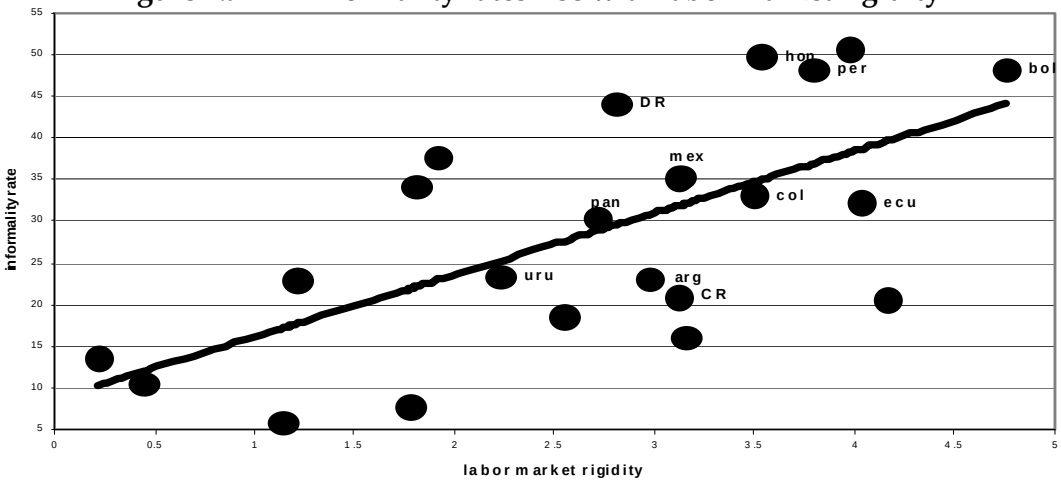
Institutional factors may be distorting Mexico's labor market, including stringent firing regulations, hiring modalities, promotions and provisions for shutdowns and downsizing. Maloney (1999) shows that inefficiencies in formal sector protections and low levels of labor productivity make the informal sector a desirable and optimal

[60] The Okun coefficient is defined here as the change in wages or employment associated with a change in employment.

alternative to formal employment. International evidence supports this view, by showing that excessive or very rigid regulations – even if well-intended – curtail the creation of formal employment, as employers seek to circumvent costly and complicated requirements by hiring workers informally. Workers also, if they perceive that formal employment is too costly while the benefits are not clear, may prefer informal employment accompanied by other forms of social insurance. This particularly affects young and less-educated workers, whose productivity tends to be lower, making them less likely to be hired in the formal sector (Pagés and Montenegro, 1999). Furthermore, the "insider/outsider" literature, asserts that strict rules protecting job security strengthen the position of formal unionized workers (the insiders), which they exploit to increase their wages, which in turn boosts pay in the broader formal labor market, encouraging informal hiring.

International experience suggests a strong link between labor market rigidity and the degree of informality. Figure 4.9 shows a strong positive association, confirmed by a highly significant correlation coefficient of 65 percent, between different countries' informality rates and a labor rigidity index based on the costs (implicit and explicit) of firing workers. Most Latin American countries appear in the upper right-hand side of the graph. Mexico is above the regression line, suggesting informality is actually somewhat higher than expected given its degree of labor market rigidity.

Figure 4.9 Informality rates rise with labor market rigidity



Source: Heckman y Pagés (2000) and ILO-LABORSTA database.

High non-wage costs also appear to reduce total employment. Statistical analysis of employment trends in the manufacturing sector[61] produces a negative correlation: a decline in the proportion of non-wage contributions *(prestaciones sociales)*

[61] The *Encuesta Industrial Mensual* (EIM) was used for the analysis, which provides information about medium and small firms in the manufacturing sector. This survey contains data from 1987 to 2004 on nine aggregate sectors (Food, Apparel, Wood, Paper, Chemicals, Non-metal, Metal, Machinery and Equipment and Others). The sample allows the use of a long time-series (more than 200 observations by sub-sector).

over total remuneration (the non- wage ratio) is accompanied by growth in employment. Results from the estimation show that a 10 percent increment in the non-wage ratio produces a contemporaneous effect on employment of about 0.4 percent. The long run effect rises to 4.4 percent. However, controlling for the endogeneity of non-wage costs, the estimates increase 10-fold for both the short run and long run; while the former reaches 3 percent, the latter exceeds 40 percent. These results suggest that non-wage costs do have a significant impact on employment Estimates using total number of hours worked as the dependent variable show that, controlling for the endogeneity of non wage costs, the coefficient of interest becomes insignificant, which suggests that firms avoid hiring new workers and substitute hiring with a heavier workload per worker.

The 1997 Social Security System reform may have had a positive impact

The 1997 Social Security reform, which replaced the pay-as-you-go pension system with one based on privately managed individual accounts and overhauled the health financing system, appears to have stimulated formal employment generation, mainly because of two reasons. On the one hand, the reform increased public contributions to the financing of both systems (as a basic pillar), effectively reducing the burden on employers and employees and introducing clearer incentives for them to make contributions "on top" of this basic pillar. In line with this, contributions in general were made more uniform across wage levels, scrapping the existing "levy" on human capital under the former system. On the other hand, the reform strengthened the link between contributions and benefits. For example, the portability of benefits across jobs increased in the pension system, which raised the incentives to contribute to the system and, thus, to become formal. Statistical analyses conducted for this report show that the formal sector grew more than the informal sector in the period right after the reform, which provides evidence that the reform may have had a positive impact on formal employment generation. Other studies conducted in the country, however, do not find evidence of this fact. Indeed, the statistical analysis shows that the formal employment grew 9 percent more than that of the informal sector in the period right after the reform (Table 4.6). While there are no significant differences by gender, estimates decrease with experience. The cost of becoming formal seems to increase with age. Primary and secondary educated workers appear to have benefited the most. Since poor workers are over-represented in those educational categories, these results imply that the poor may have been disproportionately affected by pre-reform rigidities and benefited more from the introduction of the reform than non-poor workers.

The reform was expected to primarily affect formal workers already receiving IMSS benefits. Using informal workers as a control group, a simple differences-in-differences estimator was applied to the data. Strong assumptions are needed in order to maintain the validity of this estimator. In particular, it is assumed that no changes in formal versus informal employment would have occurred without the reform. In other words, the relative cost of employment varies only because of the reform. A panel from

the ENEU, with observations before and after the reform was used. The panel starts in the last quarter of 1996 and covers all of 1997.

Table 4.6 The social security reform had a positive impact on formal employment
Differences in differences estimators of the 1997 reform, by sub-groups

Overall	0.092				
Men	0.097		**Women**	0.082	
Sch.	**Exp.**		**Sch.**	**Exp.**	
Primary	0-9	0.092	Primary	0-9	0.120
	10-14	0.119		10-14	0.198
	15-19	0.144		15-19	0.186
	20-.	0.074		20-.	0.059
Sec. Inc	0-9	0.208	Sec. Inc	0-9	0.184
	10-14	0.153		10-14	0.205
	15-19	0.148		15-19	0.068
	20-.	0.121		20-.	0.015
Sec. Comp.	0-9	0.176	Sec. Comp.	0-9	0.128
	10-14	0.331		10-14	-0.061
	15-19	0.019		15-19	0.028
	20-.	0.103		20-.	-0.137
College Inc.	0-9	-0.010	College Inc.	0-9	0.358
	10-14	0.383		10-14	0.798
	15-19	0.268		15-19	0.179
	20-.	-0.268		20-.	0.615
College	0-9	0.047	College	0-9	0.103
	10-14	0.172		10-14	-0.006
	15-19	0.022		15-19	-0.173
	20-.	-0.159		20-.	-0.152

Coefficients show the % change in formal employment attributable to the social security reform.
Source: Own calculations based on ENEU.

Box 4.1. The 1997 Social Security System Reform

Launched in February 1997, the Social Security Law or (*Ley de Seguridad Social, LSS*) introduced important and positive changes to the funding and provision of social security services. Estimates suggest that the reforms, which linked contributions more directly to expected benefits, had a positive relative impact on formal employment, especially of low-skilled and young workers, thereby improving the relative position of the poor.

As a result of the reforms, health insurance system established an almost-uniform contribution based on the minimum wage, eliminating the tax on human capital implicit in the former system, which varied payments according to salaries paid, even though the same services were available to all. Contributions above the minimum wage level were therefore seen by employers as an extra tax with no benefit attached. In scrapping this "levy" and sharply raising its own contribution (from 0.6 to 13.9 percent of the minimum wage per contributor) the government created a powerful stimulus for formal employment.

The pension system was also overhauled. Under the previous collective system the value of a pension depended on base salary and length of contribution time according to a complex and somewhat arbitrary table that was largely independent of the actual amount paid in. Under the new scheme, the country's private-sector employees must contribute to individual accounts through the private capitalization program. The contribution made by the federal government is an important innovation as it reduces incentive problems associated with combined systems that introduce individual accounts but still guarantee minimum pensions. Mexico's privately managed pension system is currently the largest in Latin America due to country's size, the major transition plan in place and the scope of the new program. By the end of 1997, Mexico's 17 *AFORES* (pension fund managers) had enrolled more than 10.5 million workers.

Despite the positive impact of 1997 reforms further major changes are needed to reduce Mexico's high non-wage labor costs and further tighten the link between contributions and benefits to promote formal employment. Non-wage expenses paid by the country's employers are estimated at 47 percent of the payroll (Hernández Laos 1998), the heaviest such burden in Latin American apart from Colombia (53 percent). Chile (21 percent), Argentina (around 40 percent), and Brazil (35 percent) all display lower non-wage costs. In Mexico, the areas that require attention include housing programs which constitutes a sizeable 5 percent of the payroll and premia to cover professional risks.

PROGRAMS FOR THE UNEMPLOYED – BETTER TARGETING COULD IMPROVE IMPACT

The government has a number of active labor market policy interventions, mostly offered by the *Secretaría del Trabajo y Previsión Social* (STPS). These include occupational training programs, labor intermediation services and direct and indirect job creation programs. A study of these programs, based on official and academic research already produced, was conducted by Montes and Santamaría (2004) and is summarized below.

Occupational Training Programs

The poor have relatively little access to training programs. Occupational training programs are key for helping labor supply keep up with the changing demand. Because firms' investment in training is generally insufficient, the role of the state is important in providing financing and a regulatory framework that provides workers, in particular the poorest, with tools to remain competitive in the labor force. However, in Mexico, the distribution of occupational training services is very unequal (World Bank, 2000): from the poorest 10 percent of the population, only 1.5 percent has attended some training program, whereas among the wealthiest 10 percent, the participation rate is 32

percent. This can be partly explained by the fact that the poor are mainly employed in small or informal firms, which rarely provide training. Evidence suggests that only 17 percent of the poorest workers who received training did so in the firm where they worked. Results also show that those programs with larger private sector participation (either privately offered training courses or courses offered in firms) obtain the most positive results.

The *Programa de Apoyo a la Capacitación* (PAC) subsidizes the hiring of independent instructors. Efforts are made to match firms with local training providers that correspond to their needs. Participant firms exhibit increased investment in training, improved labor productivity, higher capacity utilization rates, reduced personnel rotation, and improved production techniques, among others.

The effectiveness of the *Sistema de Capacitación para el Trabajo* (SICAT) varies greatly across sub-programs and regions. For instance, where there is a large participation of private institutions in the provision of training courses, results have been very positive (Calderón and Trejo, 2003). In medium and large enterprises, SICAT has had a positive impact on participants' income and employment and the implementation of training programs has helped these firms' courses' curricula to remain relevant. However, evidence suggests that in some cases, firms have used these programs as a substitute for personnel rotation, and that the evaluation of the programs objectives' fulfillment has not always been properly conducted, in which cases, the implementation of operational rules should be enforced. On the other hand, results have not been so positive in small and medium enterprises, which are precisely the firms that need the most assistance to innovate and promote workers' training, as well as the ones exhibiting very high rates of personnel rotation (De Ferranti, et al., 2003). In this type of firm, the emphasis should be placed in the selection of instructors, which seems to be more relevant than in larger firms. The self-employed do not seem to have benefited as much from the program. Evidence indicates that a larger participation of private institutions would be desirable, as they offer more flexibility to choose training courses that best suit individuals in this highly heterogeneous group.

The government has taken the right steps in promoting programs that are based on the distribution of vouchers since that allows choice by beneficiaries. Although no evaluation has yet been conducted of voucher-based programs, the introduction of this element in the programs mentioned above could greatly improve their quality and relevance by introducing competition among private and public providers. More generally, it would be beneficial to improve the targeting and relevance of occupational training programs, so that they effectively facilitate poor workers' access to better jobs. Training programs for youth should be designed to address the specific needs of young workers and ease the transition between school and the labor market. It is imperative that such policies stipulate a transparent use of training funds to avoid corruption, as well as promoting competition among private and public training

providers. State monopolization of occupational training results in training courses that do not respond to demand.

Labor Intermediation Services

Efforts in education and training can be complemented by the strengthening of labor intermediation services to increase the access of poor, low-skilled workers to labor market information and give them access to networks and connections that may boost their chances of finding good jobs. Labor intermediation services should be designed to facilitate the matching of candidates with vacancies and the referral of workers not only in the formal sector, but also more unregulated forms of employment, such as micro enterprises, self-employment, and small business development, which, as mentioned in the Chapter, employ a large share of the urban poor and typically have more restricted access to labor market information. Though the experience with current programs and the innovations introduced by the government recently, such as CHAMBATEL or CHAMBANET, has been generally very positive, evidence suggests that in practice, these programs are more accessible to skilled workers than non-skilled workers, or are designed to cover the unemployed who used to work in the formal sector (SAEBE). The utilization of public resources by people most likely to find jobs, even without these programs, undermines the effectiveness of labor intermediation services and reduces their social benefits.

Worker placement in current programs is fairly high, but targeting could be improved. Results indicate that the level of worker placement of current programs is 33 percent of the effective demand, a percentage that would be lower if the population that has no access to these services was taken into account. Compared with other countries' experiences (30 percent in Chile, 10 to 25 percent in Europe), this level of placements can be considered a success. An evaluation of the SAEBE in 2003 showed that workers with very low education levels, the youth, the elderly and those with the largest number of dependants (a possible proxy for the poor) were among those who benefited most from the program. These results suggest that a broader application of the benefits of SAEBE could increase the level of effectiveness and transparency in the use of resources. Such change in the program will probably present operational challenges, however, that should be resolved in the framework of the *Servicios Estatales de Empleo* and access to an increased budget. More generally, a greater emphasis should be placed on targeting the neediest groups, such as the low skilled, the poorly educated, the poor or victims of discrimination, who typically face the highest barriers to job market entry.

Direct and Indirect Creation of Employment

Many of the labor market policies currently in place have been designed in conjunction with policies to combat poverty, such as the support of micro-enterprises. Programs designed to finance micro-enterprises in general yield positive results,

although they present operational challenges. The private sector needs to play a larger role in advising and training firms chosen by the state to receive financial help. Programs designed to finance micro-regional projects also produce positive results, as proved by the *Proyectos de Inversión Productiva* and would also benefit from active private sector participation. The promotion of lucrative private activities in areas where funds are applied, such as the coordination between micro-enterprises and larger firms, could also be beneficial. Employment creation should focus on those groups that have the biggest difficulty in accessing job opportunities. This practice should be carried out with caution, though, as a broad application of the same could lead to inefficiency and corruption.

CONCLUSION

The poor's employment situation worsened in some respects during the 1990s. The preceding analysis of the relationship between labor markets and poverty in the main 16 urban areas of Mexico shows how developments in the labor market affected the employment opportunities of poor workers between 1987 and 2003. The poor's human capital endowments and characteristics (both observed and unobserved), combined with economic trends, low total factor productivity, and institutional factors, caused a significant deterioration in poor workers' employment - and consequently income - at least until 1996. The second half of the period in view presented an improvement in the situation of the poor. But the recovery is not complete and further attention and policy interventions are required.

During the period analyzed, poor workers were increasingly concentrated in sectors with meager performance and slow growth. Most of the poor were in low quality occupations, such as low-end self-employment (SEWI). A 40 percent increase in the share of poor households in this category resulted in significant decline in returns to labor. Although income levels dropped significantly across the board after the Tequila crisis, the wage and unemployment declines were larger than average for low-skilled workers, triggering a surge in poverty that peaked in 1996. Results showed that labor demand fluctuations largely account for the two very different trends that low-skilled workers' remunerations followed before and after 1996. Between 1991 and 1996, the relative demand for high-skilled workers increased, mainly as a response to technical change. Additionally, sectors that employed low-skilled workers contracted, resulting in a drop in the demand for low-skilled workers as well as in their relative wages.

After 1996, relative demand for low-skilled workers expanded and fell for the high-skilled. This change in labor demand, coupled with a large increase in the supply of skilled workers (especially women), resulted in a significant improvement in the relative remuneration of the poor. Wage levels recovered after 1996, but the improvement was not sufficient to regain the levels of 1991, especially for the very poor.

However, lower wages were partly compensated for by an increase in poor workers' participation in the labor market.

Institutional factors in Mexico's labor market appear to have played an important role in curtailing formal employment opportunities, particularly for the poor. However, the 1997 social-security reform may have relaxed labor-market rigidities somewhat. The analysis of worker and job flows in the formal labor market shows them to have accelerated in recent years coinciding with the introduction of the reform, thereby suggesting that costs may be falling. These results, combined with evidence that transitions to and from the formal sector are becoming more common (Budar and García-Verdú, 2004), indicate that the labor market is becoming increasingly fluid. Furthermore, although formal employment growth rose substantially in 1997 when the reform was implemented, this phenomenon was not observed in large or manufacturing establishments, indicating that the changes in employment occurred largely in firms more likely to employ poor workers.

In addition, the country's low total productivity growth is affecting poor workers' ability to access better quality jobs and thus improve their labor earnings. Sluggish productivity growth is slowing overall economic growth, hampering competitiveness, and jeopardizing Mexico's ability to take advantage of the opportunities created by NAFTA. The fact that Mexico's labor market seems to be losing its ability to adjust to output shocks through wages combined with Mexico's declining ability to improve factor productivity may seriously hurt the country's competitiveness in international markets, particularly the US.

Rising unit labor costs in 1999-2001 threatened competitiveness and long-term sustainability of job creation. In that period, real wages have been steadily rose in spite of declining GDP and low labor productivity. As discussed in Section II, Mexico was able to remain competitive in the US market until 1998, despite slow TFP growth, thanks to its low dollar-denominated wages. However, the country's increasing vulnerability became evident during the last recession, when wages and unemployment increased in spite of a large GDP fall, affecting export-oriented firms in a disproportional manner. If factor productivity is not improved, it will become increasingly difficult for Mexican exporters to remain competitive abroad, which can have negative repercussions for the labor market as a whole, and particularly the poor, who have greatly benefited from export growth since 1996. With reduced wage flexibility and continued low TFP growth, the low unemployment that characterized the country until the late 1990s will be more difficult to sustain, right at a time when labor participation, particularly among the poor, is increasing.

Policies that foster the expansion of export sectors, together with targeted interventions to favor productivity growth in small and informal firms, could increase the better jobs open to poor workers. However, for any such policy to work, it must address issues that constrain productivity growth. Furthermore, because the current low

levels of productivity growth are a major hurdle for formal sector expansion, improving productivity would go a long way toward increasing formality and, consequently, enhancing the access of poor workers to better quality jobs.

An important step in this direction is to improve the investment climate by raising the quality of institutions and services for business, and simplifying the regulations and procedures for company registration, functioning, and growth. Deepening the 1997 social security reform in the areas where there is still room for action could further smooth out labor-market rigidities, while continuing to facilitate formal employment (one such areas is, for example, the contributions to the housing fund, which are almost completely de-linked from benefits). In addition, labor provisions that hinder productivity growth, such as hiring modalities and promotion-related provisions, dispute settlement mechanisms, and termination of employment and severance payments (both individual and collective), should be addressed soon.

Current hiring modalities, which reflect the excessive emphasis of Mexican labor regulations on job stability, depress formality and productivity growth. More flexible hiring modalities could be introduced to eliminate disincentives against hiring young workers and women and facilitate their insertion into the labor market. In addition, extending fixed-term contracts could be beneficial, particularly for informal workers and firms that could transition into formality. Regulation of promotions should be eliminated, at least for private workers. Regarding the dispute settlement mechanism, there is ample agreement that it is not working properly, but little consensus on the best way to reform it. Among the agreed priority areas of action are: changing the composition of the *Juntas de Conciliación y Arbitraje* and making them more independent; introducing effective incentives for agreement between employers and employees (deadlines and some regulations on how the decisions should be made, for example); and revising the current regulations to discourage the initiation of disputes.

The simplification of onerous and costly dismissal and severance-payment regulations is crucial for improving labor productivity and transparency. Such regulations tend to generate high degrees of uncertainty for employers and workers and effectively hamper the efficient use of labor along the business cycle. The distinction between just and unjust dismissal should be discontinued and severance payments should be set at lower levels. Given that the system of unemployment protection currently in place (severance payments) neither protects informal workers, nor provides adequate service to its target population, formal workers (Dávila, 2001), a more inclusive labor protection scheme should be developed, that covers the most vulnerable and does not distort the functioning of the labor market. This could be jointly funded by employers, workers, and the government through individual accounts to provide supplemental income during job-search periods, thus facilitating easier labor market adjustments. If eligibility is well defined and costs are reasonable, this type of system may encourage employers and employees to register contracts that they might not otherwise.

More generally, it is vital to develop a system of social insurance that effectively protects the poor. The current health and pension systems, which are designed to cover formal workers and exclude most of the poor from sufficient income protection during a health shock or in old age, should be re-designed to ensure that poor workers – formal and informal – receive adequate coverage. This calls for exploring ways to expand coverage, either by adding benefit programs for the informal sector, or by de-linking social security benefits from labor-market status and moving to a single benefit system with universal coverage. Funding could involve a combination of redirecting subsidies away from the non-poor (i.e. reform of IMSS/ISSSTE) and public funding.

Increasing household-member participation in the labor market effectively improves the household's income level, yet female participation rates in Mexico remain among the lowest in Latin America, despite some increase that took place during the period considered. It is imperative to implement programs that foster the integration of female workers into the labor force, as well as to expand those currently in place to ensure provision of services, such as childcare, which facilitate women's participation in the labor force. As such, the introduction of training programs for women and childcare facilities in the *Mujeres Jefas de Familia* part of the overall *Hábitat* program is a welcome initiative (see chapter 2 for discussion). Beyond these policy solutions, the root causes of the low female participation rate should be examined, as it is possible that some degree of cultural bias, discouraging women's participation in the labor force, is further obstructing progress needed on this front.

Providing poor workers with opportunities to improve their skill levels, as well as facilitating their access to information on job prospects could greatly expand their access to decent jobs. As mentioned in this chapter, the ability of poor workers to get better jobs is greatly hampered by their endowments and limited access to labor market information. Evidence presented in the Chapter indicates that returns to higher education helped to improve the poor's relative situation in distributional terms, in spite of their limited ability to access this level of education. To a large extent, the limited enrollment of people in higher education results from the low demand for it, which in turn reflects problems in secondary education, particularly in terms of coverage and quality, which should be addressed. Educational policies should be designed to improve the quality and coverage of secondary schooling, as well as to deepen efforts already underway that promote access by the poor to tertiary education. These efforts could be complemented with incentives to make it more feasible for the poor to obtain higher education, such as the provision of a combination of credits and subsidies to cover tuition and associated costs along the lines of the process carried out under the loan financed by the World Bank. *Jóvenes con Oportunidades* is intended with this purpose (Chile and Colombia also offer some interesting experience in this regard).

Occupational training and labor intermediation services targeted to the poor need to complement efforts at increasing education, especially in the short to medium

term. Increasing access to higher education alone, however, will not improve the situation of the poor, as the benefits of education take time to appear. Moreover, since the skill premium has fallen since 1996, such initiatives cannot be considered a silver bullet for improving the situation of the poor. Thus, occupational training and labor intermediation services can be instrumental in helping the poor in the short to medium terms to access decent jobs. A recent analysis of current government programs (Montes and Santamaría, 2004) suggests that the poor are not the main beneficiaries of current programs. A staged approach should therefore be adopted, including a more comprehensive evaluation of existing programs, with an assessment of what works best to help the poor access better jobs in order to help determine which programs have the greatest impact, and therefore should be continued and/or revamped, and which ones are contributing insufficiently, and thus should be reformed.

Safety nets are needed that protect the urban poor and help them mitigate risks, particularly in times of crisis, given that the current unemployment protection system only protects formal employees and that the Mexican labor market may be increasingly absorbing output shocks through employment rates (and consequently higher unemployment rates). A scheme to protect workers confronted with unemployment mentioned above could be part of this. In addition, programs that particularly target the poor in times of crisis should be designed. Workfare is one approach commonly used - indeed Mexico had one such program operating in rural areas until quite recently (*Programa de Empleo Temporal* or PET). Chile, Argentina, Thailand and Korea are countries that have successfully relied on workfare programs to cope with the impact of macro-economic shocks. Box 4.2 describes Argentina's *Trabajar* program, which was widely considered an effective design, while Box 4.3 discusses what experts agree are the key features of good workfare programs.

Box 4.2. Trabajar: A Good Example of a Workfare Program

Trabajar, a workfare program, was established by the government of Argentina in 1996 to help address a sharp rise in unemployment. The program aimed to help through the provisions of short-term work at relatively low wages as well as through the execution of small infrastructure facilities in poor neighborhoods. Subprojects were proposed by local governments and NGOs who had to cover non-wage costs. Subprojects were designed to be labor-intensive and relatively small with average project size of less than AR$100,000 and employing an average of 20 workers. The projects were chosen on a competitive basis according to a points system set by the center. Points were given according to the poverty rate for the municipality in which the proposed project was located, the type of project proposed (usually rehabilitation, expansion, and new construction of community or public infrastructure such as water, sanitation, housing, roads, schools and health centers), willingness to work for a wage below the maximum and how much the area had already received from the program.

The wage rate was set at the same low level for urban and rural areas - AR$200/month which was lower than the average monthly earnings for the poorest 10

percent of households in Greater Buenos Aires (AR$263). In 2000, wage rate was further lowered to AR$160/mo, which is below the minimum wage. There was no legal impediment as the payment was termed "economic assistance" rather than a wage. Skilled and semi-skilled workers needed to execute the projects were hired as "foremen" and paid a slightly higher wage. The program was initially restricted to heads of households but this was changed so that the only requirement for participation was to not be receiving unemployment benefits or be participating in any other employment or training program. *Trabajar* was found to be well targeted with the distribution of gains decidedly pro-poor: 80 percent of participants were from the poorest 20 percent of families nationally and 50 percent from the poorest decile. The relatively low wage clearly made the program unattractive to non-poor. Targeting performance was evaluated early on in the program, and adjustments were made to improve in the less well performing provinces.

Trabajar encountered a number of difficulties in larger municipalities (*e.g*. 100,000 or more). First, large municipalities found it to difficult to insert *Trabajar* projects -the review and evaluation of which occurred on a monthly basis- into municipal and master plans that had already long been formulated and which mostly included fairly complex works. In addition, *Trabajar* projects were small and larger municipalities found they needed larger projects that could fit into the large-scale projects that made up their capital investment plan. Also, in larger municipalities, infrastructure projects fell under the purview of the public works agencies, not the social assistance agencies, as was the case for smaller municipalities and often the public works agencies simply felt the benefits from a *Trabajar* project did not outweigh the cost of proposing and implementing one. Finally, larger municipalities found it easier to contract out the work rather than employ low skills workers in need of more supervision.

The *Trabajar* program staff had developed a proposal to address these issues which involved changing the project cycle for larger municipalities so they would have an opportunity to work with a projected financial envelope of *Trabajar* funds, and integrate them into master plans, as well as to allow financing of a series of small stand-alone projects that could be part of a larger infrastructure project. These changes were never implemented, however, since the new government replaced *Trabajar* with the *Jefes de Hogares* program. It should be noted, however, that *Trabajar* program was still successful in large urban areas: there was always 100 percent uptake and demand for projects outweighed supply.

Source: Fay, Cohan and McEvoy (2005), Ravaillon (2000), Jalan and Ravaillon (1999).

Box 4.3. The Key Design Features of a Good Public Works Program

The following are the key features that need to be included in a workfare program for it to realize its full potential as a poverty-reducing and risk-coping instrument:

- **Wage level.** The wage rate should be set at a level which is no higher, and preferably slightly lower, than the prevailing market wage for unskilled manual labor in the setting in which the scheme is introduced.

- **Eligibility**. Restrictions on eligibility should be avoided; the fact that one wants work at this wage rate should ideally be the only requirement for eligibility. In particular, eligibility should not be restricted to household head – which constrains families own adjustment (Ravallion, 1999) and reduces workfare's effectiveness in cases where the shock is felt through a decline in real wages rather than through unemployment. In case where resources are limited some clear secondary targeting or rationing rule might be needed. Options include limiting eligibility to one person per family (but still allow the family to pick the person) limiting duration of job; limiting jobs to families with dependents; community based targeting for who gets the jobs; periodic lotteries, etc.

- **Labor intensity.** The labor intensity (share of wage bill in total cost) should be as high as possible. The level of labor intensity will depend on the relative importance attached to immediate income gains versus (income and other) gains to the poor from the assets created. This will vary from setting to setting. Generally speaking, unskilled labor costs account for 40 to 60 percent of total project costs on a large and diverse portfolio of high value works (the balance being skilled and semi-skilled workers, equipment and materials and administrative costs). It is possible to raise this share but this usually implies restricting the portfolio of works and/or limiting the return on the work.

- **Female participation.** Provision of childcare or preschool services can improve participation by women (as well as provide employment opportunities for them). Also, women tend to benefit from piece rates or task-based wages, since that allows them to combine the work with their responsibilities at home.

- **Targeting of projects.** The projects should be targeted to poor areas and try to assure that assets created are of maximum value to poor people in those areas. Any exceptions -in which assets largely benefit the non-poor- should require co-financing from the beneficiaries and this money should go back into scheme's budget.

- **Timing**. In larger municipalities projects design needs to take into account the fact that municipal and master plans are annually determined and include fairly complex works that municipal authorities preferred to contract out. Options to address these issues were developed in the Argentine *Trabajar* program and included changing the workfare cycle to allow the municipalities to work with a projected financial envelope of *Trabajar* funds and developing a series of small stand-alone projects that could be part of a larger infrastructure project (Fay, Cohan and McEvoy, 2004).

- **Sustainability**. Sustainability of the assets created requires that the program includes an asset maintenance component.

Source: Adapted from Box 1 in Subbarao (2003) except where otherwise noted.

5. BUILDING UP BUFFERS AND STEPPING STONES: ASSET ACCUMULATION AND ACCESS TO FINANCIAL SERVICES[62]

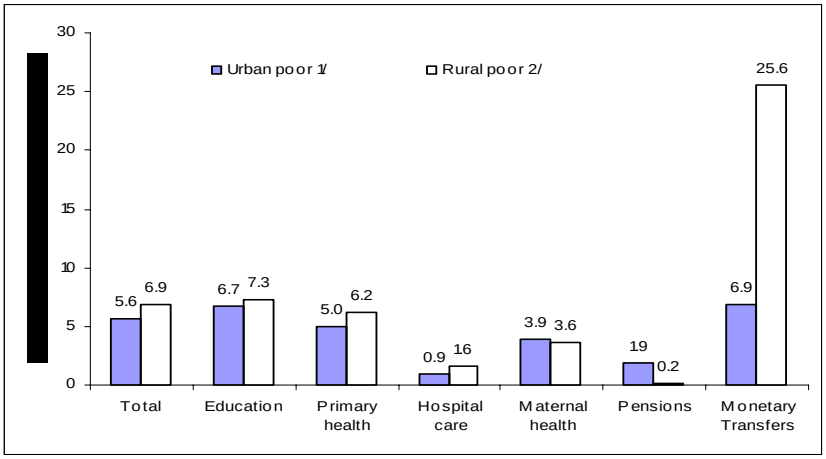
Assets are at the core of households' strategies to survive, meet future needs, improve their lot, reduce exposure to shocks or minimize their consequences. And despite being constrained by limited income and few adequate saving mechanisms the poor do save – how else would they cope with shocks and the occasional need for lump sums of money?[63] It can be potentially devastating for a poor household to stand without savings. Indeed, analysis of spending adjustment during the peso crisis suggests that poorer households cut primary health care spending in order to deal with other needs deemed more pressing (McKenzie, 2003). Apart from the direct negative effects on well-being this could have potentially serious effects on individual and household survival over the long run.

Savings are particularly important to Mexico's poor, who, as discussed in the previous chapter, are still largely excluded from public social insurance. Unemployment benefits and pensions are usually directed at employees in the formal sector and as such exclude the vast majority of the poor – indeed only about 22 percent of poor urban workers have social security. Thus, the poorest ten percent in urban areas receive only two percent of all public resources spent on pensions insurance and less than one percent of resources spent on hospital care; they receive only seven percent of monetary transfers (Figure 5.1). As a result, the household's own assets remain the principal mean to preserve consumption against income shocks or over the life cycle.

[62] This chapter was written by Marianne Fay and Sara Johansson, and benefited from input from Anna Wellenstein.

[63] Other motivations for accumulating assets include savings for predictable future expenditures related to lifecycle needs, to accumulate resources for potential future opportunities such as investing in a business or acquiring a house, or to leave bequests to friends and family (Matin, Hulme and Rutherford, 1999).

Figure 5.1 Social programs do not favor the poor
Urban and rural poor's share in total (urban and rural) public expenditures in social sectors



1. First decile. 2. Decile 1-3. The first urban decile and the bottom three rural deciles correspond to roughly the same population share (about 7.5 percent), all of whom are people under the extreme poverty line. While this graph cannot be used to conclusively argue whether the allocation of resources is optimal between rural and urban poor (other measure such as the poverty gap may be needed) it does suggest that it is probably roughly appropriate. More importantly, it does show that the poor still receive a small proportion of overall social expenditures – especially in the form of pensions and health expenditures.
Source: own calculations based on data from the Public Expenditure Review 2004 (World Bank, 2004).

As discussed in the companion study on social protection, the Mexican government is aware of this problem and is trying to improve the reach of safety nets. In addition, it is placing increasing emphasis on asset building in its newer anti-poverty programs. Thus *Oportunidades* aims to develop human capital in both rural and urban areas; and *Hábitat* is an urban program that focuses on physical assets (homes and infrastructure) while developing social capital in poor urban communities.

This chapter focuses on the physical and financial assets of Mexico's urban poor, the role they play in their coping strategies and how government programs can foster more and better asset accumulation by the poor. Other types of assets are discussed elsewhere in the report: social capital and its importance in poor *barrios* in Mexico was discussed in chapter 3; human capital, which conditions poor urban households access to jobs and the quality of jobs they can access was addressed in chapter 4 on labor markets as well as in chapter 2, in relation to vulnerability and coping strategies. As to natural assets, since they are less important in the urban economy than in the rural one – common property resources are rare and households are integrated into the monetary economy – they are not directly discussed here.[64]

[64] There is nevertheless evidence on the importance of urban and peri-urban agriculture in providing access to food and incomes for the poor (Bakker 2000), pointing to the importance of access to land for more than housing purposes.

The perspective on asset building differs between urban and rural areas. First, as shown in chapter 2, urban residents tend to be particularly vulnerable to macroeconomic shocks and in need of some type of buffer against such fluctuations. Second, cash availability is crucial to coping with shocks (to ensure food security or pay for health care), more so than in rural areas where the local economy tends to be less monetized. Third, policy challenges differ. For example, informal savings or micro-credit institutions may find it easier to enroll clients in urban areas compared to rural areas due to higher population density; on the other hand, enforcement problems are greater due to greater mobility and looser social ties within urban areas. These differences call for differentiated approaches to institutions and policies.

A main tenet of this chapter is that the poor's asset portfolio could be improved to provide better insurance and higher returns. Clearly the poor's capacity for building assets is constrained by their lack of resources. But the mix of assets and their return is also at a sub-optimal level due to constraints on the supply-side. Some assets are more suited to the specific needs of the poor than others, but are presently not accessible, and the returns, risk-level and liquidity of others could potentially be improved. This chapter looks at the two main forms of assets available to the poor – physical assets, mostly in the form of housing, and financial assets. Because of financial exclusion, the poor tend in fact to over-invest in housing and under-invest in financial assets that, if tailored to their needs, could better meet their particular needs (Box 5.1).

The chapter is organized as follows. Section I examines physical assets, focusing mostly on the housing market from the perspective of asset building. Section II reviews the poor's access to financial services identifying the key barriers to better access. The final section provides recommendations as to how public policy can support better asset building strategies of the poor by removing some of the most important supply-side constraints.

Box 5.1. What makes for a good asset for the poor -and are the assets of the poor good?

For assets to perform their primary function as a store of value they should provide *adequate returns*. Inflation presents the largest threat of depreciation for financial savings. For physical assets, such risks depend on the depth and volatility of the secondary market on which the asset is liquidated. Poor households generally have a higher share of low-return assets than others, because high return assets may not be available to them, because of risk-aversion, and because some of these assets offer non-monetary returns, including building social capital and the possibility to access credit in the future.

Good assets for the poor also allow for *high frequency operations of limited size without high transaction costs, and for flexibility*, to help the poor manage small balances and deal with cash flow problems. This is particularly important as they have limited access to formal financial savings and credit instruments. Examples of assets which offer the

possibility of high frequency operations are rotating savings pool such as the *tandas* to which 20 percent of urban Mexican households belong (see discussion below).

Financial exclusion and the reliance on informal financial tools and physical assets are likely to result in portfolios whose return and liquidity characteristics do not compare favorably to those of the better-off. The poor -generally save in physical assets – housing as well as consumer durables – and those financial assets available to them. How do these correspond to the requirements listed above?

Consumer durables (furniture, consumer appliances, bicycles) offer the opportunity of investing relatively small balances, and are highly liquid as they can be easily pawned or resold. Further, where labor is cheap, durables life and its value as an asset can often be extended with small improvements and repair.

Housing is likely to be the most valuable single possession owned by poor urban households. Most poor urban homeowners rely on "progressive housing", whereby they first acquire a plot, legal or not, build a shack and then gradually improve upon it as resources become available. This process allows households to make small incremental investments over time. It also frees them from the constraint of having to generate a fixed sum for rent every month – especially important at times of crisis. Furthermore, housing services can be monetized quite easily, by taking renters or additional household members in. Yet, as an asset, housing has some important negative aspects. Most importantly, it is unclear how liquid or buoyant housing markets are, particularly in poor neighborhoods.

The main motivation for using *financial assets* tends to be risk management rather than expected returns. Lacking access to formal insurance, the poor typically rely on a combination of savings and credit as alternatives. Formal financial institutions are generally not geared towards low-income clients who instead rely on various informal savings and credit mechanisms. Although these may offer important advantages in terms of flexibility, returns tend to be low. In fact, while the micro-finance "revolution" has increased the poor's access to credit somewhat, no similar progress has been made for savings instruments. Yet, surveys show that a saving account is the product that un-banked people are most interested in (after payment services -World Bank, 2003a and 2003b). Living in poverty in an urban slum it is very difficult to protect savings from theft, inflation or the demands of everyday living. And because the poor tend to hold their financial savings in cash or in informal arrangements they tend to be less protected than the rich against macroeconomic instability.

SAVINGS STRATEGIES OF POOR HOUSEHOLDS

Savings are notoriously hard to measure, and even more so for the poor. First, because income is hard to measure in general (it is usually underreported in surveys) and the poor rely more than the rich on self-employment and self-produced goods, the value of which is difficult to estimate (Kochar, 2000). Second, assets may have both

consumption and investment value -the poor save by accumulating anything from consumption goods (such as food) to semi-durable (such as clothing) to durable goods (such as furniture, equipment or housing), as well as cash or contributions to informal institutions or networks of reciprocal obligations.[65]

Table 5.1. The poor are less able to save out of their income than the non-poor
Median savings rates by level of education 1994 and 1996

1. Savings excluding spending on consumer durables			
	1994	**1996**	**% change**
No schooling	5.8	-0.1	-101.7
Primary incomplete	6.8	0.7	-89.7
Primary complete	6.9	1.5	-78.3
Secondary incomplete	6.9	2.4	-65.2
Secondary complete	7.6	5.8	-23.7
Higher education	13.0	7.0	-46.2
2. Savings including spending on consumer durables			
	1994	**1996**	**% change**
No schooling	7.4	1.5	-79.7
Primary incomplete	8.0	2.6	-67.5
Primary complete	8.3	2.7	-67.5
Secondary incomplete	8.6	3.5	-59.3
Secondary complete	11.4	9.9	-13.2
Higher education	15.6	10.3	-34.0

Note: Does not capture forced savings (e.g. contributions to pension schemes) or savings in the form of housing.
Source: Adapted from Székely (1998).

Keeping these caveats in mind, the available evidence confirms that indeed, in Mexico, even the very poor do save. Table 5-1 shows that prior to the peso crisis, the savings rate of the very poor (as proxied by education) was around 6 percent, increasing by about one percentage point if consumer durables are included.[66] This is clearly much less than better off households with savings rate more than twice that amount. Nonetheless, it does confirm the central premise of this chapter – which is that the poor do save even in the face of limited resources and savings instruments.

[65] As Matin, Hulme and Rutherford (1999) put it, the poor have three common methods in which they get access to the lump sums they need: selling assets they already hold (or expect to hold); taking a loan by mortgaging or pawning those assets; turning their many small savings into large lump sums –through savings deposits, through loans or through insurance.

[66] Education levels, which tend to be strongly correlated with income and consumption levels, can be considered a better proxy for permanent income levels than current income, due to measurement issues arising from e.g. underreporting. Székely (1998).

Table 5-1 also shows the poor less able to maintain their saving behavior in the face of serious crisis. Median savings rates were decidedly lower in 1996 after the peso crisis for all households, but the reduction was much more severe for poorer households, whether consumer durables are included or not.

The remainder of this chapter looks at housing and financial assets in the asset management strategies of Mexico's urban poor. While consumer durables, as mentioned in Box 5.1, are likely to play an important role in the savings strategies of the poor, there is very little evidence on Mexico. What is available, suggests that during the peso crisis adjustment in durables spending played an important part in the coping strategies of the poor: the poorest households saw significantly larger reductions in spending on consumer durables relative to non-durables than did richer households (McKenzie, 2003).

HOUSING - THE KEY PHYSICAL ASSET OF URBAN POOR

Homeownership, at 66 percent, is high among Mexico's urban poor, almost as high as for non-poor (70 percent) (Figure 5.2). These findings are corroborated by an analysis of homeownership in 31 poor *barrios* across Mexico, where on average some 82 percent of households owned their houses (Box 5.2).[67] Most however acquire housing through informal markets. This is due to the fact that in Mexico formal housing is only affordable to people who earn more than 3 minimum wages – the middle class and above. As a result, half of all newly constructed housing in Mexico, and two thirds of the existing stock, are self-constructed (World Bank 2002a).

Figure 5.2 The poor are homeowners, too
Percentage of population living in households according to type of house occupancy

Source: Own calculations based on ENIGH 2002.

[67] Note that we would expect homeownership to be higher in poor neighborhoods than among poor households –in Latin América poor neighborhoods are dominated by newer settlements on the outskirts of town where self-help housing is the norm. On the other hand, as discussed in chapter 2, only about three quarters of the poor live in poor neighborhoods and the rest, who live in better off neighborhoods, are less likely to own their home.

The value of a house as an asset depends on the existence and characteristics of the secondary market for housing – which conditions its exchange value and liquidity – as well as on the flow of returns that it can generate. These are discussed in turn below.

Box 5.2. Distribution of homeownership and different types of tenure in Mexico's poor *barrios*

The survey of 31 poor *barrios* in Mexico's 31 state capital cities carried out by *SEDESOL* in 2003 and discussed in chapter 3 gives important insights into housing tenure in poor urban neighborhoods. It confirms the notion of poor neighborhoods developing informally with property rights and infrastructure acquired gradually over time.

Home ownership is very high, with 82 percent of households living in a dwelling owned by a member of their household. Most of this ownership is informal, however, with less than half (45 percent) of households with formal property rights – *escrituras* – to the land on which the house is built. Some regional differences emerge with the region along the Northern Border standing out with a higher percentage of home ownership than in other regions (86 percent) but fewer of them with titles (27 percent Northern border against 52 percent in the Centre).

Time, whether measured by the age of the house or the maturity of the settlement affects the probability of having formal ownership. Thus, the older the house, the more likely it is that the household owns both the building and the land it stands on: joint ownership of home and land increases from 37 percent for houses which are less than 1 year old to 71 percent for houses which are 10 years or older. Similarly, settlements with a smaller share of recent settlers (a proxy for the maturity of the barrio) have a greater proportion of fully owned houses, built on titled land.

Curiously, households who received credit or subsidies from government programs related to the dwelling were more likely to own their house, but not more likely to have a full title of the house.

Finally, less than one-third (30 percent) of the households in the sample report that some form of informal mechanism (individual or organization) exists to solve disputes over property rights. Thus, a large share of informal homeowners cannot resort to some arbiter institution if their property rights are contested.

Housing exchange value

There is unfortunately not much information on the resale housing market in poor neighborhoods – whether in Mexico or elsewhere. The presumption is that it is not very developed given poor households preference for progressive housing. The limited research available suggests that low-income settlements tend to be dominated by

a land rather than a housing market as low income households prefer to acquire land for self-help housing rather than finished housing (Gough, 1998).[68]

In addition, studies suggest that few of the homeowning households in these low-income settlements actually want to sell: the hardships suffered during acquisition and consolidation result in a strong attachment to the property (Gough 1998, Datta and Jones, 2001). In particular, research on low-income settlements in Querétaro and Toluca suggests that if low-income financing solutions were to come forth most poor households would prefer to improve their conditions in the present settlement rather than use the resources to move elsewhere (Datta and Jones, 2001).

Nevertheless, data is emerging that suggests that a resale market does exist for low-income housing even if it still is in its infancy. Thus, a study of informal settlements and regularization in Tijuana found that the share of houses that were paid and titled according to the census (49 percent) exceeded the share registered with government organisms (42 percent). This difference between "self-reported" title and formally registered title could possibly be evidence of the existence of an informal secondary market where houses are bought and sold in parallel to the formal market (Alegría and Ordóñez, 2004).

In addition, *SEDESOL* survey of poor Mexican *barrios* shows that a good share of new arrivals and recent movers purchase used housing: more than a quarter of the households that migrated in the last 5 years and own the home they live in are in a house that pre-dated their arrival; even more encouraging, three quarters of the home-owning households that moved in the last year moved to a pre-existing home. Note, however, that given the small number of households in the sample that migrated or changed homes recently this represents a maximum of about 3.5 percent of all owner-occupied homes in poor neighborhoods

The development of a secondary market for low-income housing is likely to be affected by the extent of limitations on new constructions and illegal settlements. The latter working against new arrivals but in favor of the older settlers. Other important factors are the availability of housing finance and possibly the strengths of property rights, discussed in turn below.

Most housing finance systems in Latin America work against the development of a secondary market for low-income housing -they typically exclude the poor and/or often financing for "used housing". In Mexico, the public housing institutions, such as

[68] The relative importance of the land and housing market may be linked to the age of a settlement Turnover is quite high in recently occupied settlements (especially invasions) where residents attempt to cash-in on the value of the land by selling the rudimentary shelters they have built to establish their claim. Subsequently, little exchange of houses takes place for decades after that because even in later stages of consolidation, most newcomers acquire land rather than finished housing (Datta and Jones, 2001; Gough, 1998).

the *Instituto del Fondo Nacional de Vivienda para los Trabajadores* (INFONAVIT), are starting to provide mortgage for used housing financing but they tend to target clients belonging to the middle class and above.

Security of tenure increases the exchange value of a house in several ways. First, recognized property rights contribute to creating a market. The *barrios* data discussed in chapter 3 points to this as the share of households who own a house that predated their arrival rises in older settlements – where supposedly more mature institutional arrangements prevail and property rights, formal and informal, are better established. Secondly, there is a presumption that prospective buyers would be willing to pay a premium in order to purchase something whose ownership is clearly established. This is supported by evidence from many surveys across Latin America and elsewhere. In Peru, for example, 64 percent of homeowners who acquired a title during the massive titling campaign that occurred in 1996-2001 consider that the title increased the value of their home (Mosqueira, 2003).[69]

Security of tenure also has additional indirect effects on the value of a home, through "neighborhood quality." This is particularly true in Mexico, where utilities, road and transport services cannot be provided until a settlement's status is legalized. More generally, evidence from Peru and elsewhere shows that more secure homeownership tends to result in homeowners investing more in their home, thereby contributing to the general improvement of the neighborhood.

Other factors that affect the exchange value of homes owned by poor people have to do with the characteristics of poor neighborhoods. As discussed in chapter 3, Mexico's poor urban neighborhoods are plagued by much greater crime and violence than cities in general. They are also more vulnerable to natural and environmental disasters. This is a notable issue in Mexico, which is particularly vulnerable to natural disasters, having experienced three yearly between 1980-1999. The 1985 earthquake in Mexico City, for example, cost some 10,000 lives alone. The urban poor, who tend to live in high-density areas with poor infrastructure and whose houses are of worse quality are disproportionately affected by such disasters: more than two thirds of the people affected by natural disasters are poor.[70] Finally, as discussed in both chapter 1 and

[69] Formal tenure can also affect the returns of the overall portfolio of resources by freeing up labor otherwise engaged in protecting insecure property rights and allows home businesses to move into more appropriate location. In Perú, formal titling increased labor force participation due to the reduced need for constant presence in the house (to demonstrate ownership), for participating in community groups and for filing administrative claims for formalization. This resulted in substantial increases in family income as well as in a significant decline in child labor, for which adult labor was substituted (Field, 2002; Mosqueira, 2003).

[70] Other countries also demonstrate the stronger effect of natural disaster on the poorest. Thus, in Honduras, Hurricane Mitch was more costly to the poor than the rich: the poorest quintile saw average asset losses of 18 percent, compared to 3 percent for the richest quintile. In metropolitan San Salvador and Tegucigalpa, about one fifth of the poor report having suffered damage from

chapter 3, access to services tends to be much lower in poor neighborhoods although access improves over time. But even where access is high quality tends to be low in poor neighborhoods. The *barrio* surveys point to this fact as three quarters of the households did report having water services on their property but only half of them actually got water every day of the week and every hour of the day.

Other returns to housing

Returns to housing as an asset include the flow of "housing services" it provides, some of which can be monetized in case of need by taking in new tenants or extended household members who share into the upkeep of the household. Indeed, the bulk of landlords in Mexico, as in the rest of Latin America, are homeowners who let out a room or a part of their house (Rakodi, 1995). While surveys and interviews with these small scale landlords suggest that this is not a very profitable way of investing their resources, renting is perceived as offering a number of benefits (Box 5.3).

Returns to housing can also materialize in the form of access to credit by providing collateral, although this is generally dependant on having formal tenure. In Peru access to formal credit increased from 7 percent to 42 percent among beneficiary households while recourse to informal credit decreased from 31 percent to 9 percent following the titling campaign (Mosqueira, 2003). No similar data is available for Mexico.

Box 5.3. Small-scale landlordism, how profitable is it?

Surveys and interviews with small-scale landlords in Guadalajara and Puebla, Mexico found them to believe renting is not a very profitable activity, yet one that offers a number of advantages. Renting out a room or a floor of their house generates resources for housing improvements. It also provides temporary income in times of needs and permits use of accommodations built to one day house a child's or relative's family. A number of landlords felt that rental accommodations could provide a modest income during the landlords' old age. Finally, many seemed to admit that beyond investing in bricks and mortar they did not know what to do with their limited savings. Thus a mixture of motives revolving around the family, old age and a lack of perceived alternatives characterizes the small-scale landlord.

Source: Gilbert and Varley, 1991.

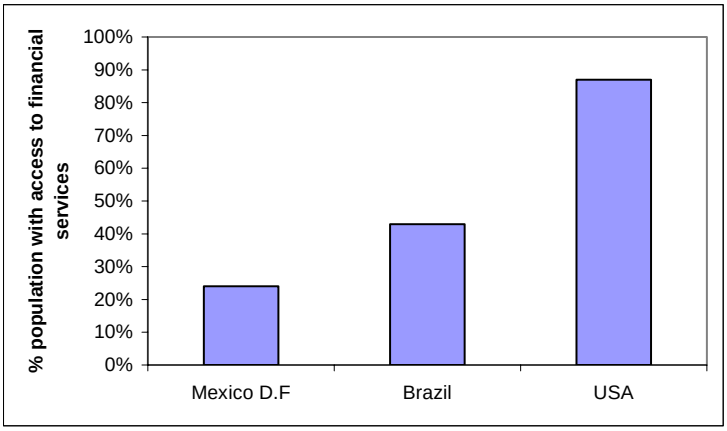
landslides in the last five years compared to 5 and 9 percent for the richest quintile (World Bank, 2002).

THE POOR'S ACCESS TO FINANCIAL SERVICES IN MEXICO[71]

A vast majority of Mexicans – rich or poor – do not use formal financial services. The banking crisis of 1994-1995 is still present in Mexico -bank credit to the private sector is still only a quarter of what it was before the crisis- and the financial market remains shallow relative to comparator countries. The banking sector's credit to the private sector amounts to only 30 percent of GDP in Mexico, compared to peer countries such as Brazil and Malaysia, where the ratios reach 51 and 145 percent respectively.

Indeed, the use of formal financial services is very low in Mexico by most standards: in a survey of households in Mexico City, less than 25 percent of the adult population reported using formal sector financial services.[72] In contrast, almost half of the adult population in Brazil, and nearly 90 percent in the US, have access to financial services (Figure 5.3). These findings were corroborated in a survey of households' use of banking instruments in Mexico's three largest cities (Mexico City, Guadalajara, and Monterrey).[73]

Figure 5.3 Use of Formal Financial Services Is Low In Mexico, Compared To the United States or Brazil
Percentage of population with access to formal financial services (Mexico City, Brazil, US)



Source: World Bank (2003).

[71] This section draws extensively on World Bank, 2003b.

[72] The usual household data sources do not collect information on use of financial services. Unless specified otherwise, the information regarding urban poor household's access to financial instruments therefore draws on a survey of Mexico City prepared for "Broadening Access to Financial Services Among the Urban Population: Mexico City's Unbanked", World Bank, Latin America and the Caribbean Region, 2003. The reader should note that access to financial services may be larger in Mexico City than elsewhere and so the survey probably *over*estimates access to financial services in urban areas in general.

[73] This survey covered a wide sample (45,000 households) in three cities (Mexico City, Guadalajara, and Monterrey). However, since its purpose was to collect information on people with access to banking services it is biased towards higher income groups and may not be fully representative of the population as a whole.

Unsurprisingly, exclusion is worse for the poor as access to financial services is strongly correlated with income. In the Mexico City survey, the median user of formal banking instruments belonged to the 8th income decile. For informal arrangements, such as participating in a savings club, a *caja popular*, or keeping cash at home, the median user belonged to the 5th or 6th income decile (Table 5-2).

Table 5.2. Use of formal financial instruments increases with income in Mexico City
To which income group does the median user of each type of financial instrument belong?

Type of financial instruments	Income group of median user (decile)
Informal Banking Instruments	
Tandas	5th
Savings at home	6th
Cooperativa or *Caja Popular*	6th
All informal	5th
Formal Banking Instruments	
Savings, debit card or AFORE account	7th
Checking account	9th
Investment account	9th
All formal	8th

Source: World Bank 2003.

What is more surprising is the extent to which the poor are "unbanked" in the sense of not even having access to a deposit account: over 90 percent of independent workers, workers without pay and the economically inactive were without formal financial services. This cannot be blamed on an inability to save -those without access to financial services are about as likely to own a home as those with access. This is in itself evidence of a capacity for asset accumulation – though the appropriate mechanisms may be lacking.

What alternatives exist for the poor?

The poor rely on a variety of alternatives to formal banking services. Apart from investing in housing and physical assets, discussed earlier, the poor generally resort to cash savings held at home; loans to and from friends and relatives; and to informal savings institutions. The latter take a variety of forms: *tandas, cajas de ahorro, clubes,* etc., described in detail in Box 5.4, but appear to have a limited reach: in the

Mexico City survey, only 30 percent of those who did not have access to formal financial mechanisms reported holding some form of financial savings with informal institutions. Notably, these informal mechanisms were also used by people who did hold bank accounts. The *cajas* in particular seem to be almost exclusively used by people in the upper end of the income distribution.

These informal savings or loans systems rely on personal trust and confidence in other people and tend to offer low returns. Of the various informal savings mechanisms used, only the *cajas* offer positive – and often quite high- returns to the savers, but again, the scarce evidence available suggests that poorer clients do not use, or have access to, *cajas*. Other mechanisms used offer no opportunities to accumulate financial savings in ways that maintain the purchasing power of those savings.

For the poor, the most common source of credit indicated in the survey was commercial stores, followed by informal institutions as described above, together with loans from friends and family. The poor in Mexico City are highly unlikely to borrow from formal banks. Non-bank credit terms tend to be high, however: grocery stores offering credit for food purchases charge the equivalent of 30 percent monthly interests rates, chain stores consumer loans (typically for consumer durables) charge some 15 percent on a monthly basis. Note that the latter is relevant even for the poor - four-fifth of them own a television, about half own a fridge and around a third a washing machine *(Oficina de la Presidencia, 2003 Impulso).*

Box 5.4. Informal savings institutions in Mexico

Tandas are rotating savings pools that operate as both loans and savings instruments. A *tanda* might work as follows: a group of 20 people agree to contribute MX$200 a week to a common pool for 20 weeks. Each week the proceeds are given to one member of the pool (who doesn't contribute that week) so that those at the beginning of the pool effectively receive a loan which they pay off equal monthly installments until the end of the cycle. Those who receive money at the end of the cycle have effectively been saving with each pool contribution until the final withdrawal. From anecdotal evidence it appears tandas are usually made up of 5 to 20 "partners" each contributing US$10 to US$20 on a weekly or bi weekly basis. The prevalence of tandas in low-income communities provides stark evidence that the poor have both the capacity and the willingness to use financial services, even with small amounts. Some quotations from tanda participants follow: "My tanda is sacred. I cannot fail to make a payment because it hurts the others"; "I participate only if I know I can fulfill my obligation. I'd rather not eat than fail to make a payment"; "My savings are small but drop by drop they make a puddle. In the bank they want us to save large quantities and they ask for a lot of papers. I prefer my tanda".

Clubes are managed by commercial stores and follow the same scheme as the tanda in which a group of individuals make regular and equal payments, in this case to the store and in this case the "pot" is not cash, but a specific article for sale. The articles

may vary from person to person, but the amounts paid are usually the same. Clubes select the weekly or bi-weekly winner in different ways, but most involve a social meeting and a game of chance (door prize, bingo, etc.)

Cajas de ahorros are similarly formed in groups of 15-50 members associated by a common place of work or through a church. Unlike the tanda, a caja usually requires a full year's commitment after which members can withdraw their accumulated savings with interest, depending on the *caja's* earnings throughout the year. *Cajas* also make loans to members and to non-members (when recommended by members). Since the *cajas* are not regulated there is no way to discover the range of interest rates they use, active or passive. However, a sampling of cajas in the DF turned up deposits ranging from US$10-$20, active interest rates from 5-6 percent per month for members and 10 percent for non-members, and, in the most profitable cases, passive interest paid annually at rates up to 30 percent-40 percent. Generally, cajas have relatively low loan ceilings and are quite hard to find, however.

Besides the *cajas* examined here, an unknown number of *cooperativas* exist. The *cooperativas* tend to offer interest on savings at a somewhat lower rate than the cajas. Systematic information is not available, however.

Source: Adapted from World Bank (2003).

Even if informal savings mechanisms, friends and families did provide adequate alternatives for savings and credit, there are specific costs to not having access to formal banking services. The poor still need to make payments on goods and services and receive and transfer money. Without a bank account, these transactions become costly. For example, paying for public services such as water, gas, etc. through banks (where one is not a customer) is typically expensive, while paying in person at the public services company represents substantial time lost in transit and waiting in line.[74] Likewise, cashing checks, which are the predominant form of payment in Mexico City, is more costly, both in terms of time and money, than receiving direct deposits to an account.[75]

What obstacles exist for the poor to access financial services?

Key reasons for low income people not to open a bank account include a lack of money, high minimum balances requirements and general distrust of banks. Focus group interviews also suggest that anticipation of bad treatment and/or rejection plays an important role in deterring low-income groups from approaching banks.

[74] Close to half of the respondents in the survey reported spending over two hours in travel time to make services payments.

[75] Some estimates based on the survey suggest that taking into account time and traveling costs, foregone interest rates, and unrealized profits, the cost of not having access to formal financial services could amount to a staggering 15 percent of a low-income household's yearly income.

In addition, banks in Mexico lack the incentives to pursue low-income clients. There is clearly an untapped market for financial services to low income groups; yet, the formal banking sector is generally reluctant to extend services to this part of the market – because of the low incentives to expand lending services in general, and because of specific concerns of the ability of small and micro-businesses and low income individuals to accumulate savings and to repay loans. The commercial banking sector has also become more focused on the high-end clientele, "investor" profile rather than the typical "saver". Banks earnings are increasingly derived from services charges – possibly a reflection of limited competition rather than actual costs for the banks- and investment, the latter mostly from low risk government papers. There is, in short, little incentive to expand into the low-income segment of the market.

Non-bank financial institutions, on the other hand, have increased in number and many have become regulated or at least legally recognized – but coverage in urban areas remains very limited. The government has taken some steps towards developing the so called "social interest banking" sector – cooperatives, credit unions and savings and loan associations. A development agency/second tier bank (*BANSEFI*) has been created, which offers technical assistance and funding to social interest banks (organizations covered by the popular savings and credit law). The objective is to increase membership in the social interest banking organizations from the current estimate of 3 million to 4.5 million by the end of 2005. *BANSEFI* has also taken over the management of over 550 former national postal savings offices of the *Patronato del Ahorro Nacional* (*PAHNAL*) and, as of 2003, has approximately 1.5 million clients. However, most of *BANSEFI*'s offices are rural and so leave the urban low-income residents needs unmet. There are only 60 branches in metropolitan Mexico City. Overall, only 2 percent of the social interest banks have offices in Mexico City and their presence in the most urbanized states of Nuevo León, Estado de Mexico and Jalisco is also minimum.

Box 5.5. Wholesale, small-scale banking can be profitable: the case of Banco Azteca

Banco Azteca (BA), Mexico's sole commercial bank entirely focused on the low-income market, began operations in 2001. It now counts some 1.75 million accounts nationwide and deposits total over MX$240 million, around 80 percent of the total so called "social interest banking" sector. In all, BA's phenomenal growth is a strong indication of pent-up demand for financial services among low-income households.

BA grew out of Elektra, a commercial outlet specializing in domestic appliances and furnishings -mostly electronic- and in selling on credit. BA (i) focuses on households between the 35th and 65th percentile of income distribution (which includes the moderately poor) (ii) holds a strong urban presence (150 branches in metropolitan Mexico City compared to *BANSEFI*'s 60.) (iii) draws on Elektra's network of 850 stores nationwide and experience, including the credit information system (iv) offers both credit and savings products.

Savings: BA offers a low-end savings product – *Guardadito* – which pays minimal annual interest rate (1 percent) but requires a minimum deposit and balance of only MX$50 (approx US$5.00). The *Guardadito* accounts average a balance of MX$1300. There is also a savings instrument for clients who can maintain a minimum of MX$5000 (US$ 500.00): time deposits paying annual interest of between 4 and 7 percent depending on the time frame.

Credit: Initially BA made loans only for commercial goods but it now offers personal loans (unsecured) up to MX$5500. The average loan size is MX$2500 and payments are collected weekly. Since the system builds on intense follow-up of clients, operations costs are relatively high, but this is compensated for by high interest rates - between 6-10 percent per month – substantially higher than the conventional commercial bank. To qualify, Elektra requires official identification, proof of income and proof of residence from its clients. Credit officers visit each potential client at home where they assess the value of the client's property and possessions. Informal workers (who make up an estimated one third of BA's clients) are allowed to present receipts for goods purchased for business to demonstrate their incomes: e.g. carpentry tools, gasoline receipts, etc. Credit officers follow the repayment and make weekly visits to the person's home whenever there is a late payment. Credit officers earn bonus commissions when credits pay off, but must pay for defaults out of their wages. The practice of close tracking of clients pays off in very high repayment rates – 97 percent- and very low late payment rate (80 percent on time).

Traditional regulations have been overruled on an ad-hoc basis to accommodate BA's specific low-end clientele. Regulations normally require that proof of income or of net worth be obtained before authorizing credit. Since this is only applicable to formal sector employees, the National Commission for Banking Securities (*CNBV*) has accepted BA's socio-economic studies as an alternative, as well as BA's redefinition of default or late payment based on monthly delays, rather than on delays by payment. Under present regulation, all Mexican banks must use (and finance) the country's only credit bureau, even though this bureau covers a "high-end" clientele which is useless for a bank working with a "low-end" clientele. Instead, *CNBV* has agreed to allow Banco Azteca to rely only on its own database for a non-extendable six-month period. Similarly, *CNBV* has granted a six-month waiver of its requirement that each credit be approved personally by a member of the bank's credit board allowing instead for electronic signatures.

Source: World Bank, 2003.

The example of Banco Azteca shows that low-end banking can be profitable on a wide scale. The most prominent recent newcomer to financial services, Banco Azteca, is evidence of the potential success of low-income focus. Banco Azteca began operations in 2001 and already counts some 1.75 million customers nationwide (Box 5.5). It also shows that the riskiness of small-scale, wholesale banking business can be reduced if resources are spent on credit ratings, background research and collection. An essential ingredient to Banco Azteca's success has been amendments to traditional

banking regulations – regarding credentials needed to obtain credit, and to accommodate the low-income profile of its clientele.

POLICY OPTIONS FOR IMPROVING THE ASSET PORTFOLIOS OF THE POOR

The poor need to accumulate assets – whether to protect themselves or to get ahead. But it is clearly harder for them than for the rest of society to do so. It is harder because they have fewer resources in general, but also because they usually lack access to social insurance, which helps protect a nest-egg and/or allows savers to pursue a higher return/higher risk savings strategy. And it is harder because good saving instruments are not usually available to them: they are typically excluded from formal financial institutions; alternatives to these (micro-finance institutions, informal financial arrangements) seldom offer good saving options; and low-income housing markets are probably neither very liquid, nor particularly buoyant.

Improving the asset portfolios of Mexico's urban poor requires a three-pronged approach. The first includes policy interventions to increase the poor's income security as well as their access to social insurance. The second entails making low income housing a better asset without distorting the poor's 'decision to buy or rent (which tends to be based on lifecycle considerations rather than income). And the third entails broadening the poor's access to financial assets, particularly savings instruments.

Interventions to increasing household resources and insurance options

A first and obvious area for public policy to increase the ability of the poor to save is to increase the resources available to them. A good example here is Mexico's own *Oportunidades* program which provides conditional cash transfers that promote school attendance and the use of preventive health care -in turn essential building blocks to increase household resources over the long run. Its impact in urban areas is described in more details in chapter 2 (curiously, the major impact of *Oportunidades* in urban areas is an improvement in housing, as households appear to use the income supplement to invest in their dwellings [Gertler et al, 2003]).

There is also room for deepening the reach of public schemes aimed at reducing household vulnerability such as unemployment insurance, pensions and health insurance, which is currently very limited for Mexico's poor. This is the focus of the companion report on Social Protection. One issue, however, that is specific to the urban poor is the complete lack of a workfare type of program that can rapidly be rolled out.

The lack of workfare programs is a major gap for the urban poor for several reasons. First because historically the impact of macro-shocks has been through lower

real wages rather than unemployment.[76] It follows that even if unemployment insurance were to be reformed and made available to the poor, it would not help the collapse in real wages such as happened between 1994 and 1996 that resulted in a tripling of the number of urban extreme poor. Second, as discussed in chapter 1, the primary response of the urban poor, as opposed to the rural, to an income shock is an added worker effect, whereas additional workers, usually the spouse enters the labor market. This type of strategy is obviously less effective in times of recession but can be made more so through workfare programs such as Argentina's *Jefes y Jefas de Familia* described in chapter 3.

Note finally that there are efforts to develop micro-insurance programs under way, although no clear paradigm has yet emerged (see www.microinsurance.com for a discussion).

Making housing a better asset

Housing is likely to remain the most valuable asset held by the poor even if they are provided with good alternatives in terms of saving instruments. Even in developed countries such as Belgium and the UK the only form in which the poor ever hold any kind of wealth is through homeownership (Van den Bosch, 1998). Thus, improving the asset portfolio of the poor necessarily entails making low-income housing a better asset.

So how then to improve the low income housing market without distorting housing markets or the poor's investment choices? It includes making it more liquid, notably by developing housing finance schemes for the poor that allow for a used housing market to develop (such as the Costa Rican or Chilean ones discussed in Box 5.6). It may also require making it more secure though actions such as titling.

Additionally, measures to improve neighborhood quality, whether by improving services or by reducing crime and violence situation of poor neighborhoods can make a particular neighborhood's housing market more buoyant, although the impact on housing market in general is more limited[77]. Thus, key areas for reform include developing resale markets for low income used housing, s well as improving tenure security.

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[76] This however may be changing as discussed in chapter 3.

[77] Slum upgrading, or even just improving infrastructure services, including transport links in poor neighborhoods, will typically translate in both an increase in property values and in easier resale. This benefits homeowners in that particular neighborhood, although the impact on renters is less clear and the effect on the low-income housing market in general is limited. This is why we do not discuss this here in details. For a discussion of community based and municipal strategies to cope with crime and violence see Moser et al (2004) or Van Bronkhorst (2003).

Housing for the poor is a major focus of the current government, as evidenced by the 2001–2006 National Housing Policy's efforts to target low/moderate-income households. The approach includes developing a unified system of housing subsidies complemented by credit and savings; expanding housing finance by working with financial institutions experienced in serving low/moderate income groups to finance low-cost housing solutions; and strengthening property rights.

This is an important change in emphasis. Over the last decade, federal support to the housing sector was largely focused on the return of private finance following the exodus of commercial banks from mortgage lending at the time of *Tequila Crisis*. While these efforts have borne fruit, they largely focused on middle income families and there was little systematic attention was paid to housing the poor (the *Tu Casa* Program, or its predecessor *Vivah*, until recently only provided starter houses for lower middle income families, and at a very small scale and with significant implementation problems).[78]

Box 5.6. The Costa Rican Direct Demand Subsidy Program

The Costa Rican direct demand subsidy program, started in 1987, was modeled after a Chilean one. The program, which can be used for construction alone, land purchase and construction, or purchase or improvement of an existing unit, consists of the following elements:

- A subsidy voucher of an amount inversely related to household income with a maximum value of about US $4,000;
- A mortgage loan given by an "authorized entity", including government banks, NGOs, cooperative federations and savings and loans: these entities have the authority to choose beneficiaries, deliver the direct subsidy and extend a loan to complement the direct subsidy and the household's down payment.

Households work with the authorized entities to determine the maximum value of what they can afford to purchase, the loan amount, and the required down payment. The household then looks for a housing solution with this maximum price. The government-housing bank then buys the authorized entities' social housing portfolio at below market rates.

At its initiation, the program attempted to re-capture the subsidy from the household when the house was sold, but these efforts were abandoned in the early 1990s.

In contrast to Chile and most other countries that have adopted direct demand subsidies (with the exception of Colombia), the program of Costa Rica succeeded in attracting the private sector into the very low-income market. The main reason is that a group of sophisticated NGOs experienced in housing development – a rarity for

[78] The discussion of housing policy is mostly based on a review of low-income housing policies done jointly by the Mexican government and the World Bank in 2002 (World Bank, 2002).

developing countries – have become the main developers under the program rather than for-profit developers. At first, many for-profit developers used the direct subsidy program as well. Since 1994, for-profit developers have largely stopped using the program, mainly because of increased political and economic risk. NGOs have stepped in to fill this gap. Some NGOs help households construct a unit on an existing lot by providing technical assistance. Others are "authorized entities" that assemble groups of beneficiaries, extend the credit, and develop units through contracting for-profit construction firms.

The program has proved stable until recently, delivering a significant number of direct subsidies each year since its inception in 1987 through the mid 1990s. The total number delivered from 1988 through 1998 (93,049) represented 13 percent of households in the country. Authorized entities have experienced few arrears on these loans. Though the program has proved politically popular, fiscal constraints since the mid 1990s have caused a decline in resources available for subsidies program. Various stopgap measures -such as issuing of bonds for funding the direct demand subsidy – have proved problematic and complicated the operations of the program.

Source: World Bank (2004).

Institutionally, the administration has taken bold steps to achieve these national priorities. Until the last three years, the federal government lacked an effective vision for reform of housing sector so that the federal agencies involved in housing operated with neither an overall strategy nor coordination. No agency existed with responsibility for sector policy. The current administration established a new organization National Commission for Housing Promotion (*Comisión Nacional de Fomento a la Vivienda* (*CONAFOVI*), to lead and coordinate other agencies in the sector. In turn, *CONAFOVI* has developed an official housing policy based on widespread participation of public and private sector leaders and analysis. Policies regarding housing subsidies, housing credit and household savings, property rights and low and moderate-income land development are discussed below.

In recent years, the Government effectively used the Special Credit and Subsidies for Housing Program (*Programa Especial de Crédito y Subsidios a la Vivienda, PROSAVI*) to pull private mortgage lenders further down market. The government has relied on the *Tu Casa* program to support poverty objectives in lower income segments, though it impact has been limited in recent years due to implementation issues and insufficient local counterpart funds. The cost of providing serviced land is in many cases beyond the financial capacity of the subnational government. The government is now trying to improve the poverty effectiveness of its housing programs by standardizing its previously fragmented, uncoordinated programs and transferring all on-budget federal housing subsidies to sit under the direction of one institution. In addition in 2004, *Tu Casa* expanded the housing solutions to include lower cost options more affordable to poor families and municipalities with difficult providing

matching funds. In addition to the small starter homes it traditionally supported, *Tu Casa* now provides subsidies for home improvement and expansion.

In the area of household credit and savings, the government undertook important structural reforms supporting mortgage credits for finished housing. While these efforts do not directly help the poor, they have helped to meet housing demand of the middle class and therefore stem filtering up of low-income housing. Nevertheless, micro loans supporting low cost housing solutions – such as home improvement and sites and services- are more appropriate to the way the poor gradually construct and consolidate their homes. The government, through its Mortgage Federal Society (*Sociedad Hipotecaria Federal,* SHF), the public bank charged with fostering private housing finance, has committed to move beyond mortgage financing for middle-income households and explore micro finance for housing. In 2005, SHF intends to launch a pilot program of providing funding to private lenders for micro finance.

In addition to credit and subsidies, household savings is a factor in the poor being able to acquiring and improve their home. As discussed in earlier, the government created *BANSEFI* in 2001 to promote household savings and support financial institutions that focus on low/moderate income households ("popular financial institutions"). *BANSEFI* has recently begun to partner with public and quasi public housing agencies to support housing savings programs. Unfortunately, as discussed before, *BANSEFI* remains more active in rural than urban areas although that might be changing as the government relies on *BANSEFI* to disburse the *Oportunidades* cash transfers.

Fully enforceable individual freehold title can greatly increase the price of housing and making it unaffordable to the poor – indeed this is why the poor often settle in informal housing. These price considerations underlie the fact that degrees of security of tenure can result from a range of ownership characteristics – having a un-registered title, having a registered titled, land zoned appropriate for use, etc., -rather than a single standard of fully enforceable free hold title. About 40 percent of Mexicans who say they own their property, in fact lack legal/planning approval, formal titles and remain unincorporated into the cadastre and property registry.

The rigidity and high standards embedded in formal mechanisms for access to land for housing purposes and formal mechanisms for access to real property rights registries -for legal protection and recognition of transactions – and the complications of the *ejido* system (communally owned land dating from Mexican revolution) largely cause this problem. The state public property registries records take long periods to access and are sometimes unreliable and costs are high and vested interests within and outside government take advantage of the system. State governments use property registries largely as mechanisms to collect revenues rather than provide a service. Typically, the fees from registries account for the second or third largest component of own-source revenue.

Government efforts on property rights in housing sector have focused on modernizing the public property registries. Well aware of the importance of real property rights for many markets and for social stability, the government initiated a project to strengthen the real property registries in three states, focusing on modernizing the practices and technical aspects of the registries.

Through the *Hábitat* program, the government has expanded support for the purchase of land reserves in recognition of the fact that low-income urban land supply is a major bottleneck for housing the poor. Most commonly under this scheme, sub-national governments purchase rural land, facilitate the provision of trunk infrastructure and the regulatory change from rural to urban land use and then sell to developers or households or provide the land as a subsidy to low income households.

Though great progress has been made, additional efforts in the following areas may be necessary to fully respond to the housing needs of the 40 percent of the population below 3 minimum wages.

- *Broad land policy for the poor is needed*. Land reserves – the public provision of urban land for low-income families- may currently be the only solution for low-income housing.[79] Support of land reserves should, however, be seen as a short-term response linked to a broader medium term program that addresses the bottlenecks in land markets and aims to build low-income land markets. Such a program would entail reviewing regulatory barriers, building local capacity to plan, administer permits and provide infrastructure and expanding and streamlining titling and registry processes. This could include reducing standards to allow formal land to be affordable to the poor (e.g. lot sizes, setback requirements, etc) and allowing the private sector to develop housing with progressive infrastructure – in many states only the public sector is allowed to develop housing with progressive provision of infrastructure. It should also include continued efforts to provide titles to the poor, complemented by reforming property registry systems to reduce costs and increase capacity of the system to register the new titled poor. The Peruvian experience may yield some important lessons (Box 5.7). In fact, the government is planning a titling program, the structure of which will be developed following an in-depth study that is to involve Peruvian experts.

Box 5.7. Peru's Urban Land Titling Program

Peru has seen rapid urbanization, with the population living in cities increasing from 46 percent in 1960 to 73 percent in 2000. While the official policy for long centered

[79] Even the middle class's demand for urban land is being met through government provision of land reserves for *INFONAVIT*, *SHF* and *FOVISSSTE* housing programs. Were private developers to further enter into this business, they would likely first provide land to the more lucrative middle and upper income markets, rather that to the poor.

on repressing illegal settlements, the government now recognizes that these developments are inevitable. In 1996, Peru launched the Informal Real Estate Property Formalization Program, with the purpose of establishing legal titles for informal urban properties and thus secure poor families rights to their principal assets. The programs implementation depended critically on consensus building among the political entities, people in the informal settlements and civil society in general. By 2003, over 1.3 million plots had been titled through the program and women represented more than 50 percent of the beneficiaries of the formalization process. The program has turned out numerous positive results:

Two thirds of newly titled homeowners perceived that the title increased the value of the home and three quarters believed that the title increase the security of ownership.

Titled households invested more in home improvements in the year following titling, housing quality improved (with more titled homes made of durable materials) and so did access to services (notably water.) Finally, crowding was reduced as households enlarged their homes and increased the number of rooms, which also had the additional benefit of stimulating the rental market.

As properly titled real estate could be used for collateral, access to formal credit increased from 7 to 42 percent among beneficiary households while recourse to informal credit decreased.

Formal titling increased labor force participation due to the reduced need for constant presence in the house (to demonstrate ownership), for participating in community groups and for filing administrative claims for formalization. This resulted in substantial increases in family income as well as in a significant decline in child labor, for which adult labor was substituted.

Source: Field (2002), Mosqueira (2003).

- *Greater micro credit to accompany home improvement and expansion.* The *SHF* pilot program for 2005 shows great promise as it fosters increased private sector lending, and appropriately reflects the recent moves of the private sector into this market through consumer and materials loans. The historical absence of private credit for low-income housing has been recognized in Mexico, and many states and municipalities responded by providing micro loans for housing. Credit from the public sector has a terrible track record in terms of loan origination and recovery, fostering poor financial practice on the part of beneficiaries and crowding out the private sector with subsidized rates. A challenge for *SHF* will be to foster expansion of private micro credit in the face of continuing crowding out of the private sector by state and municipal lending.

- *Align subsidies programs to social policy goals and foster private finance to low income households.* Government efforts to unify their subsidy programs have

to date focused on unifying subsidy administration below one agency, the National Fund for Housing Economy Support (*Fondo Nacional de Apoyo Económico a la Vivienda, FONAEVI*). The challenge of aligning subsidy amounts and targeting toward low income housing goals remains, as well as refocusing fiscal resources from subsidies to support the development of private mortgage finance down market – whose social impact is limited as households below 3 minimum salaries cannot afford a finished mortgage financed house with a fiscally prudent level of subsidies- to subsidies targeting social goals of low income housing and that focuses on neighborhood upgrading, sites and services and home improvement. The expansion of *Tu Casa* to include subsidies for home improvement and expansion is a step in the right direction.

- *Modernize the institutional and financial framework for property registries.* Property registry reform to date has focused on the mechanics of registries, using electronic systems, reengineering work flows, etc. While these efforts may to some degree improve efficiency the big issues related to registries as a major income source for states and the lack of competitive and transparent mechanisms for the selection, recruitment, contracting and promotion of public employees remain.

Expanding access to formal financial services

Mexico is characterized by a shallow financial market and neither poor nor non-poor make much use of financial services, especially not through the formal banking system. A full discussion of the policy reforms that can help promote more access to financial services by the poor is beyond the scope of this chapter (for a discussion in the context of Latin America see World Bank 2003a and 2003b). Briefly, however, here are some of the approaches that have been advocated. Concerning the formal banking sector, this includes:

- *Approaches to improve the financial infrastructure for financial intermediation.* This includes strengthening credit information registries, legal and regulatory framework for secured transactions, and regulatory framework to encourage product design.

- *Approaches that encourage banks to offer low cost financial products to poor households*. This includes: a) encouraging the use of information technology (PDAs, smart cards, and handheld computers); b) requiring or encouraging banks to offer "lifeline" accounts with low or no minimum balance requirement; and c) reducing the physical and social distance of banks from the poor (e.g. adequate branching).

- *Approaches to reduce the lack of familiarity between poor households and banks* - through financial literacy programs by publishing information on the profitability of reaching down and through programs to encourage large employers to pay through electronic transfers rather than by checks.

- *Approaches to transfer direct income transfers to the poor through the formal banking sector.*

In addition, the regulatory framework is currently not designed to deal with low-end banking. For example, regulatory costs are lower over a small number of high price transactions than for a large number of low value number transactions. But the example of Banco Azteca shows that regulations can be altered to accommodate low-end conditions – like wavering the need for formal proof of income for credit (which automatically excludes employees in the informal sector).

In sum, the urban poor do accumulate assets, but are constrained in their choices – because of their lack of resources, their risk aversion, but also the fact that good savings and insurance instruments adapted to their needs are not usually available to them. As a result, they probably over-invest in housing and durable goods, and under-invest in financial assets. Policy measures to make housing a more liquid asset and to increase access to financial services, particularly savings, are therefore essential to help the urban poor cope with poverty and vulnerability.

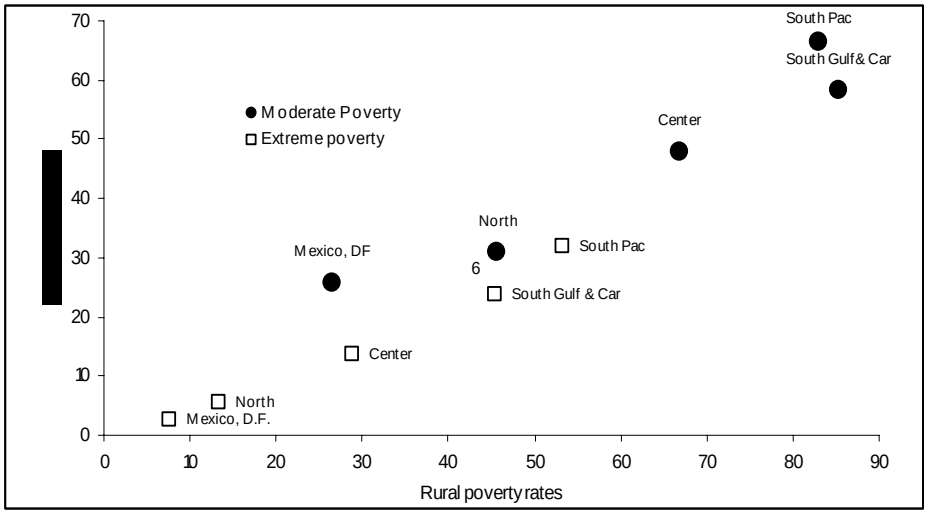
ANNEX

Table 1-A: Overview of Poverty Trends for Extreme and Moderate Poverty with Income and Consumption

		1992	1994	1996	1998	2000	2002
Income							
	National	22.4	21.4	37.1	34.0	24.2	20.3
Extreme	Rural	35.6	37.0	52.4	52.4	42.4	34.8
	Urban	13.3	10.1	26.5	21.2	12.6	11.4
	National	52.5	55.8	69.6	63.7	53.7	51.7
Moderate	Rural	65.0	72.3	80.8	75.1	69.3	67.5
	Urban	43.8	43.7	61.9	55.7	43.7	42.0
Consumption							
	National	24.8	22.0	36.1	33.4	24.2	21.0
Extreme	Rural	41.8	38.7	52.9	52.0	42.4	37.2
	Urban	13.0	9.8	24.5	20.5	12.5	11.1
	National	51.2	50.4	64.0	60.6	53.7	51.3
Moderate	Rural	69.3	68.7	76.5	75.8	69.3	66.1
	Urban	38.7	37.0	55.3	50.1	43.7	42.2

Source: World Bank (2004a).

Figure 1.A: There is a strong relationship between regional location and the level of urban and rural poverty rates
Rural versus urban poverty rates, 2002, for Mexico's regions



Source: Own calculations based on *ENIGH*, 2002

TABLE 2-A: METROPOLITAN ZONES OF MEXICO

Zone	Number of Municipalities
Aguascalientes	2
Chihuahua	2
Mexico City	54
Coatzacoalcos	6
Colima	2
Córdoba	2
Cuautla	2
Cuernavaca	5
Guadalajara	7
Guaymas	2
León	2
Mérida	4
Monclova	4
Monterrey	9
Oaxaca	9
Orizaba	7
Pachuca	2
Poza Rica[1]	2
Puebla	26
Querétaro	3
Saltillo	3
San Luis Potosí	2
Tampico	4
Tijuana	2
Tlaxcala	6
Toluca	6
Torreón	4
Veracruz	2
Xalapa	3
Zacatecas	2
Zamora	2
TOTAL	188

1: The metropolitan zone of Poza Rica includes also the locality of Poza Rica in the municipality of Papantla. Since we do not have locality-level data, we did not include this locality into our metropolitan zones.

Figure 2.b: Public marginality index: Average values of marginality vs. range of marginality for metropolitan zones: 2000

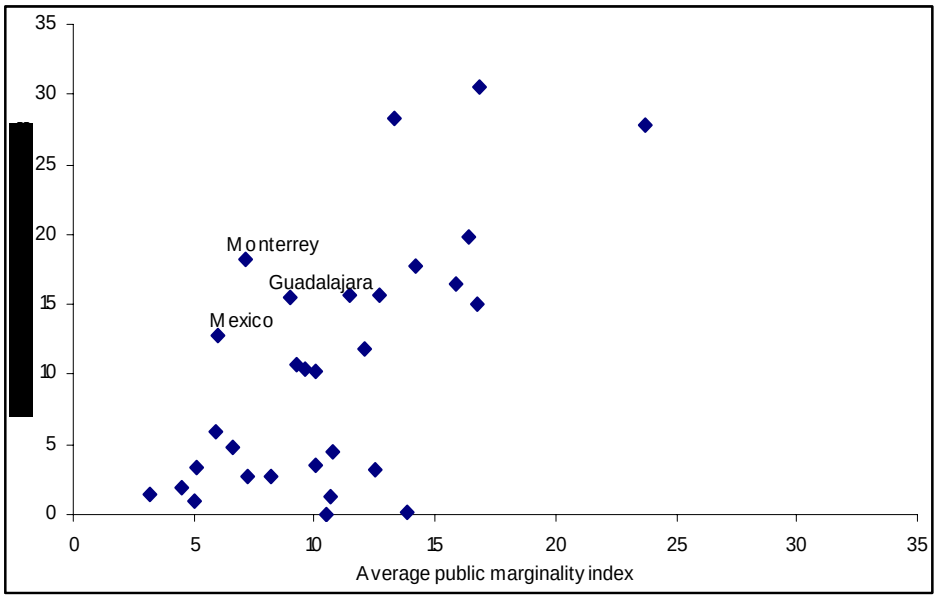


Figure 3.A: Private marginality index: Average values of marginality vs. range of marginality for metropolitan zones: 2000

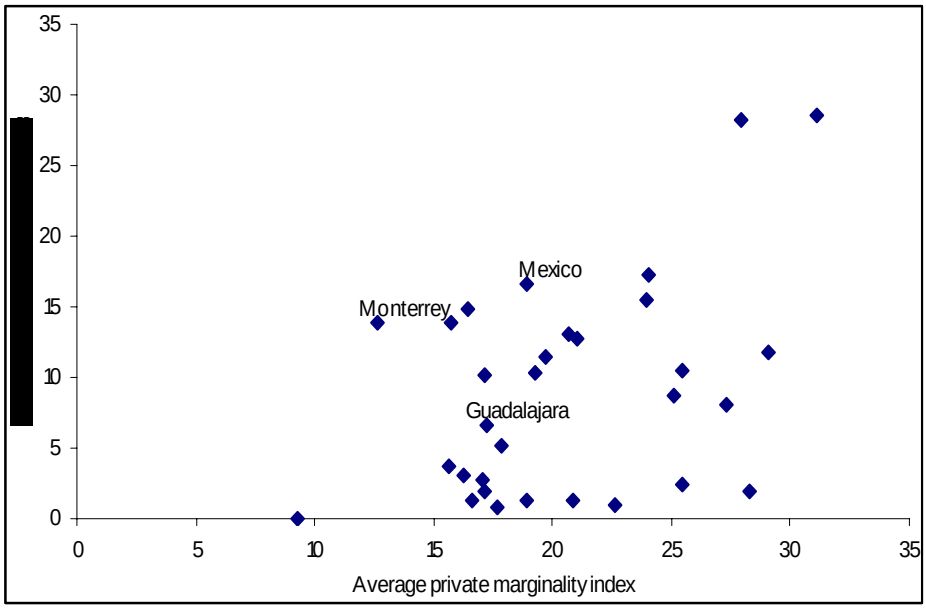


Table 3-A: Dispersion in municipal average marginality (columns I, II, IV, V) and in municipality growth rates (columns III, VI) 1

Private marginality dispersion in				Public marginality dispersion in			
	Municipality average		Municipality growth rates		Municipality average		Municipality growth rates
	I	II	III		IV	V	VI
	1990	2000	1990-2000		1990	2000	1990-2000
Tijuana	0.0	0.0	0.0	Tijuana	0.0	0.0	0.0
Veracruz	1.1	1.3	2.5	Colima	0.4	1.5	1.9
Guaymas	1.3	1.0	0.2	San Luis Potosi	0.4	0.9	0.5
Pachuca	1.3	0.8	2.2	Zamora	1.1	1.3	0.2
Cuautla	2.7	2.4	0.3	Cuautla	4.2	3.5	0.7
Zacatecas	3.2	1.2	1.9	Guaymas	4.6	0.1	4.5
Zamora	3.4	1.2	2.2	Veracruz	4.8	2.8	7.6
San Luis Potosi	3.5	2.8	0.7	Aguascalientes	5.6	3.4	2.2
Colima	4.3	1.9	6.2	Cordoba	7.1	3.2	3.9
Cordoba	5.1	2.0	3.1	Zacatecas	8.8	4.8	4.1
Monclova	6.8	3.7	3.1	Pachuca	9.2	1.9	7.3
Aguascalientes	8.0	5.1	2.9	Leon	9.7	4.5	5.2
Leon	8.0	3.0	5.0	Monclova	12.2	15.7	3.5
Merida	9.4	8.8	3.4	Torreon	12.5	10.7	2.1
Chihuahua	10.6	14.0	3.3	Saltillo	13.3	17.8	8.9
Guadalajara	12.4	6.6	6.1	Cuernavaca	13.6	10.2	3.7
Torreon	12.6	10.3	2.3	Monterrey	13.7	18.2	12.2
Xalapa	13.0	10.5	8.1	Chihuahua	14.8	5.9	8.9
Queretaro	13.3	10.2	5.1	Merida	16.9	16.5	4.7
Monterrey	14.3	13.8	8.3	Guadalajara	17.8	15.5	8.5
Oaxaca	16.1	12.7	10.2	Xalapa	18.1	2.7	15.4
Toluca	16.4	11.5	6.1	Toluca	19.2	15.6	4.4
Cuernavaca	16.7	15.5	4.3	Poza Rica	19.6	15.0	4.6
Saltillo	16.8	14.8	6.5	Tlaxcala	20.8	10.4	10.4
Tampico	16.8	13.0	5.9	Queretaro	23.2	11.8	11.3
Poza Rica	17.2	11.8	5.4	Oaxaca	23.2	19.8	20.2
Coatzacoalcos	18.9	8.1	13.6	Mexico Df	28.9	12.7	24.9
Tlaxcala	19.5	17.3	3.0	Coatzacoalcos	29.3	27.8	15.4
Mexico DF	20.2	16.6	12.4	Tampico	29.9	30.4	20.3
Puebla	28.0	28.2	7.9	Orizaba	33.4	28.2	6.9
Orizaba	32.9	28.6	6.5	Puebla	48.0	42.8	12.1
Median	**12.4**	**8.8**	**4.3**	**Median**	**13.6**	**10.4**	**5.2**
Mean	**11.4**	**9.0**	**4.8**	**Mean**	**15.0**	**11.5**	**7.6**

[1] Columns are sorted by ascending city average dispersion in 1990

Table 4-A: Mexico's urban inequality in an international perspective

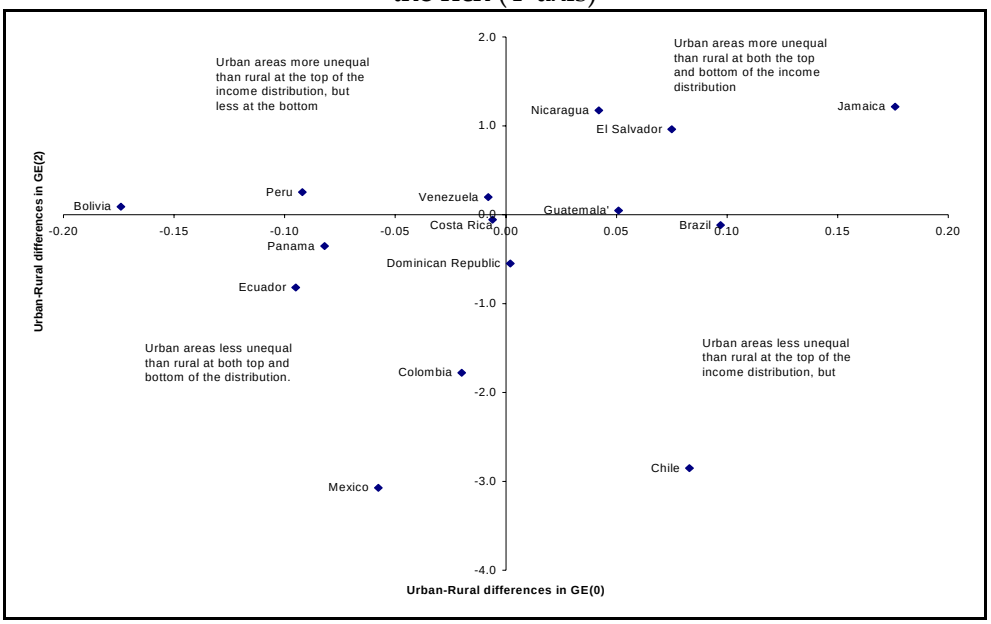
Distribution of household per capita income – Inequality indices

	URBAN				RURAL			
Country	Gini	E(0)	E(1)	E(2)	Gini	E(0)	E(1)	E(2)
Bolivia 2002	54.0	0.5	0.6	1.2	57.3	0.7	0.6	1.1
Brazil 2001	57.7	0.6	0.7	1.6	53.1	0.5	0.6	1.7
Chile 2000	56.5	0.6	0.7	1.8	52.4	0.5	0.7	4.7
Colombia 1999	55.1	0.6	0.6	1.9	55.0	0.6	0.7	3.7
Costa Rica 2000	44.2	0.4	0.3	0.5	44.0	0.4	0.4	0.5
Dominican R 1997	48.0	0.4	0.5	0.9	47.5	0.4	0.5	1.5
Ecuador 1998	52.2	0.5	0.6	1.4	54.1	0.6	0.6	2.2
El Salvador 2000	50.6	0.5	0.5	1.6	46.9	0.4	0.4	0.6
Guatemala 2000	55.8	0.6	0.6	1.3	51.8	0.5	0.6	1.3
Jamaica 1999	54.9	0.6	0.7	2.2	46.8	0.4	0.4	1.0
Mexico 2002 1/	46.2	0.4	0.4	0.7	49.5	0.4	0.5	3.8
Nicaragua 2001	56.7	0.6	0.8	4.2	52.2	0.5	0.6	3.0
Panama 2000	52.2	0.5	0.5	0.9	54.4	0.6	0.6	1.3
Paraguay 1999	50.3	0.5	0.5	1.2	59.9	0.7	0.9	11.8
Peru 2000	44.0	0.4	0.4	0.7	47.3	0.4	0.4	0.5
Venezuela 1998	46.3	0.4	0.4	0.8	45.4	0.4	0.4	0.6

Source: For Mexico, own calculations based on *ENIGH* 2002. Other countries: World Bank (2004a).
1. Based on income per capita

Figure 4.A: Mexico's urban areas are less unequal than rural areas, especially at the top of the income distribution

Urban-Rural differences in inequality among the poor (X-axis) and in inequality among the rich (Y-axis)



Source: For Mexico, authors' calculations based on ENIGH 2002. Other Countries: Regional Urban Poverty Study (draft), Latin America and Caribbean Department, WB.

Figure A.5: Public marginality index: some convergence 1990-2000

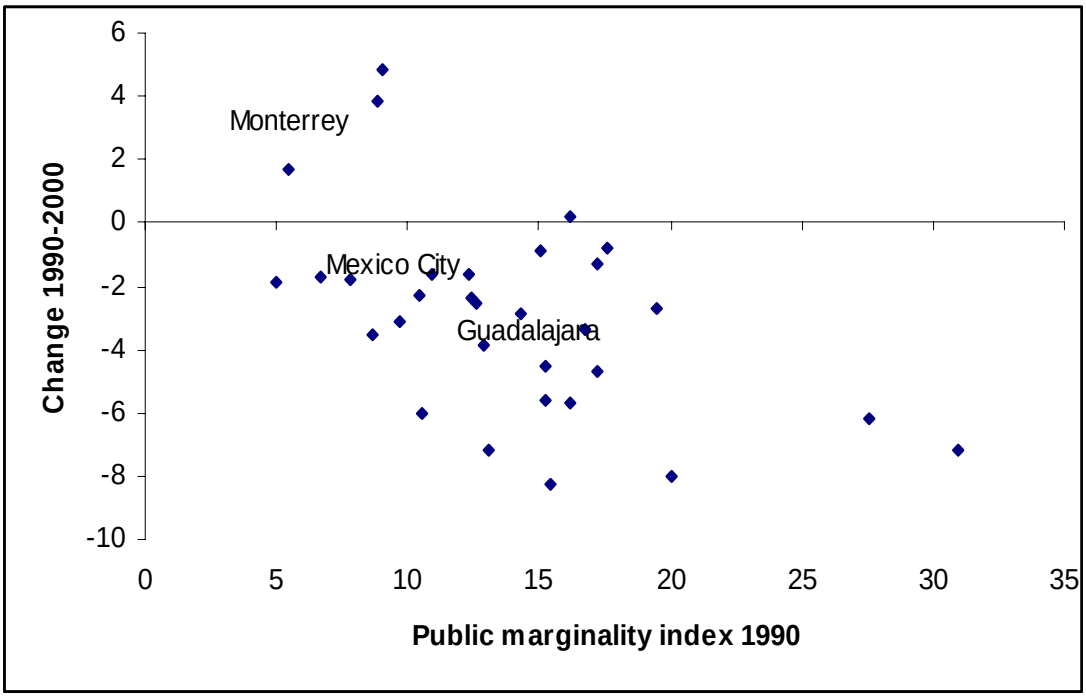


Figure 6.A: Private marginality index: no convergence. 1990-2000

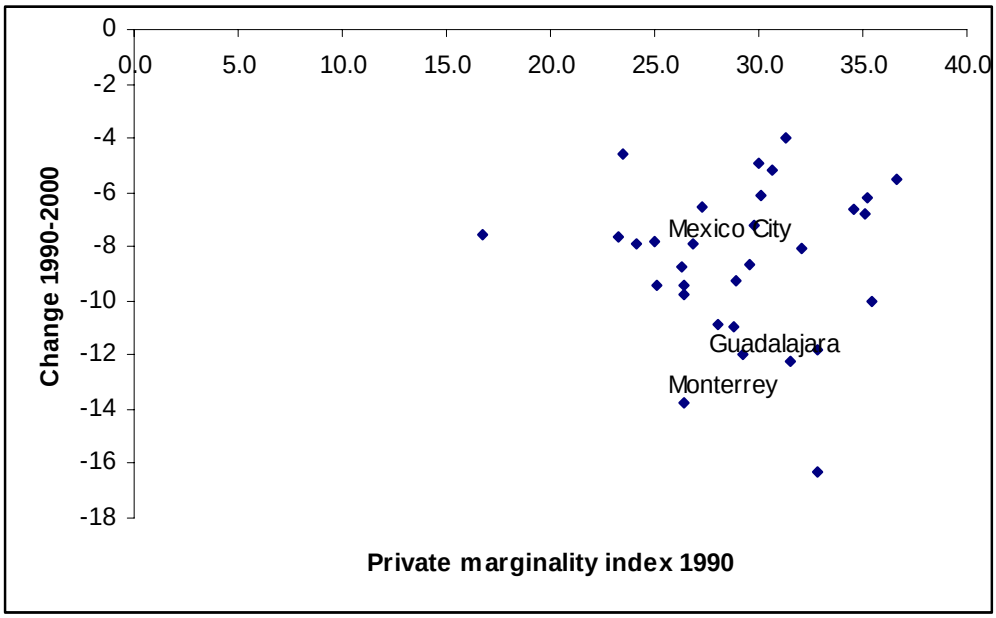


Table A.5: Correlates of log income charges in urban household income estimation results: Quantile Analysis: 1992-1995

Dependent variable	Log Income Change											
	Presample Period						Crisis Period					
Observations	41676		41676		41676		41676		41676		41676	
	0.2		**0.5**		**0.8**		**0.2**		**0.5**		**0.8**	
	a		**b**		**c**		**d**		**e**		**f**	
Primary Inc.	0.2324	***	0.0085		-0.0649	***	0.2320	***	0.0358		0.0729	**
Primary	0.1832	***	0.0047		-0.0552	***	0.2241	***	0.0597	***	0.0662	**
Secondary Inc	0.1084	***	0.0024		-0.0326	**	0.1282	*	0.0118		0.0387	
Secondary	0.0788	**	0.0081		-0.0156		0.1665	*	0.0226		0.0278	
Young	0.0411		0.0079		-0.0286		-0.1021		-0.0094		0.0195	
Old	-0.1918	***	-0.0467	***	0.0142		-0.0456		0.0011		-0.0394	
>1.3 Children	0.0278		0.0174	*	0.0039		0.0187		-0.0051		0.0124	
Single Mothers	-0.0466		0.0046		0.0078		-0.0011		0.0302		0.0306	
Single Women	-0.1627	***	-0.0550	***	-0.0793	***	0.2190	**	0.0615	*	0.1164	***
Single Men	-0.1025	*	-0.0305		-0.0014		0.0309		0.0264		0.0137	
Informal Self-Employed	-0.2631	***	-0.0685	***	0.1051	***	0.0487		-0.0055		0.0181	
Informal Salaried	-0.0928	***	0.0196		0.0771	***	0.0712		-0.0081		-0.0001	
No remuneration	-0.1569	***	0.0595	***	0.2424	***	-0.4475	***	-0.1244	***	-0.1064	***
Constant	-0.4356	***	-0.0176	*	0.5289	***	-0.4056	***	-0.2799	***	-0.3082	***

Analysis uses five quarter panels of the National Urban Employment Survey. The table above shows the coefficients of a regressions where five periods (1992:4 -1993:4, 1993:1-1994:1,1993:2-1994:2, 1993:3 -1994:3, 1994:3 -1995:3) of income growth have been regressed on characteristics of Mexican households and their heads. We also included in the regression a dummy interacted to one of each variables for the Crisis Period that goes from the 1994:3 to the 1995:3. Each group of columns a-d, b-e and c-f, correspond to the estimations of the 20th, 50th and the 80th quantile.The second column of each pair retrieves the coefficients of the interaction of each variable with the dummy for the crisis period. Standard errors have been caculated using bootstrapping techniques from Gould (1992, 1997). Number of bootstraps obtained by running the algorithm proposed by Davidson and Mackinnon (2000). Coefficients have been corrected following Kennedy (1981).

Table 6-A: Determinants of income

	Log of real income		
	Coefficient	**t-statistics**	
Number of infants in the household	-0.317	(2.77)	**
Number of children 1-15 in the household	-0.388	(25.49)	**
Number of adults in the household	-0.088	(3.65)	**
Number of infants in the household squared	0.035	(0.33)	
Number of children 1-15 in the household squared	0.032	(9.76)	**
Number of adults in the household squared	0.013	(4.36)	**
Female headed household	0.129	(3.16)	**
Share of the household members who has migrated	0.125	(5.14)	**
Head of the household is Catholic	0.024	(0.96)	
Age of the head	0.010	(2.38)	*
Age of the head	-0.000	(1.81)	
Years of schooling of the head	0.008	(1.10)	
Years of schooling of the head squared	0.003	(6.28)	**
Years of schooling differential between the head and the highest educated person	0.034	(10.22)	**
Head is employed	0.578	(14.19)	**
Head occupation as white collar	0.062	(1.38)	
Head occupation as low skilled in capital intensive act	0.110	(4.83)	**
Head occupation as low skilled in labor intensive act	0.027	(0.76)	
Head occupation as agricultural laborer	-0.271	(2.54)	*
Head is indigenous	-0.207	(5.45)	**
Barrio distance from markets (average distance to work)	0.002	(0.54)	
Mode of individual having moved in the barrio in last 5 years	-0.368	(2.93)	**
Modal age of the house is 1-5 years old	0.021	(0.44)	
Modal age of the house is >10 years old	0.017	(0.50)	
region== Border	-0.047	(0.80)	
region== North	0.093	(2.46)	*
region== Centre	0.155	(4.22)	**
city size== between 50000 and 100000	0.365	(8.49)	**
Municipality index of access to water	-0.006	(0.92)	
Municipality index of access to sanitation	-0.013	(2.09)	*
Municipal level share of employment in services	-1.233	(4.48)	**
Municipal level share of employment in construction	5.620	(4.84)	**
Municipal level share of employment in f_wshare00	-203.508	(5.45)	**
% 15 or more are illiterate	-0.019	(4.57)	**
illiteracy growth between 1990 and 2000	0.315	(1.66)	
population in 1990	0.000	(3.91)	**
Population growth between 1990 and 2000	1.054	(12.28)	**
Constant	8.544	(49.66)	**
Observations	13294		
R-squared	0.20		

Robust t statistics in parentheses
* Significant at 5%; ** significant at 1%

Table A-7: Simulated barrio average level of income expressed as a proportion of the poverty line in different scenarios

City	[a] Baseline	[b] Absolute equality	[c] Equality in the *barrio*	[d] Equality between *barrios*	[c]-[a] effects of inequalities in the *barrio*	[d]- [b] effects of differences in characteristics of *barrio* inhabitants	[d]-[a] effects of differences in *barrios* characteristics
Aguascalientes, Ags.	1.40	1.32	1.40	1.27	0.00	-0.05	-0.013
Tijuana, B.C.	1.87	1.32	1.84	1.37	-0.02	0.06	-0.50
La Paz, B.C.S.	1.78	1.32	1.77	1.49	-0.01	0.18	-0.29
Cd. del Carmen, Ca.	1.47	1.32	1.46	1.53	0.00	0.21	0.07
Cd. Acuña, Coah.	1.26	1.32	1.26	1.26	0.00	-0.06	0.00
Colima, Col.	1.15	1.32	1.16	1.35	0.00	0.04	0.20
San Cristóbal, Chi.	0.74	1.32	0.69	1.06	-0.05	-0.26	0.32
Cd. Juárez, Chi.	1.77	1.32	1.77	1.32	0.00	0.00	-0.45
Cd. Victoria, Dgo.	1.31	1.32	1.30	1.31	-0.01	0.00	0.00
León, Gto.	1.37	1.32	1.36	1.16	-0.01	-0.16	-0.21
Acapulco, Gro.	1.12	1.32	1.12	1.36	0.00	0.04	0.24
Pachuca, Hgo.	1.11	1.32	1.10	1.36	0.00	0.04	0.25
Pto. Vallarta, Jal.	1.60	1.32	1.57	1.43	-0.02	0.12	-0.16
Toluca, Mex.	1.20	1.32	1.19	1.12	0.00	-0.19	-0.07
Uruapan, Mich	1.23	1.32	1.21	1.28	-02.02	-0.04	0.05
Cuernavaca, Mor.	1.20	1.32	1.18	1.65	-0.02	0.33	0.45
Tepic, Nay.	1.45	1.32	1.44	1.53	-0.01	0.22	0.09
Cd. Gral., Escobedo	1.60	1.32	1.59	1.34	-0.01	0.03	-0.26
Sta. María Atzompa	1.23	1.32	1.23	1.32	0.00	0.01	0.09
Cd. Tehuacan, Pue.	1.13	1.32	1.12	1.22	-0.01	-0.10	0.09
Querétaro, Qro.	1.45	1.32	1.44	1.40	-0.01	0.08	-0.05
Cancún, Qtroo.	1.59	1.32	1.57	1.29	-0.03	-0.02	-0.30
Cd. Valles, S.L.P.	0.93	1.32	0.93	1.33	0.00	0.01	0.40
Culiacán, Sin.	1.33	1.32	1.34	1.27	0.00	-0.05	-0.06
Villahermosa, Tab.	1.10	1.32	1.07	1.40	-0.03	0.08	0.29
Cd. Victoria, Tamp.	0.96	1.32	0.95	1.25	-0.01	-0.07	0.29
Chiautempan, Talx.	1.30	1.32	1.30	1.46	-0.01	0.15	0.16
Coatzacoalcos, Ver	1.16	1.32	1.14	1.42	-0.02	0.10	0.26
Mérida, Yuc.	1.24	1.32	1.24	1.46	0.00	0.14	0.22
Zacatecas, Zac.	1.16	1.32	1.15	1.56	-0.01	0.24	0.40

Note:

[a] Baseline: households have real characteristics, *barrios* have real characteristics

[b] Absolute equality: household have sample average characteristics, *barrios* have sample average characteristics

[c] Equality in the *barrio*: households have *barrio* average characteristics, *barrios* have real characteristics

[d] Equality between *barrios*: households have real characteristics, *barrio* have sample average characteristics

Table A-8: Determinants of different indicators of social capital

	someone in the barrio could provide help	has asked for help someone in the barrio	would like to participate in creating new infrastructure in barrio	would like to participate in providing new services	has attended organization meeting	is a member of an organization	knows of informal organizations in the barrio
Owns home	-0.021	-0.023	0.202	0.109	0.109	0.133	0.206
	(0.73)	(0.77)	(5.36)**	(3.82)**	(3.82)**	(4.65)**	(7.38)**
Share of the household members who has migrated in the last 5 years	-0.184	-0.181	0.106	-0.084	-0.084	-0.041	-0.007
	(5.63)**	(5.42)**	(2.36)*	(2.63)**	(2.63)**	(1.29)	(0.23)
Head of the household is Catholic	0.023	0.021	0.063	-0.055	-0.055	-0.254	-0.002
	(0.79)	(0.71)	(1.64)	(1.89)	(1.89)	(9.19)**	(0.09)
Years of schooling of the head	0.004	0.005	0.002	0.013	0.013	0.014	-0.003
	(1.57)	(2.09)*	(0.47)	(5.02)**	(5.02)**	(5.65)**	(1.40)
Gender	-0.046	-0.056	-0.113	0.158	0.158	0.004	-0.044
	(1.92)	(2.30)*	(3.48)**	(6.61)**	(6.61)**	(0.17)	(1.89)
age	-0.014	-0.018	0.024	0.058	0.058	0.040	0.008
	(3.83)**	(4.97)**	(5.25)**	(15.95)**	(15.95)**	(10.99)**	(2.25)*
Age squared	0.000	0.000	-0.000	-0.001	-0.001	-0.000	-0.000
	(2.83)**	(3.88)**	(10.01)**	(16.20)**	(16.20)**	(9.51)**	(2.78)**
Indigenous person	-0.086	-0.070	-0.171	0.042	0.042	0.167	0.040
	(1.99)*	(1.59)	(3.19)**	(0.98)	(0.98)	(4.10)**	(0.99)
Income variance in the barrio	-0.000	-0.000	0.000	0.000	0.000	0.000	-0.000
	(3.19)**	(2.57)*	(1.10)	(6.19)**	(6.19)**	(5.09)**	(1.54)
Ethnic variance in barrio	-0.835	-0.845	-0.051	0.121	0.121	0.496	0.698
	(6.82)**	(6.76)**	(0.29)	(0.95)	(0.95)	(3.95)**	(5.66)**
Religious variance in barrio	0.494	0.414	-0.296	1.990	1.990	1.610	1.262
	(2.77)**	(2.28)*	(1.22)	(10.92)**	(10.92)**	(9.12)**	(7.13)**
Region Border	-0.203	-0.126	0.166	-0.441	-0.441	-0.011	-0.326
	(4.30)**	(2.63)**	(2.42)*	(9.15)**	(9.15)**	(0.24)	(6.96)**
Region Centre	-0.009	0.023	-0.097	-0.086	-0.086	0.169	-0.029
	(0.26)	(0.62)	(1.98)*	(2.31)*	(2.31)*	(4.72)**	(0.81)
Region South	0.088	0.116	-0.125	-0.228	-0.228	0.052	-0.603
	(2.06)*	(2.68)**	(2.19)*	(5.22)**	(5.22)**	(1.22)	(14.30)**
Large city	0.196	0.206	-0.031	-0.103	-0.103	0.039	-0.113
	(4.03)**	(4.14)**	(0.48)	(2.12)*	(2.12)*	(0.81)	(2.45)*
Fast growing city	0.034	0.028	-0.127	-0.100	-0.100	-0.204	-0.384
	(1.25)	(1.01)	(3.37)**	(3.64)**	(3.64)**	(7.83)**	(14.50)**
Modal age of the house is 5-10 years old	-0.257	-0.262	0.186	0.151	0.151	-0.025	0.270
	(8.44)**	(8.46)**	(4.04)**	(4.51)**	(4.51)**	(0.78)	(8.36)**
Modal age of the house is >10 years old	-0.238	-0.231	-0.099	-0.119	-0.119	-0.104	-0.245
	(5.53)**	(5.24)**	(1.69)	(2.70)**	(2.70)**	(2.34)*	(5.62)**
Barrio average of having someone to help			-0.948	0.795	0.795	0.956	1.914
			(5.07)**	(5.66)**	(5.66)**	(6.77)**	(13.84)**
Constant	0.016	-0.010	1.575	-2.097	-2.097	-2.456	-0.622
	(0.12)	(0.07)	(8.28)**	(14.47)**	(14.47)**	(17.19)**	(4.46)**
Observations	15414	15395	15434	15434	15434	15434	15434

Absolute value of z statistics in parentheses, * significant at 5%; ** significant at 1%

Table A-9: Probability of being employed

	employment		
	coefficient	**z-statistic**	
Gender	-1.262	(50.88)	**
Years	0.147	(40.10)	**
Years squared	-0.002	(40.12)	**
Moved in the last 5 years to the *barrio*	0.067	(1.15)	
Changes house in the last year	-0.040	(1.19)	
Catholic	0.014	(0.58)	
Indigenous	0.033	(0.83)	
Literacy	-0.185	(2.81)	**
Years of schooling	0.022	(2.17)	*
Years of schooling squared	0.002	(3.10)	**
Household head is female	0.424	(10.63)	**
Share of the household members who has migrated in the last 5 years	0.164	(2.40)	*
Number of household members of working age	0.363	(41.53)	**
Share of unemployed in the barrio	-5.590	(7.24)	**
Married	-0.777	(29.07)	**
Has asked for help someone in the *barrio*	0.203	(4.41)	**
Barrio average of having someone to help	0.159	(1.17)	
Region Border	0.033	(0.95)	
Region Centre	-0.092	(3.15)	**
Region South	-0.071	(2.13)	*
Large city	0.051	(1.35)	
Fast growing city	0.044	(2.10)	*
Modal age of the house is 1-5 years old	0.114	(4.66)	**
Interaction access to network and unemployment	-1.756	(1.71)	
Interaction access to network and household members in the Labor Force	-0.034	(2.09)	*
Constant	-2.169	(15.31)	**
Observations	31016		

Table A-10: *Barrio* level determinants of number of crimes

	Number of crimes reported
Smaller city (less than 100000 inhabitants)	-83.4
	(3.41)**
Barrio average of having someone to help	-231.6
	(2.44)*
Barrio average of would like to participate in creating new infrastructure in barrio	-49.7
	(2.19)*
Average income	0.061
	(2.89)**
Average income squared	-0.000
	(2.32)*
Income variance in the barrio	-0.013
	(3.01)**
Population of the settlement	-0.003
	(3.00)**
Age of the settlement	21.4
	(1.42)
Public lightning	-98.2
	(2.86)*
Policing in the streets	-240.4
	(3.77)**
Frequency of patrols	198.6
	(4.00)**
Constant	43.2
	(0.29)
Observations	31
R-squared adjusted	0.493

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A STUDY OF RURAL POVERTY IN MEXICO

1. EXAMINING RURAL POVERTY IN MEXICO: WHY AND HOW

The purpose of this introductory chapter is to explain the rationale for studying rural poverty in Mexico today, discuss the approach, indicate some structural issues that are at the core of Mexican poverty, and present the plan of the study, data sources and issues.

STUDY RATIONALE

This study is part of the second phase of a long-term programmatic work on poverty in Mexico in three phases being carried out by the World Bank at the request of the Government of Mexico (GOM). The first phase has already concluded, resulting in a report with an assessment of conditions, trends and government strategy on poverty in Mexico (World Bank, 2004). The second phase consists of three studies: the present one on rural poverty and two companion reports on urban poverty and social protection. The third phase will concentrate on issues related to quality and delivery of services, especially to the poor in the framework of decentralization. While the work has benefited from extensive collaboration with government and independent Mexican specialists working on issues related to rural poverty, the views expressed are those of the authors alone.

Why a study on rural poverty? First, because of the size and intensity of the phenomenon, poverty and inequality in rural Mexico are a matter of concern not only from the well-being of the poor point of view but also from that of the expansion of internal market, inclusion of large sectors of the population traditionally excluded from the economic and social mainstream, and the political integration and stability of the country. Poverty incidence in rural areas, in particular extreme poverty, is much higher than in urban ones. Although most of the country's moderate poor live in urban areas, most of the extreme poor are rural, even if the rural population is only one quarter of total. Poverty issues have received considerable attention in Mexico over the last decade from academics and policy makers but there is no recent comprehensive review of rural poverty.

Rural poverty differs from urban poverty in many important aspects. There are differences in sources of income between rural and urban poor. Also, rural environment poses specific constraints for provision of social infrastructure and services. Furthermore, institutions and culture tend to differ between rural and urban areas. The presence of indigenous groups is much larger in rural areas and the production systems, the economic and other risks faced by rural poor and their coping strategies usually

differ from those of their urban peers. Urban poor are surrounded by services and opportunities -even if they have limited access to them- not available to rural poor, who often need to migrate in order to potentially enjoy those facilities (Warman, 2001: 30). By the opposite, rural poor benefit from safety nets such as subsistence agriculture, access to forest resources, and local community ties not available to the urban poor.

Mexico needs to move away from a fragmented social protection system to a unified framework which nonetheless tailors different programs to different contexts in rural and urban areas. Consistent and equitable strategies for poverty reduction requires (1) a unified framework for social policy, such as *CONTIGO*, rather than separate approaches for rural and urban areas, and (2) a unified system for setting policy priorities which consider simultaneously rural and urban needs. Programs, however, and other instruments for income poverty reduction and the provision of basic infrastructure and social services should be designed and implemented within specific circumstances of the target group in mind. These circumstances usually differ between rural and urban areas, although they may overlap in the semi-urban segment of the rural space. Even programs targeting similar needs, like education and health, normally require different implementation systems in rural and urban areas. Examples of differences in rural and urban program needs are provided in Box 1.1.

Box 1.1. Differences between Rural and Urban Program Needs

All programs related to agriculture and natural resource management are specifically rural. Micro-finance programs, experience shows, operate differently in rural and urban areas and should be adjusted accordingly. Rural roads programs are rural by definition. Social infrastructure (electricity, drinking water, transport infrastructure, housing) is required in both urban and rural areas, but the specific demands, the cost of providing the services, the engineering, the O&M systems and the forms of community participation are usually different. In rural areas, environmental priorities are typically linked to air pollution, collection and disposal of domestic and hazardous waste, water scarcity and occupation of fragile/risky areas for residential purposes, whereas in urban areas they focus on deforestation, loss of biodiversity, soil degradation, fertilizer and pesticide contamination of soil and aquifer, and health hazards in their application. Urban marginality and violence are distinctly urban, linked to family breakdown, drug use and trafficking, degraded neighborhoods, opportunities for specific types of robbery, close contact between the destitute and the well-off, and tribal youth cultures. Marginality and violence exist in rural areas too but in a different way. Rural marginality is related to income, employment, geographical constraints and often to ethnic characteristics, and does not carry negative moral implications. There are no "street kids" in rural areas. Rural violence exists but is typically linked to land conflicts and the desperate fight of rural organizations for human or economic rights, thus differing from the individual and mob criminality of the cities. Only domestic violence seems to cut across the rural-urban divide.

APPROACH TO POVERTY AND STRUCTURAL ISSUES

Approach

This study is policy-oriented: it examines poverty in the rural areas of Mexico in order to examine strategic approaches to rural development, as well as policy options to promote pro-poor rural economic growth.

More efficient use of existing resources is a key aspect. Attention is paid *inter alia* to institutional and public administration issues related to the implementation of rural development programs. There are two reasons for this: first, under conceivable circumstances of availability of fiscal resources and public expenditure allocation, significant increases in the already high federal expenditure budget in rural areas are not likely. Second, there is room for improvements in the design and implementation of rural development programs, particularly those related to productive activities.

An important result of the first phase of the Programmatic Poverty Study is that while considerable progress has been made in meeting basic needs in rural and urban areas over the last two decades, progress has been much lower in income poverty (World Bank, 2004). The present study concentrates, therefore, on the analysis of income poverty and on examining options for fighting it. In particular, we do not discuss issues and programs related to health, education and social infrastructure. This is not to ignore that there are important complementarities between basic needs and income programs, and hence that both types of programs should be carried out within an integrated framework particularly at the local level.

Rural areas are understood in a broad way, including country towns and considering both farm and non-farm activities. For statistical purposes we use two definition of rural: a narrower one consisting of disperse populations in localities of less than 2,500 residents, which is the definition used by *INEGI*, and a broader one which includes semi-urban populations in localities between 2,500 and 15,000 residents. Semi-urban areas can be seen as transition regions between rural and urban spaces. They are an important part of the rural system formed by the interaction of countryside and rural towns. In the study we contrast the performance of different variables under these two statistical definitions of rural.

We treat poverty as a multidimensional phenomenon intrinsically relative, with deep cultural aspects, and discuss the merits and limitations of quantifying poverty in terms of measurable incomes and income lines. To analyze the incidence and evolution of rural poverty we take first a more quantitative, income-based approach, used in the first chapters of the study. This approach is relaxed further down, particularly in chapter 7, in order to examine the heterogeneity of poverty, the varying sources of vulnerability, and the coping strategies of rural poor. The analysis of poverty friendliness of agriculture and rural development policies and programs and the policy

recommendations are also based on a more multidimensional and nuanced view of poverty.

Spatial factors are important for rural poverty, which is unevenly distributed in the Mexican geography. To the extent possible we take into consideration these factors using a space-conscious approach. The main way in which this is done is by contrasting the performance of different regions regarding a number of variables. In particular, since the Southern region concentrates a disproportionate number of rural poor, we often compare the situation of this region with that of richer ones.

Long-term Structural Issues

Rural poverty in Mexico has strong historical roots resulting from the interplay over time of institutions, political power and market development in a highly varied geographical setting. We try to keep this in focus in the study by examining how poverty, its characteristics and determinants have evolved, and comparing situations at different points in time. We don't intend, however, tracing a history of Mexican rural poverty, for we look at the last decade only. To put things in perspective, however, it is useful to mention right from the beginning some long-term structural issues that gravitate on contemporary poverty in Mexico. We do that briefly in next paragraphs.

The high incidence of rural poverty, particularly extreme poverty, in marginal areas is the first structural issue. Combining survey data from *ENIGH* 2000 and 2002 with municipal level data from the 2000 population census, following a methodology proposed by Bigman *et al* (2000), CIMMYT has prepared a poverty and food security map for Mexico, where the municipal distribution of poverty is shown. CIMMYT's map illustrates a "non-uniform distribution of poverty, i.e. islands of poverty within Mexico. Poverty is concentrated in mountainous and indigenous areas, mainly in Central and Southern Mexico, but also in the mountainous regions of NW Mexico" (Bellon *et al*, 2004:20). There is strong correspondence between poor communities and municipalities identified in the poverty map and marginality as defined by the *CONAPO* marginality index used by *SEDESOL*.[1] Extreme rural poverty is hence prevalent in marginal areas. From a historical perspective marginal areas are traditional *zonas de refugio* (shelter zones) of indigenous and other destitute populations, characterized by physical isolation and hard topographical and/or agro-climatic conditions (Aguirre Beltrán, 1967). Strong

[1] Thus, as explained by Bellon *et al* (2004a: 12-13): "Close to 83 percent (n= 33,752) of the predicted extremely poor rural communities from our model occurred within the priority zones defined by the Mexican government for anti-poverty programs, and of those 33,752 communities 99 percent occurred within either "high" or "very high" marginality municipalities. At the municipal level, the model predicted 1,020 municipalities to be below the food poverty line. This compares to 1,314 municipalities classified as of either "high" or "very high" marginality by the Mexican Ministry for Social Development (*SEDESOL*). Out of the 1,020 predicted food poverty municipalities, 89 percent (n=909) coincide with highest marginality rankings of *SEDESOL*". We do not know, however, if poverty "density", i.e. the number of poor per km^2, is higher in these marginal areas than in highly populated non-marginal ones.

incidence of extreme poverty in these areas is important from a policy perspective, for much can be done to reduce core poverty by focusing efforts there. In fact, the Mexican government had a program to promote productive development in these areas recently ended —the Marginal Zones Development Program (*Proyecto de Desarrollo de Zonas Marginales*)— and has an on-going program, *Microrregiones,* to promote clustered investments in these areas, which is examined in chapter 5. Incidence of extreme poverty in marginal areas with a harsh geographic environment is also evident in other regions of the world with large indigenous peasantries, such as the Peruvian Andes (see World Bank, 2002a). Geography not only affects poverty directly by, for instance, making agriculture less profitable and more hazardous, but also and perhaps more, indirectly, by reducing the availability of public and private assets in marginal areas (Escobar and Torero, 2000). Thus, geography and history combine to produce high incidence of extreme poverty in certain rural areas. According to CIMMYT's poverty map, poor rural municipalities are dominantly placed in the mountain.

A second issue is the difficulty of raising the productivity of rural labor. The bottom-line of poverty persistence in contemporary middle income countries with highly dualistic economies, such as Mexico, is the inability of the economic system to absorb the labor force engaged in low productivity "refuge" occupations into high-productivity employment. This applies to both urban informal and rural marginal laborers. High productivity employment, capable of offering returns to labor above the poverty line, is the only way in which income increases and poverty reduction can be sustained. Only if the economic system is capable of offering increasingly more high-productivity employment to low-productivity rural labor can rural development succeed. This was the case in contemporary developed countries with a history of large populations of small farmers living in poor conditions, for example in much of Southern Europe. Here, rural development took place under a combination of three circumstances: (1) a strong pull of surplus labor away from agriculture into more productive occupations both within rural areas and outside them; (2) relatively low natural population growth; and (3) fast overall economic growth, which allowed considerable investment in the expansion of high productivity employment and the modernization of rural areas (FAO-WB, 2003).

These conditions are not yet in place in Mexico. It is true that there is strong rural-to-urban and rural-to-USA migration, but the demographic turning point has not yet been reached: the rural population is still growing and only expected to stabilize around 2020. Also, most of permanent migrants to urban areas in Mexico seem destined to swell the ranks of urban informal sector where labor productivity may be larger than in marginal rural areas, but remains very low. Second, fertility rates in rural Mexico are falling but are still large. Finally, Mexico's long-term economic growth has been disappointingly low, at an annual average of around 0.3% per capita from 1981 to 2003.

STUDY PLAN AND DATA SOURCES

Study Plan

This report is organized as follows.

- Chapter 2 provides an overview of the evolution of poverty and inequality in the rural areas of Mexico in the decades between 1992 and 2002. We examine the positive and negative factors influencing that evolution and propose a broad interpretation. The chapter concludes by looking at poverty profiles and comparing the correlates of poverty in 1992 and 2002.

- Chapter 3 looks more closely on what happened to rural incomes, employment, labor markets and the characteristics of rural labor force between 1992 and 2002. Five major themes are analyzed: the evolution of the demographic and employment characteristics of the rural labor force; how rural wages have changed and what determines them; sources of income in rural areas and their evolution over the decade; the nature and growing importance of non-agricultural rural employment; and the correlates of the participation of rural households in non-agricultural occupations.

- Chapter 4 is devoted to examine the relation between poverty and the agricultural economy. We discuss first the role that agriculture has in poverty reduction and review the evolution of agriculture in Mexico over the last two decades. Using survey data we examine then the profitability and efficiency of the small farm sector in Mexico.

- Chapter 5 reviews the main agriculture, land and rural development policies and programs operating in Mexico, and examines them from the perspective of poverty-friendliness. Options are examined to increase poverty-friendliness without harm to the primary objectives of policies or programs, which do not need to be related to poverty.

- Chapter 6 starts with a theoretical discussion of the issues and challenges usually faced in the implementation of development policies and programs. It moves then to examining concrete institutional problems faced in the implementation of rural development programs, and to examining options to improve program implementation in Mexico.

- Chapter 7 brings a more multidimensional and qualitative view, looking at how different types of rural poor can experience their poverty situation, including strategies to survive, manage risk and achieve petty accumulation. We also examine the vulnerability of the rural poor, and discuss the incidence on this of some government programs. We include political and cultural dimensions and recognize the heterogeneity of poverty situations.

- Chapter 8 concludes with a summary of policy options to reduce rural poverty in Mexico.

Data Sources and Methodological Issues

Four main sources of data are used in the study. **The first source is the well-known *Encuesta Nacional de Ingresos y Gastos de los Hogares* (*ENIGH*)** carried out by Geography, Statistics and Surveys National Institute (*Instituto Nacional de Estadística Geografía e Informática*, INEGI) every two years, which contains standard income-expenditure household survey information. *ENIGH* is used by *SEDESOL* and the Poverty Measurement Technical Committee (*Comité Técnico de Medición de la Pobreza, CTMP*) to estimate poverty levels in Mexico. The last survey available is for 2004. *ENIGH* data for 2004 became available shortly before this report was going to print. It has not been possible, therefore, to incorporate this information fully in the analysis. Also, *ENIGH* data previous to 1992 is not entirely comparable with that from 1992 onwards. For these reasons we show poverty figures for 2004 but confine most statistical analyses using the *ENIGH* source to the period 1992-2002. Because of the recent availability of the 2004 *ENIGH* results, it has not been possible to measure poverty based on consumption expenditures and a consumption poverty line. Nor has it been possible to calculate the poverty gap and poverty severity measures (FGT1 and FGT2).[2] Hence, the only poverty measure reported for 2004 is the incidence of income poverty or FGT0. Questions have been raised as to the comparability of *ENIGH* results of 2000 and 2002 because of some changes in survey design and in the questionnaire. There have also been some changes in 2004. We discuss this further down.

ENIGH is designed to be representative at the national, rural and urban levels, not at the state or regional levels. We use, however, information at the regional level, but it should be bear in mind that these are survey results, not necessarily representative of the true situations in the regions. Perhaps more importantly, *ENIGH* is not designed to give statistically significant results for the separate sources of income of the households, only for the aggregate. However, we use abundantly in our analyses information on the individual sources of income to which the same caveat as before applies.

The second source of data is the National Jobs Survey (*Encuesta Nacional de Empleo, ENE*) carried out by *INEGI* every three months, which gives information on the characteristics of the labor force at the individual level, including education, gender, age, occupation, labor status, and other variables. Panel data were included since 2000 following individuals during five quarters. *ENE* uses a large sample which is representative at the rural and urban levels, for all states and regions, and for the 48 major cities in the country. Data from *ENE* surveys previous to 1995 are not entirely comparable with those for the following years. For this reason, when using *ENE* data we examine the period 1995 to 2003.

[2] These measures are explained in chapter 2.

The third source of data is the Mexican Rural Homes National Survey (*Encuesta Nacional de Hogares Rurales de México, ENHRUM*), carried out in 2002 in collaboration between *INEGI* and *El Colegio de México*. *ENHRUM* covered 1,782 rural households in localities between 500 and 2,500 residents. *ENHRUM* provides data on assets, production technology, sources of income, and socio-demographic aspects including migration. Results are representative for the entire country and *INEGI*'s standard regions (*Centro, Sur-Sudeste, Centro-Oeste, Noroeste and Noreste*).

Finally, we have used Agriculture, Cattle Farming Rural Development and Fisheries Ministry (*Secretaría de Agricultura, Ganadería, Desarrollo Rural y Pesca, SAGARPA*) on-line agricultural data base, the Agriculture Consul System (*Sistema Agropecuario de Consulta*, SIACON), for information on crops, area, yields, and prices, and on-line information from INEGI's Economic Information Bank (*Banco de Información Económica*) for other relevant economic and demographic data.

For convenience we use point estimates in our tables and text and we make comparisons between them without explicit reference to the underlying confidence intervals. We should bear in mind that the point estimates used to assess poverty incidence and other relevant measures are just one of many possible estimates within confidence intervals to which a certain probability is assigned. We should not attach other value than this to the estimates No definite value should therefore be attached to the figures, more so since in many cases the disaggregate level used for results based on the *ENIGH* survey makes them not statistically significant under the design of the survey.

Doubts have been raised on the comparability of poverty incidence and other results from *ENIGH* surveys for 2000 and 2002 because of some changes in the questionnaire, larger size of sample and some change in sample design in 2002. Because of this, the decrease in poverty incidence between the two dates shown by *ENIGH* data has been challenged, particularly in view of the fact that this was a period of economic stagnation. The *CTMP* has expressed its views on the comparability of both surveys,[3] which can be summarized as follows:[4]

1. The decrease of rural poverty between 2000 and 2002 indicated by the point estimates from the *ENIGH* surveys is statistically significant for the extreme poor (food poverty line) but not for the moderate poor (assets poverty line) and for the capacity poor (capacity poverty line). Even for extreme poverty, where the decrease is statistically significant, the precise change indicated by the point estimates is contained within confidence intervals and cannot be taken as the *true* change.

[3] The *Comité* is an independent body of academics specialized in poverty analysis created by SEDESOL to provide technical advice on issues related to poverty measurement in Mexico. Some technical staff from SEDESOL participate in the Committee but without voting capacity.

[4] See Cortés (2003), Vences-Rivera (2003), CTMP (2004), World Bank (2004), Scott (2004), and (CTMP 2005).

2. The larger sample size in 2002 than 2000 does not seem to introduce sample biases that affect comparability at the aggregate level.

3. Independently of comparability, the changes introduced in 2002 result in an improvement in the survey and in the measurement of poverty.

4. There are doubts as to the comparability of specific sources of income of rural households because of the changes in the questionnaire and/or sample size and design.

5. In particular, there are differences in the comparability of incomes derived from public transfers, where the amount registered in the surveys could be compared with the disbursement figure in the public accounts. Public transfers seem to be better measured in 2002 than in 2000, giving considerably higher estimates for the former year. This is of particular importance for the poorer sections of the population.

6. Changes in the questionnaire create doubts on the comparability of certain expenditure categories. This is particularly the case for non-monetary expenditures and especially for the substantial increase registered in the amount reported for the imputed value of own housing.

The poverty figures shown in this report for 2004 are those of income poverty of the *CTMP*, calculated on the basis of *ENIGH* 2004. The calculation was made according to *CTMP*'s poverty measurement methodology, which is the one officially adopted in Mexico. In the document reporting the 2004 figures, the *Comité* points out that *INEGI* has indicated the existence of some changes in the questionnaire and sampling framework between 2002 and 2004 that were considered by *INEGI* not to affect poverty estimates. The effect of these changes has not yet been examined by the *Comité*. *CTMP* carried out, however, tests of significance of the variations in poverty incidence between 2002 and 2004. Poverty reduction between the two years is statistically significant at the 95 percent confidence level for all three poverty lines at the national level and for rural areas. Changes in poverty incidence are not significant for any of the poverty lines in urban areas, where small increases are reported for extreme and capacities poverty and a slight decrease for moderate poverty.

2. THE DYNAMICS OF RURAL POVERTY AND INEQUALITY IN 1992-2002: AN OVERVIEW

This chapter presents basic figures about rural poverty and inequality in Mexico and how they evolved in the decade between 1992 and 2002.

The main findings from the chapter are as follows:

- Poverty in urban and rural areas, both moderate and extreme, went through a cycle in the decade of 1992-2002 marked by the 1995 crisis, with a strong increase around the 1995 crisis between 1994 and 1996 and decreasing trend thereafter. Rural poverty decline was strong between 1998 and 2004.

- Rural poverty and inequality are comparatively high and did not experience long term progress during the 1992-2002 decade. In 2002, 35 percent of rural dwellers were extreme poorly and 67 percent moderately poor.

- There are large poverty differences within rural areas, with a gradient of poverty incidence that increases from urban to semi-urban and to disperse rural areas and from Northern to Southern regions in the country.

- The lack of overall progress in long-term poverty reduction in rural areas can be explained mainly by the 1995 economic crisis, the sluggish performance of agriculture, and stagnant rural wages. These circumstances were compensated to some extent by the increase in private and public transfers, improved targeting of parts of public expenditure in rural areas, and a notable expansion of employment and income in rural non-farm activities.

- Rural poverty is positively associated with lack of education, living in disperse rural zones and in the South, Gulf of Mexico and Central regions, young households with small age children and being employed in agriculture.

The main areas for policy action derived from these findings are as follows:

- Macroeconomic stability is essential for reducing poverty.

- Maintaining the level of direct transfers to the poor is important in view of their significance for their livelihood, but incremental resources at the margin could better be used to promote income and employment growth.

- Regions and areas where poverty is more concentrated requires specific attention.

- Building up critical investment masses to trigger endogenous growth process using a territorial development approach with participatory planning methods would be more effective than thinly distributing investments.

- Rural education, and technical and vocational training for rural people related to farm and non-farm activities, are key to productive development.

- Young households need specific support to access productive assets to start up independent economic activities.

EVOLUTION OF RURAL POVERTY AND INEQUALITY

Poverty in 1992-2004[5]

Poverty saw a moderate increase in 1992-1994, a strong increase in 1994-1996, and a decreasing trend in 1996-2004 (Box 2.1). The evolution of national, urban and rural poverty, both extreme and moderate, between 1992 and 2004 was in fact rather similar (Figures 2.1 and 2.2). Since 1996, with the economic recovery, Mexico has made headway in reducing national poverty, and extreme poverty in particular (Table 2.1). The incidence of extreme poverty in 2002 was similar to that in 1992, of the order of 20 to 22 percent, with around 20 million Mexican living in extreme poverty, i.e. without sufficient income to buy a minimum basket of food. The lack of overall progress registered in the 1990s compounds the unfavorable situation in second part of the 1980s. In 1984-89 poverty increased sharply, with rural areas being the most affected.[6] A decade was thus lost for poverty reduction. The evolution between 2000, 2002 and 2004 was very positive in rural areas, with a reduction of 2.8 million in the number of extreme rural poor in 2000-2002 and another 2.4 million in 2002-2004. It is interesting that the falling trend in rural poverty since 1998 has taken place under different performances of the macroeconomy, although in the absence of an economic crisis.

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[5] Throughout this chapter, unless otherwise indicated, poverty refers to extreme poverty and poor to the extremely poor. The *Secretaría de Desarrollo Social* (SEDESOL), following the *Comité Técnico para la Medición de la Pobreza*, uses three poverty lines: a "food-based" poverty line (income required to acquire enough food to cover nutritional needs); a "human needs" or "capacities" poverty line, which includes also the income required to acquire basic education, health, housing, dress, footwear, and transportation; and an "assets-based" poverty line, which also includes other needs. The latter corresponds to the usual broad definition of "poverty", which we call "moderate poverty', while the former corresponds to the usual definition of "extreme poverty" (see SEDESOL/CTMP, 2002, and World Bank, 2004, for more information on poverty lines).

[6] See Cortés and Rubalcava (1991), Lustig (1992), Székely Pardo (1994), and Hernández Laos (1994) on poverty evolution during the 1980s, and the review of this literature by McKinley and Alarcón (1995), who stress the impact that poverty increases had on rural areas.

Box 2.1. Poverty indicators

This report uses three poverty indicators developed by Foster, Greer and Thorbecke.

The poverty headcount ratio, FGT(0), measures the percentage share of people whose income or consumption falls below the poverty line.

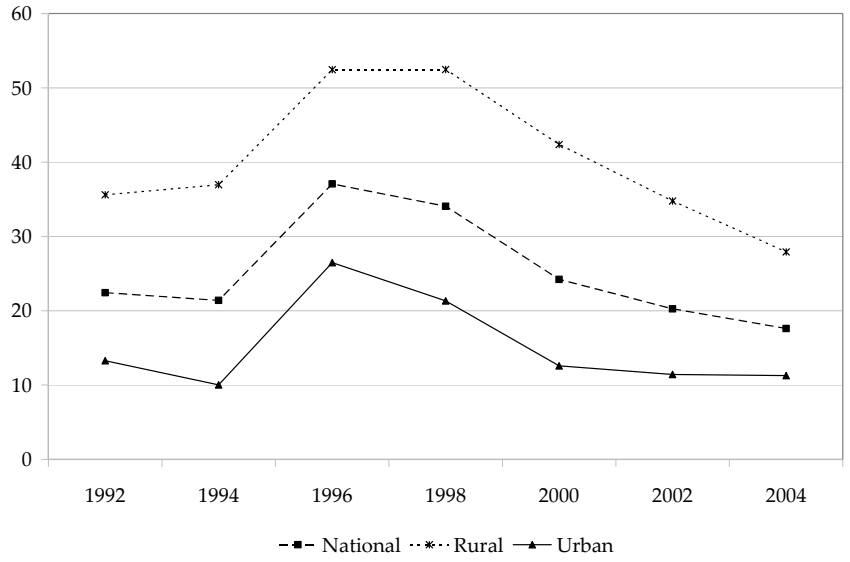
The poverty gap index, FGT(1), measures the depth of poverty, i.e. the distance of the actual income or expenditure of the poor to the poverty line. Unlike FGT(0), FGT(1) can tell us whether the poor are on average very poor, i.e. very far from reaching the income or consumption expenditure benchmarked by poverty line, or whether many of the poor are clustered around that line. FGT(1) can also be interpreted as the cost of eliminating poverty with perfect targeting, i.e. providing each poor enough income to place him or her above the poverty line.

The poverty severity index, FGT(2), measures the relative position of the poor with respect to the poverty line, but distances are squared to give more weight to individuals or households most distant from the line. The poverty severity index picks up changes in the distribution of income within the poor.

See Foster, Greek and Thorbecke (1984).

Extreme poverty is more prevalent in rural than in urban areas. Extreme poverty has declined at a faster rate in rural than in urban areas since 1998, and the gap is hence closing. But poverty incidence in rural areas is still considerably higher. Thus, in 2004, the poverty count measure for extreme poverty was 27.6 percent for rural areas vs. 11.0 percent for urban areas, and the equivalent figures for moderate poverty were respectively 56.9 and 41.0 percent.

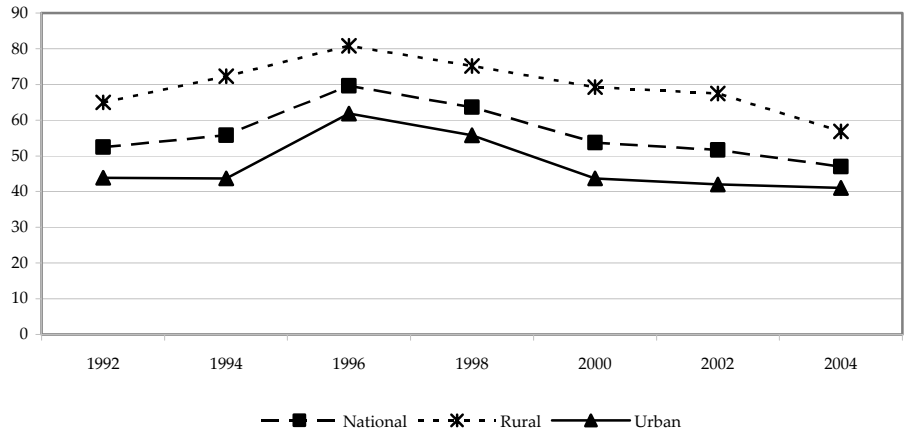
Figure 2.1. Mexico: Incidence of Extreme Poverty FGT(0), 1992-2002



Source: WB staff calculations based on ENIGH.

Mexico has steep gradients in the conditions of living from the more developed urban areas through the urban periphery and smaller towns to the more remote rural areas. In 2002, the incidence of extreme poverty was in fact twice higher in disperse rural localities than in semi-urban areas and close to four times higher than in urban areas (Table 2.1).

Figure 2.2. Mexico: Incidence of Moderate Poverty FGT(0), 1992-2002



Source: WB staff calculations based on ENIGH 1992, 1994, 1996, 1998, 2000 and 2002

The steep rise in poverty along the urban-rural continuum is also visible in the poverty gap and poverty severity indices. The two other FGT poverty indicators confirm the general picture given by the poverty headcount index. As shown in Table 2.1, the poverty gap increases the smaller and more rural the localities are considered. The same holds for the poverty severity index. Thus, people are, on average, poorer — further below the poverty line– in rural than in urban areas, and there are also more people clustered at the very bottom of the distribution. Indeed, the average income of the poor decreases as we move from urban to semi-urban and to disperse rural areas, indicating higher depth of poverty (Figure 2.3). The trends between 1992 and 2002 are also similar, as both the poverty gap and the poverty severity index increase in conjunction with the 1995 crisis, and in spite of the reduction since 1996, remain around the levels prevalent in 1992.

Table 2.1: Extreme poverty in Rural and Urban Mexico, 1992-2002 (percent)

	Headcount FGT(0)			Poverty Gap FGT(1)			Poverty Severity FGT(2)		
	1992	**1996**	**2002**	**1992**	**1996**	**2002**	**1992**	**1996**	**2002**
National	22.4	37.1	**20.3**	7.5	14.1	**6.3**	3.5	33.9	**3.2**
Urban (localities > 15,000)	13.3	26.5	**11.4**	3.6	8.3	**2.8**	1.4	3.7	**1.1**
Rural (localities with 1-15,000)	35.6	52.4	**34.8**	13.1	22.5	**12.2**	6.5	77.5	**6.6**
Semi-Urban (localities with 2,501-15,000)	17.4	35.6	**21.1**	6.0	13.1	**7.0**	3.0	11.0	**3.4**
Disperse Rural (Localities with 1-2,500)	44.7	60.8	**42.1**	16.7	27.1	**14.9**	8.2	11.4	**8.3**

Source: WB staff calculations based on ENIGH 1992, 1996 and 2002.

Table 2.2: Average Monthly Per Capita Income of the Extreme Poor and the Non-Poor in Mexico, 1992, 1996 and 2002 (2002 Prices)

	1992		1996		2002	
Region	**Non-poor**	**Poor**	**Non-poor**	**Poor**	**Non-poor**	**Poor**
Disperse Rural(1)	1,277.76	329.29	1,163.56	302.80	1,417.20	315.45
Semi-urban(2)	1,600.69	346.55	1,304.62	349.91	1,521.37	327.74
Urban	2,940.99	520.70	2,470.30	511.12	2,647.41	506.64

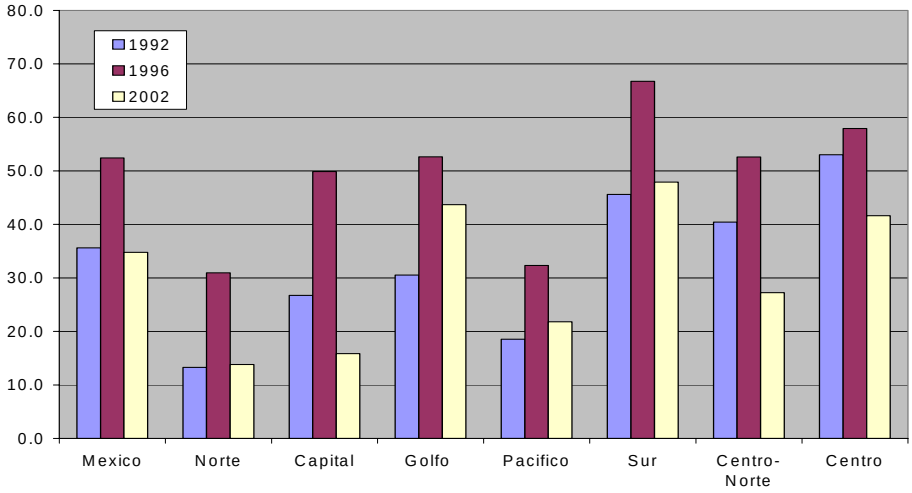
(1) Less than 2,500 residents; (2) between 2,500 and 15,000 residents
Source: WB staff calculations based on ENIGH 1992, 1996 and 2002.

Geographic Factors

Poverty is more prevalent in the Southern regions and the gap between Northern and Southern states increased between 1992 and 2002. Regional area appears to be an important determinant of poverty. There are large variations in income poverty among regions, with a generalized gradient from North to South (Figure 2.3).[7] In 2002, the poverty rate in rural areas of less than 15,000 inhabitants in the *Norte* region was 14 percent, a third of that in the *Sur* region, where 48 percent were poor. Distance among regions may in some cases matter more for rural poverty than the rural-urban difference. The dynamics of poverty is also sensitive to region, as poverty fell in some regions but not in others between 1992 and 2002. Thus, as shown in Figure 2.3, the *Capital*, *Centro*, and *Centro-Norte* regions experienced a considerable fall in the headcount poverty rate in 1992-2002, with the share of poor people falling by more than 10 percentage points in each of these regions. This compares to the *Golfo* region where it is estimated that poverty increased by more than 10 percentage points, and the *Sur* region where poverty also increased

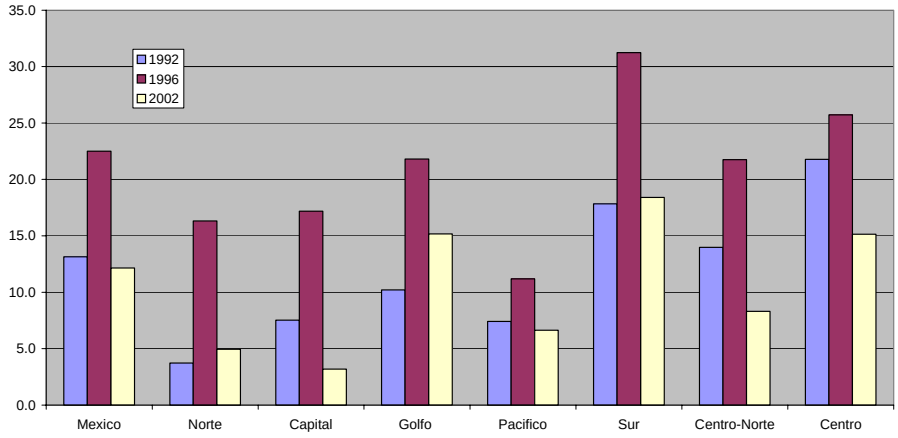
[7] It is important to note that ENIGH – the basis for the income poverty estimates – is not designed to be representative at a regional level. As a result, the regional numbers on income poverty should be interpreted with care. The differences between regions here presented are statistically significant.

Figure 2.3: Incidence of Extreme Rural Poverty in Mexico by Region in 1992-2002 (Percentage)



Note: Rural defined as localities of less than 15,000 residents.
Source: WB staff estimates based on ENIGH 1992, 1996 and 2002.

Figure 2.4: Mexico: Rural Poverty Gap, FGT(1), by Region in Selected Years



Note: Rural defined as localities of less than 15,000 residents.
Source: WB staff estimates based on ENIGH 1992, 1996 and 2002.

Poverty is also deeper in the Southern, Gulf and Central regions. If we look at poverty gap figures by region (Figure 2.4) we can observe large regional differences. Thus, in 2002, FGT(1) was less than 5 percent in the *Norte* and *Capital* regions, and more than 15 percent in the *Centro*, *Golfo* and *Sur* regions. During 1992-1996 the poverty gap increased most in regions where poverty was less deep in 1992, such as the *Capital* and *Norte*. As a consequence of the 1995 crisis, the depth of poverty was at its highest for all regions in the middle of the 1990s.

Other measures of regional welfare levels corroborate the regional differences in income poverty. Work on census data confirms the higher prevalence of poverty in the Southern part of the country as well as its persistence over time (see Araujo, 2003).

Inequality

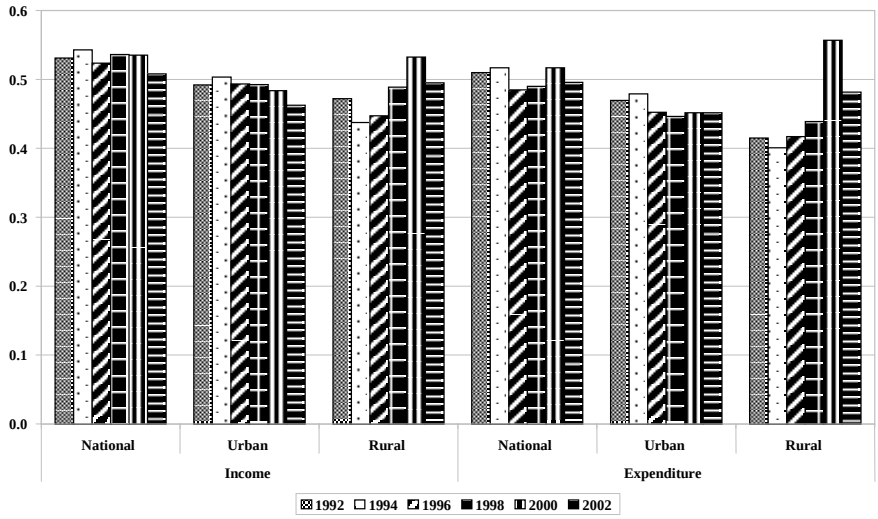
Mexico's income distribution did not improve much during the decade 1992-2002 and remains very unequal. In 2002**,** the *Gini* coefficient for rural Mexico was 0.517 for household income and 0.492 for household expenditure. As shown in Table 2.3 and Figure 2.5, rural inequality decreased in 1992-96, increased in 1996-00 and decreased again in 2000-02. Altogether, income inequality among rural households did not change over the decade but inequality in household expenditure increased. There were strong variations in both income and expenditure *Gini*s during the period, but as is usually the case inequality in expenditure was generally smaller than in income, with the exception of 2000. Inequality has tended to be counter cyclical for both income and expenditure, with the 1995 crisis having no significant influence, the 1996-2000 recovery a disequalizing one, and the 2000-02 stagnation period being equalizing (World Bank 2004).

Table 2.3. Mexico: Gini Indices for Individual Income and Expenditure in Rural Areas 1992-2002

	1992	1994	1996	1998	2000	2002
Income	0.47	0.44	0.45	0.49	0.53	0.49
Expenditure	0.41	0.40	0.42	0.44	0.56	0.48

Note: Rural defined as localities of less than 15,000 residents.
Source: *SEDESOL* estimates using *ENIGH*.

Figure 2.5: Mexico: Income and Expenditure Inequality in Rural and Urban Areas Measured by *Gini* coefficients, 1992-2002



Source: World Bank, 2004.

When we compare rural income and expenditure inequality measured by person and measured by household, inequality is consistently smaller for personal than for household income and consistently larger for personal than for household expenditure.[8] The former follows from the fact that inequality in family size compounds the effect of inequality in personal income resulting in more variation in the income distribution. The latter seems to indicate that there are scale economies in expenditure by families who are also more successful than individuals at expenditure smoothing.

Income distribution is more dispersed for families with diversified income sources and/or who receive transfers and this inequality has increased over time. Income inequality differs markedly according to the dominant source of income of rural families. In Table 2.4, we show Gini coefficients for rural families classified according to their main (more than 50%) source of income. Inequality is smaller for agricultural wage labor families and larger for families with diversified income sources, and for those depending mostly on transfers. The fall in inequality between 1992 and 2002 in families depending on wage labor is probably a reflection of the fall in real rural wages. Contrarily, the increase in inequality in transfer dependent and diversified income families reflects the raising importance of transfers and non-agricultural activities as sources of income and employment opportunities in rural areas, resulting in more variation in the income distribution for these categories of families. Interestingly, as discussed in more detail in chapter 3, the new opportunities seem to have both reduced poverty and increased inequality.

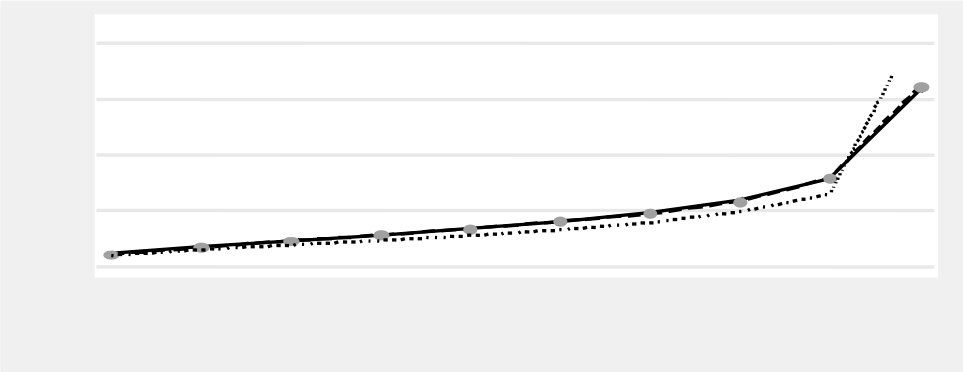
Table 2.3. Mexico: Gini Income Coefficients by Type of Rural Households Classified by their Main (>50%) Source of Income, 2002

	Independ. Farming	Non-ag. Entrepren.	Agricul. wage labor	Non-ag. wage labor	Transfer dependent	Diversi-fied
1992	0.45	0.41	0.36	0.53	0.44	0.36
2002	0.44	0.48	0.33	0.46	0.54	0.55

Source: WB staff calculations based on ENIGH 1992 and 2002.

[8] This assertion is derived from ENIGH data not shown in the tables and figures presented here.

Figure 2.6: Mexico: Rural Expenditure Share by Expenditure Decile, 1992, 1996 and 2000



Expenditure Decile

Source: WB staff estimates based on ENIGH 1992, 1996, and 2002.

Another way of looking at rural inequality is to focus on how different sectors of the rural population participated in total rural expenditure. We do this in Figure 2.6, where we compare the share of total expenditure by expenditure decile in three years: 1992 (continuous line), 1996 (broken line), and 2002 (dotted line). We observe that there was no alteration between 1992 and 1996 and a worsening of the distribution between 1996 and 2002. The reason was the increase in the share of expenditure at the top of the distribution, i.e. by the 10th decile. Whereas in 1992 and 1996 the expenditure of the top decile was 32 percent of the total, it was 45 percent in 2002. A similar exercise carried out for agricultural families (both independent farmers and agricultural wage labor families) and non-agricultural families (the rest), not shown in the figure, indicated that there was no change in the distribution of the share of expenditure in agricultural families during the entire period. The change, however, between 1996 and 200, was marked for non-agricultural families. It is hence the non-agricultural families that explain changes in the distribution of expenditure between 1996 and 2002 for the rural sector at large.

The more unequal income is distributed the less effective economic growth is in reducing poverty. In Mexico, even with steady growth, poverty reduction tends to be slow as a consequence of the country's high income inequality. This is also the reason why the poverty indicators of Mexico are worse than those of other countries with similar per capita income (World Bank 2004). Changes in inequality are typically slow, except during periods of radical social and institutional change. Where inequality has fallen, it has usually happened in association with major expansion and equalization in educational attainment, as in Korea and Malaysia in the 1970s and 1980s. Mexico's expansion in education and reduction in education inequalities in rural areas may be too recent and perhaps too segmented in quality to have a significant effect on the composition of skills, and occurred during a period in which the overall return to high skill levels was rising and that to basic skills falling. Mexico experienced a decrease in returns to tertiary education since the middle of the 1990s, but rural areas experienced relatively little of this fall as very few rural-dwellers hold a university degree.

EXPLAINING THE TRENDS IN RURAL POVERTY AND INEQUALITY

The conclusion from the previous section is that following a period of poverty increase in the second part of the 1980s, rural poverty started a sustained decreasing trend in spite of the lack of progress in rural inequality. Comparing, however, 1992 with 2002, poverty in rural areas remained stagnant. The economic crisis in the mid-1990s, the sluggish performance in the agricultural sector and the reduction in rural wages all had a negative impact on poverty. Such negative developments were somewhat offset by an improvement in non-farm opportunities and an increase in private and public transfers to rural households. These themes are summarized below and developed further in subsequent chapters.

The Economic Crisis of the Mid 1990s

The so-called *Tequila Crisis* in 1995 had a tremendous impact on both rural and urban poverty. There were 3.9 million more rural poor in 1996 than in 1994; the poverty incidence had passed from an estimate of 37.0 percent in 1994 to one of 52.4 percent in 1996. By 2000 rural poverty had not yet fully recovered from the effect of the crisis, notwithstanding the favorable evolution of the macro economy from 1996 to 2000, with an increase of 30 percent in total GDP between these two dates. Not only did the number of poor increase substantially, but the rural extreme poverty gap almost doubled, passing from an estimate of 13.5 percent in 1994 to an estimate of 23.9 percent in 1996.

The crisis hit the rural sector mainly through a fall in rural wages and a reduction of private transfers. Although agricultural GDP increased during the crisis, agricultural real prices and the real value of crop output fell,[9] but it is not clear how much this was the result of the crisis or of the evolution of international prices and the liberalization of trade. Public expenditure in rural areas fell as well in real terms from 1995 to 1999. From 1992 to 1996 the average monthly income of the Mexican rural worker had fallen by one third, from MxP 3,029 to MxP 2,031 in constant 2002 prices.[10]

Agricultural families were hardest hit. There is little information on how the crisis affected different sectors of the rural population.[11] From the point of view of spatial distribution, all regions were strongly hit, but the richer and the poorer regions

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[9] The index of the real average price of crops (base 1980=100) fell from 77.8 in 1993 to 63.5 in 1997, while the index of the real value of food crop output fell from 103.2 in 1993 to 90.2 in 1997. Indices are of purchasing power, i.e. deflated by the consumer price index, and were calculated from SAGARPA's SIACON data base. There was no fall, however, in agricultural GDP in 1995. See Chapter 4.

[10] Estimated from ENIGH.

[11] Lack of panel data for rural areas for the crisis period prevents an analysis of the distribution of the impact of the crisis among households according to their profiles. The finding of Maloney, Cunningham and Bosch (2003) that in urban areas the impact was generally distributed in a way similar to the distribution of shocks in more normal periods probably applies to rural areas as well, although of course shock intensity was particularly large during the crisis period.

were hit proportionally more (Figure 2.3). Different types of occupations were also hit differently. As shown in Table 2.5, agricultural families, relaying mostly on independent farming or on agricultural wage labor, were the worst hit. Percentage-wise, poverty increased more among the non-agricultural entrepreneurial families but poverty levels are much smaller in this group. The relatively small change in poverty in the non-agricultural wage labor families is to be noticed, and it is somewhat surprising in view of the increase in poverty among wage laborers in urban areas upon the crisis.

Table 2.4. Mexico: Incidence of Extreme Poverty in Rural Families Classified According to their Main (>50%) Source of Income, 1992 and 1996

	Independ. Farming	Non-ag. Entrepren.	Agricul. wage labor.	Non-ag. wage labor	Transfer dependent	Diversi-fied
1992	49.2	22.6	50.4	32.7	44.4	49.6
1996	65.8	36.0	65.3	38.7	52.0	62.3

Source: WB staff calculations based on ENIGH 1992 and 1996

Unfavorable labor market conditions appear to have resulted in higher out-migration from rural areas. Figures are not available on the evolution of rural employment, and hence we do not know how important unemployment was as a source of poverty intensification in rural areas during the crisis. As further developed in chapter 7, Mckenzie (2003) found that rural workers could not resort to increased labor market participation because of the depressed state of the markets. Unemployment rose in urban areas after the crisis (although the bulk of the adjustment in urban labor markets was via real wages), and this must have affected the possibility of finding urban jobs by temporary migrants, as well as that of coping with the rural crisis by more permanent rural-to-urban migration. *ENHRUM* figures show, however, an acceleration of internal migration from rural areas after the crisis. Rural migration to the USA accelerated even more: rural household members in the USA doubled between 1994 and 1999 (see chapter 7).

Agricultural Performance

The sluggish performance of agriculture and the fall in the agricultural terms of trade also depressed agricultural incomes. Agricultural growth during the decade concentrated on the irrigated and more commercial farming segments, thus deepening the characteristic dualism of the sector. Between 1992 and 2002 average food crop yields increased 1.9 annually, which is not much considering the low yield levels and existing yield potential (see chapter 4). The terms of trade for the food crop sector fell 5.7 percent annually in the decade and the real value of food crop output decreased 3.5 percent annually. The yield of cereals, a particularly important crop for the poor, increased from an average of 2.5 ton/hectare in 1991-93 to an average of 2.8 ton/hectare in 2000-2002, and the real price of food crops fell at an annual rate of 6.1 percent between 1991 and

2002.[12] Falling food crop prices do not have an unambiguous effect on poverty, however. The fall of real producer prices of food crops may translate into cheaper prices of food to consumers, and thus increase the real income of the segment of the rural poor who are net buyers of food. This may compensate for the decrease of income for the segment of the rural poor who are net sellers of food crops.

Rural Wages

Real wages in agriculture fell from an already low level, while rural wages in general stagnated. An index of average real remunerations in agriculture calculated from *INEGI's* national accounting data fell from 102.2 in 1992 to 75.6 in 2001 (base 1993=100).[13] The agriculture hourly wage, calculated from the *Encuesta Nacional de Empleo* (ENE), fell from an average of MxP 8.3 in 1995 to an average of 7.4 in 2003, in constant 2002 MxP, while the average rural wage remained stagnant at around MxP 10.[14] This contrasts with average hourly wages in rural areas for 2002 of MxP 12.3 in manufacturing, 10.5 in commerce and 14.3 in services (see chapter 3). Low agricultural performance and wages have a particularly significant effect on rural poverty because rural poor depend more on agricultural incomes than rural non-poor, and also because of the positive association between agricultural growth and rural poverty reduction (see chapter 4).

Income Diversification

Income diversification out of agriculture was very important in the 1992-2002 decade for all rural families in general, poor and non-poor alike. The weight of agriculture on income passed from one half to one third. Whereas in 1992 agriculture accounted for 51 percent of family income in disperse rural areas, it only accounted for 34 percent in 2002,[15] including incomes from both independent farming and agricultural wage labor. If the wider definition of rural is used (localities of less than 15,000 residents), the corresponding figures are significantly lower: 44 percent, and 17 percent respectively. Conversely, income from non-farm employment in localities of less than 15,000 residents increased from 35 percent in 1992 to 49 percent in 2002. The rural poor and the rural non-poor both benefited from the expansion of non-farm employment opportunities, but it was the non-poor who benefited most from the best opportunities. These changes in employment and income sources mark a deep transformation in the structure of rural markets and the rural economy during the decade, which is analyzed in detail in chapter 3.

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[12] Calculated form *SAGARPA*'s on-line agricultural information system. More information on the evolution of agriculture is provided in chapter 4.

[13] Calculated from *INEGI's* National Accounts by dividing the sum of all salaries and wages paid in the agricultural sector by the number of all paid workers occupied in agriculture, and deflating with the National Consumer Price Index.

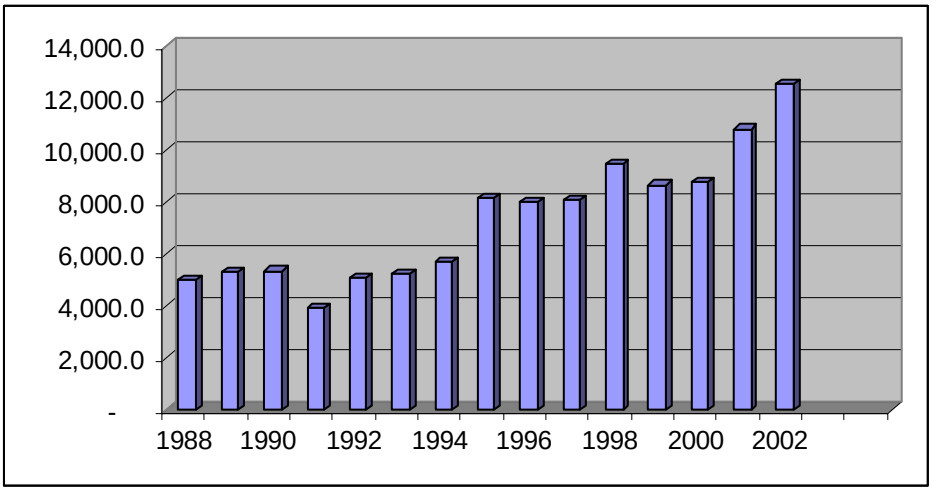
[14] *EN*E figures before 1995 are not strictly comparable with those for 1995 and after.

[15] Calculated from ENIGH (see Chapter 3).

Transfers

International migration proved an essential coping mechanism for poor rural households. We have estimated the value of remittances from abroad reaching rural areas,[16] which passed from MxP 5,085 million in 1992 to MxP 12,534 million in 2002 in constant 1993 MxP (see Figure 2.7). The main increase started in 1996 reflecting no doubt the acceleration of rural migration to the USA that took place since 1995-6. As a percentage of family income in disperse rural areas, remittances passed from 2.7 percent in 1992 to 5.9 percent in 2002.

Figure 2.7: Estimate of Remittances from Abroad to Mexico Rural Areas in Million MxP at 1993 Prices, 1988-2002



Source: WB staff calculations based on Bank of Mexico remittance figures and the division of remittances between rural and urban areas from ENIGH.

Private domestic transfers to rural families did not increase much during the period, its share in disperse rural areas passing from 4.1 percent of family income in 1992 to 4.4 percent in 2002. The change, however, is bigger if a wide definition of rural is used, particularly in certain regions (*Golfo*, *Centro-Norte* and *Centro*), where private transfers reached around 8 percent of income in 2002. Private domestic transfers are also more important to the income of the rural poor than to that of the non-poor.

Improved targeting of direct public transfers have partly compensated for the fall in rural incomes. Federal public expending in rural areas did not increase in real terms between 1995 and 2003. After falling in 1995-99, the trend and composition changed (see chapter 4). Expenditure in social and labor programs, which decreased in

[16] Remittance figures from the *Banco de Mexico* were transformed into MxP using the average exchange rate for the year, and then deflated using the national consumer price index. Of the total remittances in MxP thus calculated a portion was allocated to rural areas according to the percentage of rural remittances in total remittances given by ENIGH for the corresponding year. Percentages for odd years, for which there are no ENIGH surveys, were estimated by interpolation.

real terms in 1995-99, then increased until 2002, while productive expenditure, which remained constant in 1998-02, increased in 2003 and were budgeted to increase again in 2004. Of particular importance for rural poverty have been the *Procampo* and *Progresa/Oportunidades* programs, which account for the bulk of direct public transfers to rural areas. Altogether, direct public transfers accounted for only 0.2 percent of family income in disperse rural areas in 1992, when *Procampo* and *Progresa/Oportunidades* were not yet in operation. In 2002, they accounted for 6.0 percent of family incomes in disperse rural areas and 16.7 percent for the bottom quintile of the rural income distribution. *Progresa* alone accounted for 11.9 percent of the income of the extreme rural poor (see chapter 3).

When public and private transfers are added together, they amount to 16.5 percent of income in disperse rural areas in 2002. The proportion is larger for the bottom quintile of the rural population, 23.8 percent, and for the extreme poor, 25.4 percent (see chapter 3). Since only 84 percent of the income of the extreme poor was cash income,[17] direct transfers accounted for 30 percent of the cash income of the extreme poor. The large majority of transfers were not statutory since pensions and other statutory transfers are very small in rural areas.

A PROFILE OF THE RURAL POOR

Who are the rural poor, where do they live, and where do they work? Comparing poverty levels for different categories allows us to examine which population groups are falling behind or are catching up. In the first part of this section we trace the evolution of poverty incidence for various groups during 1992-2002, examining the characteristics of the rural poor and their evolution in the decade. In the second part we discuss the results from an econometric analysis to study more formally the correlates of poverty in rural areas. By no means is the poverty analysis below complete, as many important aspects of poverty beyond conventional income and non-income indicators are missing (**Box 2.2**), including safety, voice and participation, as well as the role of ethnicity in determining poverty (the latter is discussed in chapter 7).

Box 2.2. Other dimensions of poverty.

The poverty analysis provided in this chapter lacks important information identified by the poor themselves in rural Mexico, like safety, peace of mind, good health, sustainable environment, belonging to a community, and freedom of choice and action. In particular, crime, violence and safety are flagged as important problems and obstacles to well-being in poor communities. Unfortunately, *ENIGH* surveys do not contain information on these variables or other important ones for poverty analysis like land assets or ethnic background.

Other studies on poverty incorporate other variables than those used here. Thus, Finan, Sadoulet, and de Janvry (2002) measure the poverty reduction potential of land in

[17] The remaining 16 percent is self-consumption, imputed house rent, and in-kind gifts and donations.

rural Mexico using 1997 *ejido* data. They show that for small landholders, an additional hectare of land increases welfare by 1.3 times the earnings of an agricultural worker. The marginal welfare value of land depends much on access to complementary assets and on the context where assets are used. For non-indigenous small farmers with at least primary education and access to a road, the welfare benefit of additional land is seven times higher than for small farmers without these attributes. Ethnicity lowers the marginal value of land, whereas education increases it. Households facing lower transactions costs, measured by access to roads, obtain a return to land two to three times higher than those without access to roads. These findings suggest that land can indeed be an important element in a poverty reduction strategy, but there are specific conditions that must hold for this to be the case.

As mentioned, the *ENIGH* data set does not contain information on ethnic background. Other studies on poverty in Latin America have shown that ethnicity is an important factor related to poverty, controlling for other characteristics. On-going work at the World Bank on ethnicity and poverty in Latin America, should shed light on this issue.

Poverty Characteristics

Table 2.6 presents the poverty profiles for 1992 and 2002 for disperse rural areas, semi-urban areas, and geographical regions. Before commenting on the data we must call attention here again to the fact that the *ENIGH* survey is not designed to be representative at the highly disaggregate levels of Table 2.6. The results in this table must hence be taken as indicative only. Time trends and the differences evidenced among population categories are probably correct, but the point estimates provided should not be taken as reflecting true population values. With this caveat in mind, the following poverty characteristics call our attention:

Table 2.6: Characteristics of the Extreme Poor in 1992 and 2002

	1992		2002	
Characteristics	**Disperse Rural**	**Semi-Urban**	**Disperse Rural**	**Semi-Urban**
Gender (% who are extreme poor)				
Male	38.2	14.9	36.8	17.0
Female	36.6	4.0	32.1	11.6
Age Cohort (% who are extreme poor)				
15 to 25	27.4	16.3	30.5	6.2
26 to 40	44.5	18.1	42.7	16.9
41 to 60	37.7	10.3	36.0	15.4
>61	31.4	8.2	30.0	15.4
Education (% who are extreme poor)				
No education	46.2	25.2	45.0	28.1
Primary incomplete	38.0	11.4	36.2	21.1
Primary complete	31.0	15.0	36.1	13.7
Secondary complete	22.0	7.0	17.9	8.9
Higher education	0.7	0.4	0.5	0.6
Labor Status (% who are extreme poor)				
Employed	38.5	14.2	37.1	16.5
Unemployed	56.6	39.5	20.4	18.8
Inactive	32.7	6.4	29.4	12.0
Work Position (% who are extreme poor)				
Salaried worker	39.3	13.7	35.7	14.3
Self-employed	42.6	14.5	42.2	20.6
Employer	21.3	16.6	17.2	12.3
Family worker	36.3	-	39.3	-
Work Sector (% who are extreme poor)				
Agriculture	43.7	21.3	45.3	36.0
Extraction	26.2	9.8	7.7	1.1
Manufacturing	24.3	6.4	22.1	7.5
Construction	40.3	16.5	35.8	21.6
Utilities	7.7	-	-	24.3
Sales	25.5	12.0	23.2	7.0
Hotel-restaurant	1.9	0.2	15.4	6.6
Services	23.6	14.6	23.1	14.1
Education	1.4	0.9	1.8	1.1
Government	23.6	0.1	25.1	2.3

Source: WB staff calculations based on ENIGH 1992 and 2002

Education levels are strongly related to poverty. In rural Mexico, as elsewhere, poverty rates fall with educational attainment. Thus, in 2002, extreme poverty in disperse rural areas was estimated at 45 percent for household whose heads had no education. Extreme poverty fell slightly during the decade for households whose head had none or little education in disperse rural areas, whereas it increased slightly for those in semi-urban areas.

There is an important premium to having some education, compared to none, and to having secondary education compared to lower levels. While there is a large difference in disperse rural areas in the incidence of extreme poverty between household whose heads have no education (45 percent) and those who have incomplete primary education (36 percent), the difference is very small between household whose heads have incomplete and those who have complete primary education. Secondary education makes a big difference; only 18 percent of household whose heads have completed secondary education are poor. Extreme poverty for households with heads who are high school graduates decreased rapidly during 1992-2002, down from 22 percent in 1992. These findings indicate that while education is a crucial element for poverty reduction in rural Mexico, it is not a silver bullet, as the more educated also experience poverty, and proportionally more now than a decade ago in the case of primary education. [18]

Very young household heads in semi-urban areas are far less likely to be poor than those in disperse rural areas and the difference has increased over time. Of the households headed by a person of less than 25, six percent are extremely poor in semi-urban areas compared to 31 percent in disperse rural areas. In fact, in semi-urban areas, poverty rates are markedly lower for these households compared to those headed by people above age 25. Furthermore, while poverty among young households has fallen in semi-urban areas, it has increased in disperse rural ones.

Instead, poverty has increased among households headed by elderly persons in semi-urban areas and stagnated in rural disperse areas. Fifteen percent of the households headed by elderly persons (of more than 61 years) were below the food poverty line in 2002 in semi-urban areas—an increase of 7 percentage points from 1992. In disperse rural areas poverty among this group has stabilized at around 30 percent during 1992-2002. Poverty incidence in households with heads in age groups of 25 to 40 and 41 to 60 were stable at around 43 and 36 percent over the decade in disperse rural areas, with an increase in poverty for the latter group in semi-urban areas. Thus, the life-cycle profile of poverty indicates strong poverty incidence for households in age brackets where children are young and the family is expanding, which decreases as the

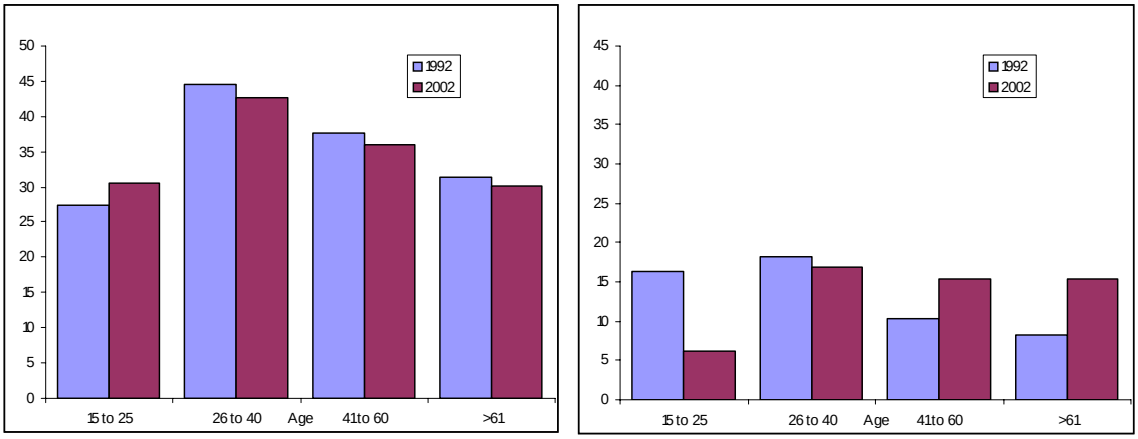
[18] Skill-biased technical change, changes in the relative supply of and demand for workers with different characteristics, and trade liberalization, have all been mentioned as possible explanations for the changes taking place in the impact of education on poverty in Mexico and Latin America in general (see Blom and Velez, 2001, and Blom, Pavcnik, and Schady, 2001). We will come back to the impact of different levels of education when discussing rural wages and non-farm occupations in the chapter 3.

children grow up, and decreases again as the size of the family becomes smaller with old age (Figure 2.8).

Female-headed households have lower incidence of poverty than male-headed ones in both semi-urban and disperse rural areas. The incidence of poverty among female-headed households decreased in disperse rural areas during the decade, but increased considerably in semi-urban ones. It is risky, however, to use information on household heads as the basis for wider gender-poverty analysis, since income poverty figures are only part of the myriad of factors that affect a poor woman's well being.[19]

Households with heads employed in agriculture suffer far more incidence of poverty. Thus, the poverty incidence was 36 and 45 percent in agricultural households in semi-urban and disperse rural areas in 2002, compared to 8 and 22 percent in manufacturing, and 14 and 23 percent in service occupations (excluding sales and hotel/restaurants where it is much lower). Poverty among households with the head employed in agriculture increased by an astounding 15 percentage points in the last decade in semi-urban areas, while in disperse rural areas the increase was only of 1.6 percentage point.

Figure 2.8. Mexico: Poverty incidence by age of household head, in disperse rural areas (left) and semi-urban areas (right), 1992 and 2002.



Source: WB staff calculations based on ENIGH.

[19] Gender-poverty analysis based on gender of household head is fraught with difficulties. First, female-headed households are often underreported if migrant spouses are still identified as the non-resident head. Second, it is impossible to separate out individual consumption levels of men and women (and boys and girls) in households headed by either men or women. Yet, women, and perhaps especially girls tend to be disadvantaged in intra-household distribution of goods or investments in human capital. (see e.g. Quisumbing and Maluccio, 1999 and Case and Deaton, 2003) and continue to lag behind in terms of many social indicators. Non-income aspects of poverty, including level of and access to human capital, access to labor markets, health status, etc., are therefore required to properly analyze gender-poverty links.

Poverty Correlates

The poverty profile is corroborated by the analysis of conditional poverty correlates. Simple correlations can be misleading since it can be difficult to distinguish the influence of the individual characteristics. Probit regressions for 1992, 1996 and 2002 provide information on conditional correlation between poverty and the characteristics of household heads. By running regressions for these three years we also obtain information on the volatility of the impact of the attributes on the likelihood that a household experience poverty during the beginning and mid-1990s and the beginning of the 2000s. Finally, we obtain information on the groups that are particularly vulnerable, as well as changes in these groups over the decade. A detailed analysis of the results together with the probit regression coefficients are provided in Annex 2.A. The main statistically significant results for 2002 and the main trends between 1992 and 2002 are as follows:

- **Households in disperse rural areas were more likely to be poor than those in semi-urban areas**.

- **Formal sector workers in rural areas, i.e. those contributing to the social security system, were much less likely to be poor than their informal sector counterparts**, reflecting an increase in the formal-informal gap since 1992. In contrast to earlier years, households with heads inactive in the labor market were more likely to experience poverty than other households. Surprisingly, among the households with active heads the probability of being poor did not increase with unemployment. This holds in both 1992 and 2002, but not in 1996, after the crises, when unemployed heads were more likely to experience poverty than employed ones.

- **Employers are the group with lowest probability of being poor followed by self-employed and salaried workers**. In 1992, households with self-employed heads were 4 percentage points less likely to experience poverty than those headed by salaried workers in the off-farm sector. Household with self-employed heads had the same probability of being poor than those headed by non-agriculture salaried workers. During 1992-2002, households with heads self-employed in agriculture experienced a dramatic increase in the likelihood of experiencing poverty. Households headed by salaried workers in agriculture also saw their probability of being poor increased compared to households in the non-farm sector. A second income –whether from spouses engaged in the off-farm sector or from the household head taking a second job– had an increasingly important effect on reducing the probability of poverty for households. We discuss this more in chapter 3.

- **Educational attainment is the single strongest correlate of poverty among the variables included in the analysis, controlling for other variables**. The

positive effect of education on poverty reduction increases with the level of completed education of the household head and the spouse. The probability of falling into poverty of secondary school graduates decreased between 1992 and 1996 and increased between 1996 and 2002, reaching in 2002 a level not much different from that of 1992.

- **Having a female household head reduces the probability of poverty**. This was not the case in 1992, however, and this finding is different in some other countries, for example Brazil, where male headed households have been found to have a lower probability of being poor (see Elbers *et al*, 2001), or in Ecuador where there seems to be no association between poverty and gender of the household head (World Bank, 2004c).

- **The dependency ratio of the household is also an important factor**. The presence of children or youth in the household makes it more poverty prone, but the probability of being poor falls with increasing child age. Households with children under 5 are more likely to be poor than childless families, and their higher probability of being poor has been rather constant over the past decade. Households with children between 6 and 11 years have also higher probability of being poor than those without children, although the likelihood is lower than that for families with smaller children, and the probability has increased since 1992. Households with members aged 19 to 25 were significantly less likely to be poor than households with no children. The fact that young members enter the labor market and bring home an income contributes positively to the household's poverty situation. In the *Sur* region, however, households with young members did not experience the same lower probability of being poor in 2002. Finally, the presence of older members (above 65 years of age) in the household makes it more poverty prone. In 2002, households with members of old age experienced a higher likelihood of poverty than those without them but the magnitude was lower than in 1992: 0.3 percent in 2002 compared to 5 percent in 1992.

POLICY IMPLICATIONS

What policy conclusions can be derived from the above findings? The aggregate and rather general type of analysis carried out in this chapter does not allow inferring detailed policy options. We can suggest, however, some general orientations likely to influence poverty positively. More detailed suggestions are made in other chapters.

The first policy implication refers to the importance of maintaining macroeconomic stability. The effect on poverty of the 1995 crisis confirmed what was already known from the 1982-83 crisis and from the experience of other countries: that strong macroeconomic shocks can undo in one or two years long-time improvements on

poverty reduction, and that poverty levels take time to recover after the shocks. Macroeconomic stability is hence a necessary element of any poverty reduction strategy.

Another implication refers to the importance of cash transfers for the very poor, since one quarter of their income comes from this source. Transfers have become indispensable for many rural poor families who could not survive without them. Public transfers, particularly those associated with programs like *Procampo* and *Progresa/Oportunidades*, are an important part of all transfers received by the poor. There are evident dangers in a rural economy and society which depends always more on transfer incomes, and there is need of revitalizing both agriculture and non-agriculture sources of employment and income in rural areas. But public transfers to the income-poor in rural areas cannot be discontinued without much suffering and the probable reversal of the poverty reduction trend of the last years. It is at the margin, however, where policy decisions are usually made. And the decision in this case is whether to increase *at the margin* public expenditure in direct cash transfer programs or in employment and income generation ones. Our view is in favor of the latter option, but without reducing the current level of cash transfers to the poor, or not at least before new income opportunities become available. This view, however, is conditional on substantially strengthening the efficiency of economically-oriented programs, which as we will see in chapter 6 could be improved in design and implementation. The decision of what to do with *Procampo* when it officially comes to an end in 2008 is related to this policy issue.

It is important to focus actions on areas of concentration of poverty to have maximum impact. The fact that rural poverty is particularly prevalent and acute in some regions, in disperse rural areas, and, as indicated in chapter 1, in an conglomerate of refuge zones, has important policy implications. Focusing actions on poor areas is already the rule in some programs where the allocation of funds or the selection of areas is related to the marginality index or other poverty indicators. This is a good practice which could be extended to other programs. Focusing on poor areas could be combined with an assessment of the capacity of specific programs to promote local development there. Different zones have different potentials, and different programs have different capacities to promote local development in those zones and may do it in different ways. This poses trade-offs between the depth of needs existing in different zones and the cost-efficiency of programs to attend them under the specific conditions of the zones. Population in disperse rural areas present a particular challenge because their needs are usually greatest but the cost-efficiency of programs tends to be low in those areas.

A good principle in connection to these trade-offs is to concentrate investments in particular localities -in the way for instance envisaged by the *Microrregiones* strategy- so as to build up critical masses of infrastructure, services and production-oriented programs to help triggering endogenous processes of local development. The best instrument to priorize investments locally and identify strategic areas for local economic growth is that of the territorial approach to rural development

and the use of participatory planning methods. We come back to this in other chapters of the study.

Households with children of young age requires special policy attention. *Oportunidades* offers already a mechanism to support these households, but other mechanisms could also be considered. Given the importance of secondary income sources, subsidizing rural child care facilities to allow mothers of young children to participate in the labor market or carry out on-farm productive work are potential areas for policy action. Some programs operating in rural areas like, for instance, *Jornaleros Agrícolas*, operated by *SEDESOL*, already include some support of this type.

A problem discussed in other chapters is the young households lack of access to assets that would allow them to undertake independent economic activities. There is in particular very limited or no access to land, technical assistance, training, and loans for farm investments and to start up on -and off-farm economic ventures. Focusing on young households and supporting them to develop productive activities emerges hence as another policy priority. The *Secretaría de la Reforma Agraria* is starting a program to facilitate the access of young landless workers to land and complementary assets, which is a welcome step in the mentioned direction.

Educational improvements should be part of any effort to reduce poverty in rural areas, for lack of education gives individuals less opportunities, reduces the return to their labor, and hence tends to make them poorer. An advantage of education is that being a "portable asset" it accompanies the individual if he or she decide to migrate. Since progress over the last decades has made primary education now practically universal among young citizens in Mexico rural areas, the focus should be on improving quality, which is lagging behind, expanding secondary education facilities and enrolment, and strengthening different types of technical education and vocational training in rural areas related both to farm and non-farm economic activities.

3. ACTIVITIES, EMPLOYMENT AND INCOMES OF THE RURAL POOR[20]

This chapter sheds light on the changes that have taken place in employment and income generation in the rural areas of Mexico.

The main findings of the chapter are as follows:

- **The characteristics of the rural labor force are changing, with greater participation of women**, higher levels of education, and considerable ageing of the workforce.

- **Rural employment has fallen, which points to limited employment opportunities and the impact** of rural out-migration. Also, formal employment is not expanding in rural areas.

- **Informal salaried employment has increased at the expense of unpaid workers, as has rural non-farm (RNF)** employment at the expense of farm employment.

- **Rural wages, which fell with the 1995 crisis, had on average just recovered in 2003**, but the average agricultural wage was still below the 1995 level in real terms.

- **Wage levels are largely determined by education levels, but also by gender**, experience/age, level of formality, and location.

- **The importance of agriculture in rural incomes, including independent farming as well as** agricultural wage labor, fell significantly between 1992 and 2002, giving way to rural non-farm occupations. The poor remain more dependent on agricultural income than the non-poor, however, and their access to rural non-farm activities, especially high-return ones, is more limited. Instead, transfers, especially public transfers from *Progresa* and *Procampo*, have developed into a major source of income for the poor and appear to have lowered rural inequality.

- Rural non-farm occupations appear to play a key role for sustaining rural incomes, especially for the moderately poor.

[20] Detailed statistical tables and other relevant materials are presented in Annexes 3A to 3I.

- Access to high-return RNF activities is more limited for women and for workers with little education, located in disperse rural areas, and belonging to an indigenous culture.

The main policy implications deriving from the above findings are:

- **There is need for a comprehensive view of rural development which include** both farm and non-farm activities.

- **Rural policy may be more effective if focused on the family rather than the farm**, moving away from the viable farm concept in order to promote competitiveness through multiple interventions embracing small and large farms, full- and part-time farmers.

- **Education -both access and quality, and including vocational and technical training** – together with improved rural infrastructure, microfinance schemes, and technical and management support systems are all key policy areas for raising rural productivity and increasing access to higher wages and RNF activities.

- **A spatial policy could facilitate the geographical concentration of investments** and services for productive development, favor the growth of rural towns and intermediate cities, and encourage the establishment of links between these urban centers and their rural hinterlands.

- **Economic investments to promote the RNF sector could be included in rural** development program. This could be done by decentralizing investment decisions through a system of local participatory planning based on a territorial approach to rural development.

EMPLOYMENT AND THE RURAL LABOR FORCE

Demographic Trends

In 2000, 24.8 million of Mexico's 97.5 million people lived in disperse rural areas (Table 3.1). Expanding the definition of rural to locations with less than 15,000 inhabitants increases this figure to 38.1 million. The national average conceals significant regional difference; however, rural-urban patterns vary throughout the country. For example, in the *Sur*, 47 percent of the population lives in disperse rural areas compared to only 12 percent in the *Norte*.

The rural population share has fallen over time, but the rural population is still growing. Between 1990 and 2000, population growth in disperse rural areas was lower than the national average: 0.6 percent annually compared to 1.8 for Mexico as a whole. This was the result of out-migration since fertility rates in rural areas, though

falling, still reached around 4.3 in 1995-2000, compared to 3.1 for cities over one million (Partida Bush, 2004). Thus, in 2000, 25 percent of

Table 3.1. Mexico: Total Population, Rural and Urban Shares, and Annual Growth Rates, 1990,1995 and 2000

Region	*Type of Area*	1990	1995	2000	Annual Growth (%) 1990- 2000
Mexico	Total	81,249,645	91,158,290	97,483,412	1.8
	Urban (%)	71.3	73.5	74.6	2.3
	Rural (%)	28.7	26.5	25.4	0.6
Norte	Total	13,246,991	15,242,430	16,642,676	2.3
	Urban (%)	84.7	86.5	87.9	2.8
	Rural (%)	15.3	13.5	12.1	-0.1
Capital	Total	18,051,539	20,196,971	21,701,925	1.8
	Urban (%)	91.4	91.5	91.6	1.9
	Rural (%)	8.6	8.5	8.4	1.5
Golfo	Total	10,121,385	11,388,767	12,024,666	1.7
	Urban (%)	59.9	62.5	63.7	2.4
	Rural (%)	40.1	37.5	36.3	0.7
Pacífico	Total	9,077,660	10,177,075	10,745,699	1.7
	Urban (%)	75.7	77.4	78.7	2.1
	Rural (%)	24.3	22.6	21.3	0.3
Sur	Total	12,398,892	13,600,852	14,424,973	1.5
	Urban (%)	48.7	52.0	52.9	2.4
	Rural (%)	51.3	48.0	47.1	0.6
Centro-Norte	Total	10,382,375	11,488,771	12,113,254	1.5
	Urban (%)	59.4	62.9	64.8	2.5
	Rural (%)	40.6	37.1	35.2	0.1
Centro	Total	7,970,803	9,063,424	9,830,219	2.1
	Urban (%)	64.0	66.5	67.7	2.8
	Rural (%)	36.0	33.5	32.3	1.0

Note: Rural defined as locations of < 2,500 residents, urban as locations of > 2,500 residents.
Source: WB staff calculations based on INEGI.

Mexicans lived in disperse rural areas, down from 29 percent one decade earlier and 34 percent two decades earlier. Not all regions followed the same pattern, although in all regions the urban population grew more. In the *Norte* the disperse rural population actually diminished by 0.1 percent annually during 1990-2000. In the *Capital* region, the difference in population growth between disperse rural and urban areas was small, with the rural population expanding at 1.5 percent annually. Population growth in the *Sur* and *Golfo* regions followed closely the national average. The demographic turning point

has not yet been reached in rural Mexico: the disperse rural population is only expected to stabilize (at around 26.8 million) by 2020 (CONAPO, 2004).

Changing Characteristics of the Rural Labor Force

The Mexican rural labor force is becoming more feminized, better educated, older, and less dependent on unpaid employment. These trends are summarized in Table 3.2 below and shown in more detail in Annex Tables 3.A.1, 3.A.2 and 3.A.3 of Annex 3.A, based on ENIGH, and Annex Table 3.B.1. of Annex 3.B, based on ENE.

The participation rate of women in the rural labor force increased 45 percent between 1992 and 2002, from a rate of 21.8 percent to one of 31.6 percent. Male migration, lower fertility rates, and the increased importance of non-farm occupations, where women are strongly represented, would seem to be the main reasons for this. The participation of family and unpaid family workers decreased 3.5 points and that of employers another 3.3 points. The fall in the position of women as unpaid family workers shown by ENE is remarkable: from 39.5 percent in 1995 to 25.0 percent in 2003 (Annex Table 3.B.1).

Table 3.2: Mexico: Composition of the Rural Labor Force in 1992 and 2002 (percentages)

Concept	1992	2002
Gender		
Male	78.2	68.4
Female	21.8	31.6
Labor Status		
Salaried Worker	45.4	48.7
Self-employed	30.9	34.4
Employer	6.8	3.5
Family and unpaid worker	16.9	13.4
Education		
Without or incomplete primary	61.8	51.3
Complete primary	26.7	27.3
Complete lower secondary	9.3	15.3
Upper secondary and higher education	2.2	6.1
Age		
Less than 15	4.7	3.5
15 to 25	31.6	25.4
26 to 40	31.7	30.0
41 to 60	24.0	28.1
61 or more	8.0	13.0

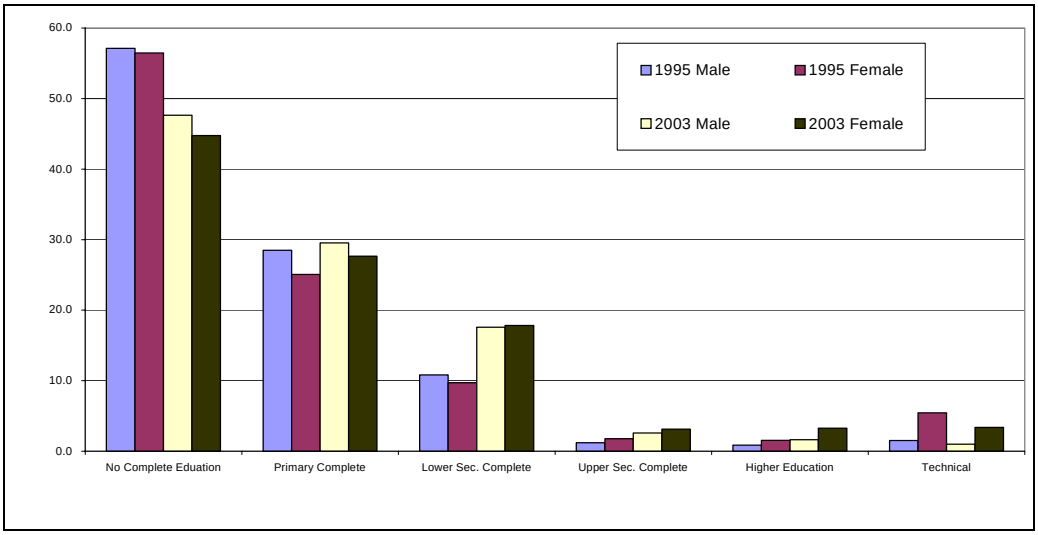
Source: WB staff calculations based on ENIGH.

The improvements in education of both male and female workers are substantial. The average years of education of the 9.3 million people in the rural labor

force increased from 4.4 years for both genders in 1995 to 5.1 and 5.4 years for males and females respectively in 2003 (Annex Table 3.B.1). The increased level of education between 1995 and 2003 reported by ENE is shown in Figure 3.1. The percentage of male and female workers with complete lower secondary education increased by 62.2 and 83.6 percent, respectively, in the period. The percentage of workers with complete upper secondary, technical and higher education expanded from 3.6 to 5.3 percent in the case of males and from 8.8 to 9.8 percent in that of females.

The labor force is rapidly ageing in rural Mexico, because of the combined effect of migration of workers in younger age cohorts and the increase in life expectancy. Working men are slightly older than working women; the average age was 37.9 for men and 36.3 for women in 2003, up from 34.8 and 33.6 in 1995 (Annex Table 3.B.1). Rural workers between 15 and 25 years decreased their participation by 6 points in 1992-2002, while mature workers of 41 to 60 and 61 or more increased their participation from 24 to 28 percent and from 8 to 13 percent, respectively, in the same period (Table 3.2).

Figure 3.1: Mexico: Education Attainment of the Rural Labor Force



Source: WB staff calculation based on ENE surveys.

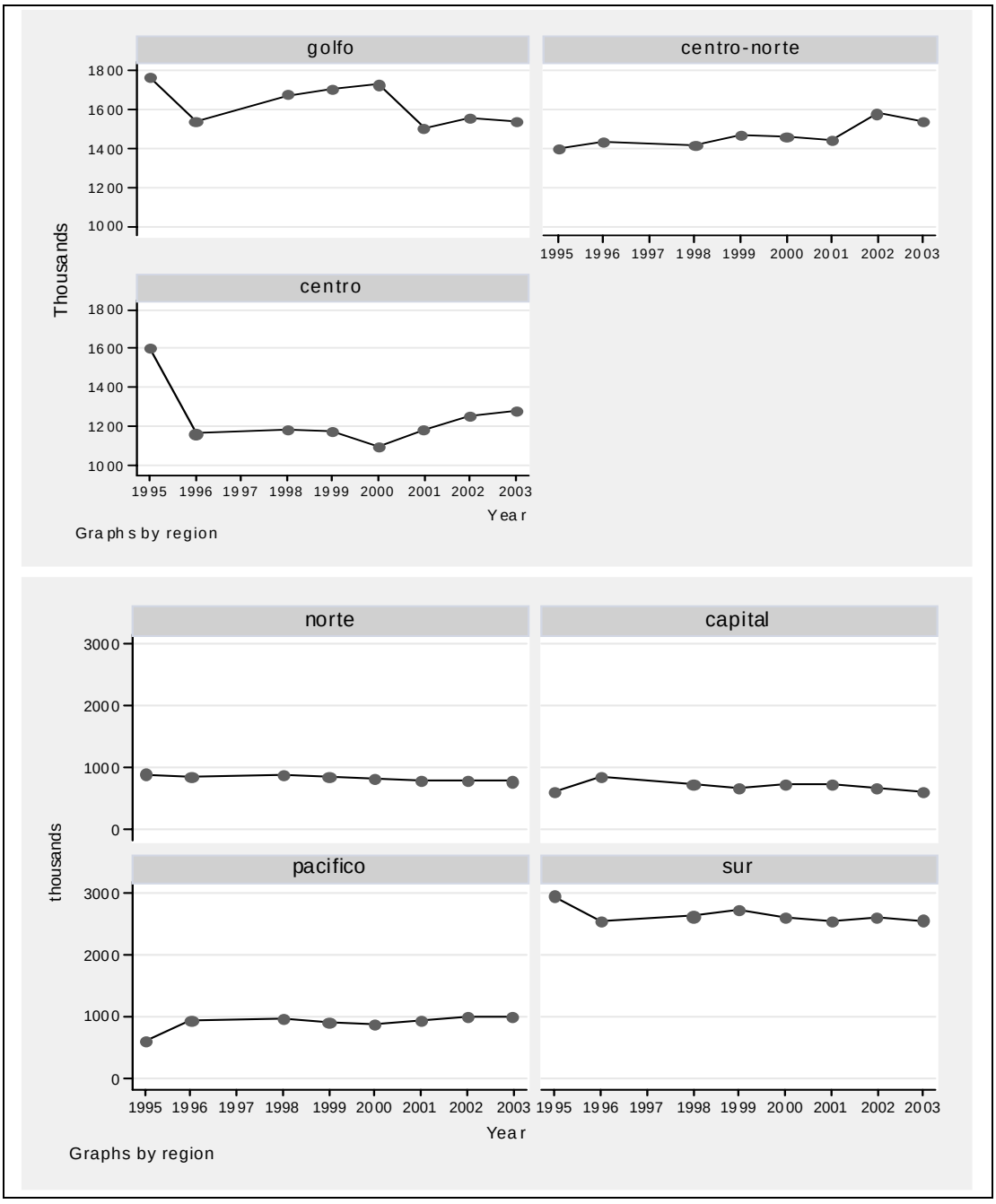
Rural Employment

Rural employment has fallen slightly since the 1990s. From 1995 to 2003, Mexico's rural work force decreased by 0.5 million reaching around 9.3 million in 2003, of which 9.2 were employed, 0.3 million down with respect to 1995 (Annex Table 3.C.1.). The main explanation for the shrinking work force seems to be the migration of the younger age cohorts to urban areas or abroad, which also contributes to the higher age of workers.[21] Notwithstanding their increasing participation, women are still a minor

[21] Rural labor force defined here as individuals above 12 years of age in areas < 2,500 inhabitants.

part of the rural work force; according to ENE there were only 27.0 percent women in the rural work force in 2003.[22]

Figure 3.2: Rural Employment by Region in Mexico, 1995-2003



Source: WB staff calculations based on ENE 1995 to 2003, second quarter.

[22] This figure is likely to under-represent the actual female share of the work force, because of the way the question is phrased in the ENE questionnaire. Women participation in 2002, calculated from ENIGH, is close to 32 percent (Table 3.2)

Rural employment followed different paths in the regions as can be seen from Figure 3.2 and Annex Table 3.C.1. The *Pacífico* and *Centro-Norte* regions experienced job expansion of around 200 to 400 thousand workers in 1995-2003, while employment decreased in the *Centro, Golfo, Norte*, and *Sur* regions, particularly in the latter region where nearly 400 thousand jobs were lost. This pattern seems to be partly due to the expanded production of export crops in the *Pacífico* and *Centro-Norte*, which increased the demand for labor, with workers migrating from other parts of Mexico to grasp job opportunities.

Agriculture is still the main employer, although its share has fallen since 1995. The distribution of the working population in disperse rural areas by main sector of primary occupation is shown in Table 3.3, and a more detailed breakdown is provided in Table 3.D.1 of Annex 3.D. Of the working population of rural Mexico, 56 percent was engaged in agricultural activities in 2003, the vast majority in cultivation. As shown in Annex Table 3.B.1, males had a much greater participation in agriculture than females; 66.9 of rural males were in agriculture against only 25.0 percent of females, who were more involved in services. Agricultural employment has fallen from 63 percent in 1995 to 56 percent in 2003 as the main field of occupation declared by workers.

The share in total occupation of those who declare agriculture as their main area of work is much higher than the share of agricultural income in total income. We can think of three related explanations for this. The first is that being agriculture a cyclical activity many farmers with agriculture as their principal occupation work also in other sectors during the low season. Second, independently of the seasonality factor, there are many part-time farmers who complement agriculture with other activities on a permanent basis. Finally, there are rural dwellers that come from a farming tradition and continue to see themselves as agriculturalists, and hence declare farming as their principal occupation, even if they currently work little in agriculture and derive most of their income from transfers or other sources.

Table 3.3. Mexico: Rural Work Force Shares by Primary Occupation, 1995 and 2003

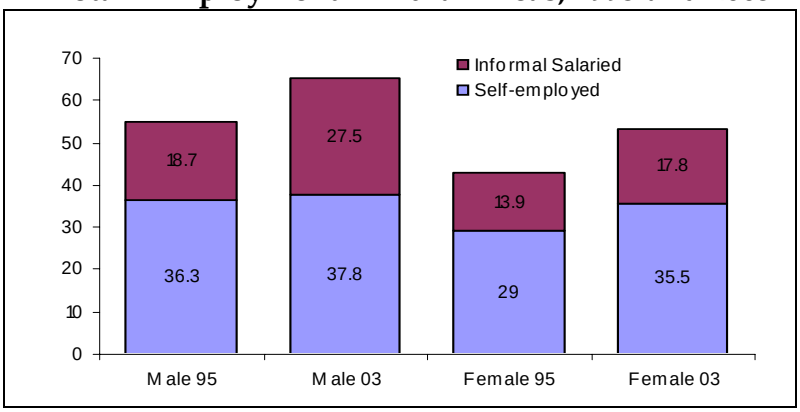
	1995		2003	
	Urban	Rural	Urban	Rural
Agriculture	9.6	62.8	5.4	55.6
Mining & Extraction	0.3	0.7	0.4	0.1
Manufacturing	24.8	11.0	26.3	18.5
Commerce	21.2	11.7	21.5	10.0
Services	44.1	13.8	46.4	15.8
Total Non Agriculture	90.4	37.2	94.6	44.4

Note: Rural work force defined as individuals above 12 years of age in areas < 2,500 inhabitants.
Source: WB staff calculations based on ENE 1995 and 2003. Individuals of 12 years and more.

Formal rural salaried employment is small. In 2003, 8.1 percent of men were employed in the formal sector, and 12.5 percent of women, many of whom teachers and other government-paid staff.[23] Employers and the self-employed jointly amounted to 40.9 percent of all men and 36.5 of all women employed in rural areas, while the informal salaried and contract workers jointly represented 31.3 percent of men and 21.7 percent of women, and unpaid family workers 16.0 and 25.0 percent, respectively (Annex Table 3.B.1). During the period covered, the percentage of informal salaried workers, both men and women, increased much, while that of family workers decreased much. It is interesting to notice the sharp decrease in women family workers and their larger involvement in self-employment activities. On the whole, trends during the period tended to reduced gender differences in labor status.

Falling labor force participation rates together with higher informality point to a lack of income opportunities in rural areas. The open unemployment rate is very small, of the order of 0.7 percent, but under employment is estimated to be high.[24] At the same time, employment has become increasingly informal over the 1990s, as self-employment and informal salaried work has increased (although unpaid family work has fallen). Moreover, while unemployment has fallen since the mid-1990s, the share of inactive people of working age has increased (Figures 3.3 and 3.4.). Together with increasing informality, this points to the lack of rural income opportunities.

Figure 3.3. Mexico: Informal Employment and Self-employment as a Share of Total Employment in Rural Areas, 1995 and 2003

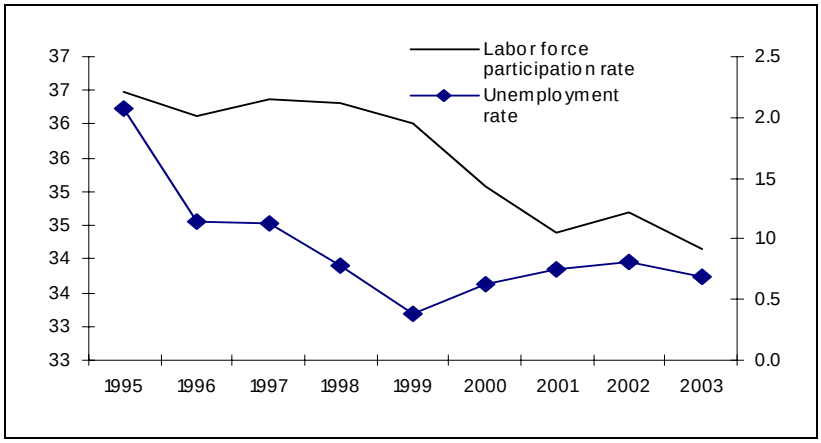


Source: Annex 3.B, Table 3.B.1.

[23] The figures for formal employment are probably underestimated because the formal sector is here defined for the purpose of quantification according to whether workers contribute to social security. This means that all "formal" work (i.e. where labor is paid an agreed wage and where the worker's labor time and effort are controlled by the employer) in which labor laws are not respected is classified as informal. Given weakness of enforcement of labor regulations in Mexico, many workers who work under "formal" conditions are considered informal.

[24] Oxford Analytical, April 2004, estimates under-employment at 20 percent.

Figure 3.4. Mexico: Labor Force Participation and Unemployment rates in Rural Areas



Source: Annex 3.C, Table 3.C.1.

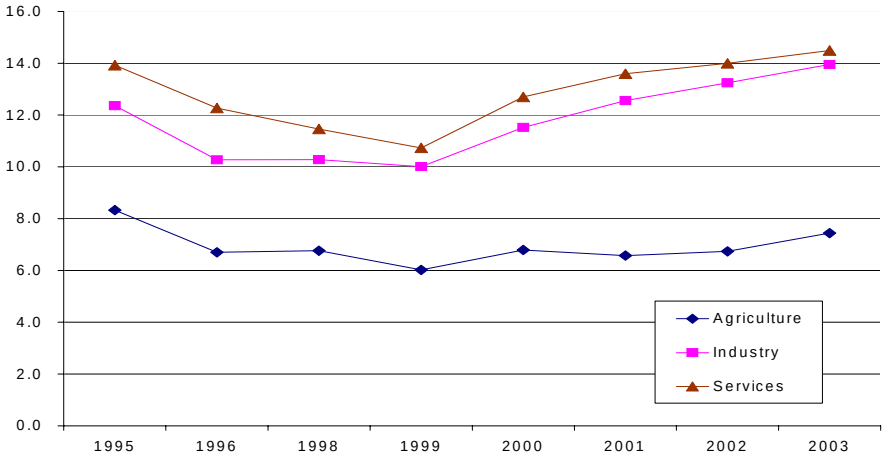
RURAL WAGES AND WAGE CORRELATES

Level and Trends in Rural Wages

Mean rural wages in all occupations fell since 1995 as a consequence of the 1995 *Tequila Crisis*, and did not start recovering until after 1999. Mean hourly wages by sector of occupation in 1995 and 2003 are presented in Table 3.4., and the evolution by sector between these two years is shown in Figure 3.5. Recovery was slower in agriculture than in industry and services, particularly between 2000 and 2002 (Figure 3.5). As a consequence, the rural agricultural wage was 11 percent smaller in real terms in 2003 than in 1995, while real wages in mining, extraction activities, manufacturing and services were slightly higher. The average rural wage rate remained stagnant. Hourly wages in the three sectors followed the same downward trend as unemployment from 1995-99, indicating little trade-off between unemployment and wages as adjustment mechanisms in the rural labor market (Table 3.4).[25]

[25] Wage figures by gender according to labor status, sector of activity, and education are presented in Table 3.E.1. of Annex E, and wage figures for rural and urban areas broken down by type of activity are provided in Annex Table 3.D.1.

Figure 3.5: Rural Average Hourly Wages by Sector (2002 Pesos), Mexico, 1995-2003



Source: WB staff calculations based on ENE 1995 to 2003, second quarter.

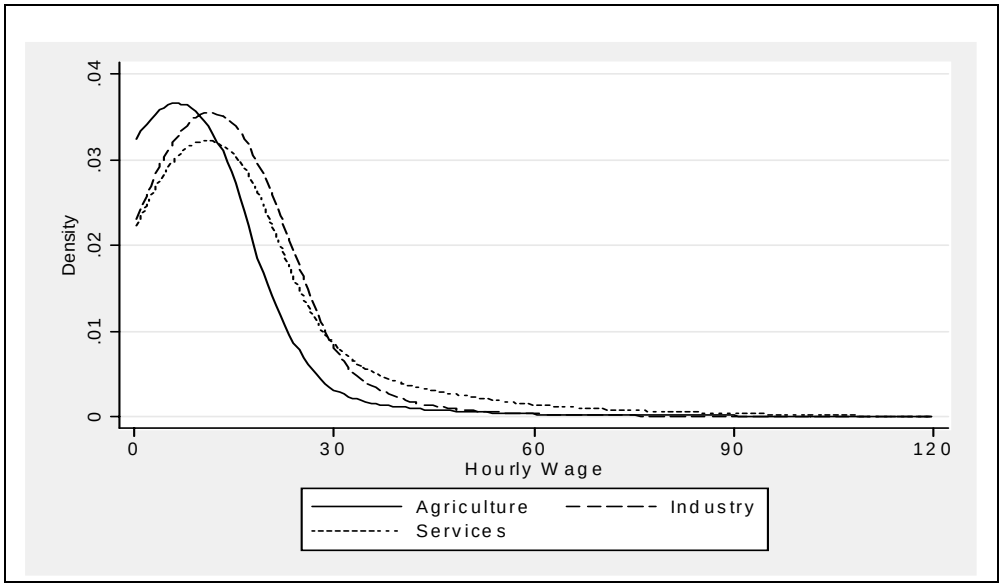
Table 3.4. Mexico: Mean Hourly Wagea by Occupation, 1995 and 2003

	1995		2003	
	Urban	Rural[b]	Urban	Rural[b]
Agriculture	12.0	8.3	13.5	7.4
Mining & Extraction	18.6	12.7	36.6	16.6
Manufacturing	17.1	11.8	19.1	12.3
Commerce	16.6	10.8	17.2	10.5
Services	21.7	13.9	23.0	14.1
AVERAGE	18.5	9.8	20.3	9.7

Source: ENE 1995 and 2003; a. 2002 MxP per hour of work; b. Localities < 2,500 residents.

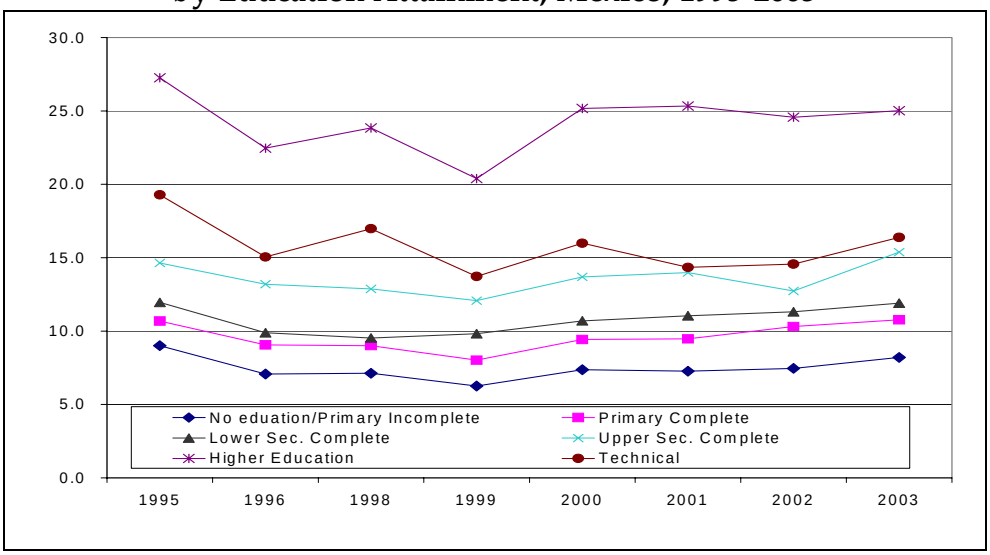
Median wages are higher in the non-agricultural sectors. Considering the whole distribution for the three sectors, median wages are higher in the industry and services sectors than in agriculture (Figure 3.6.). The right tail of the distribution of agricultural wages is also less heavy than those of industry and service wages, indicating that more people are being paid higher wages in these sectors than in agriculture.

Figure 3.6. Rural Hourly Wage Distribution by Sector (2002 Pesos), Mexico, 2003



Source: WB staff calculations based on ENE 2003, 2nd quarter.

Figure 3.7: Average Rural Hourly Male Wages (2002 pesos), by Education Attainment, Mexico, 1995-2003



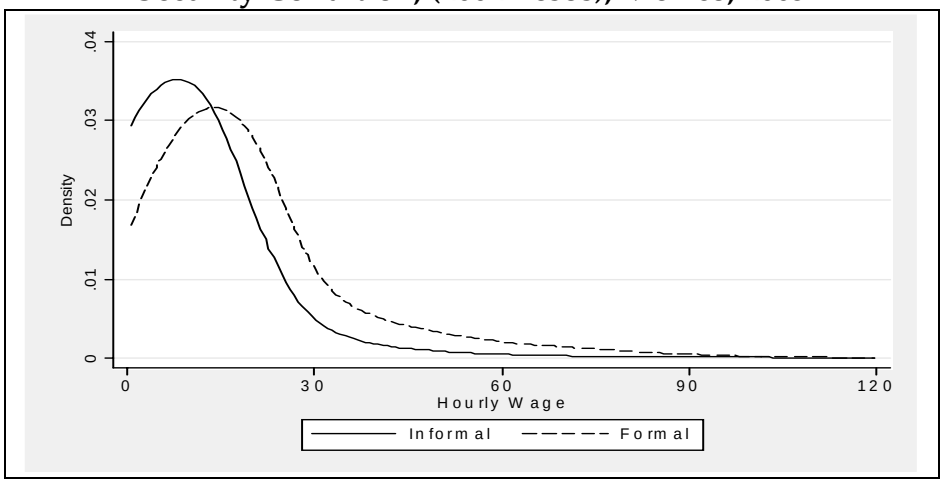
Source: WB staff calculations based on ENE 2003, 2nd quarter.

There are high returns to education. Unskilled workers with less than complete primary education receive an average hourly wage of MxP 8.2 compared to skilled workers with complete high school education who earn MxP 25.0 or more per hour (Annex Table 3.E.1). Hourly wages increase monotonically with the levels of education, as can be seen in Figure 3.7. In 2003, a male rural worker with complete higher education received on average a wage more than three times higher than a similar worker with no education or incomplete primary. Education, however, did not protect workers from

wage falls during the *Tequila Crisis*. At all levels of education, real wages of rural workers fell between 1995 and 1999.

Wages are also related to labor status, with self-employed and informal salaried workers showing lower returns to their labor than employers and formal sector employees, two categories with similar returns (Annex Table 3.E.1). Figure 3.8. shows the hourly wage distribution of formal and informal sector rural workers in 2003. Formal workers are defined as those who contribute to social security, and therefore are protected. Median wages are higher in the formal sector and this remained unchanged during 1995-2003. Not only do formal sector workers receive benefits and other social services, but their hourly wages are also larger than those of unprotected informal workers.

Figure 3.8: Distribution of Rural Hourly Wages by Social Security Condition, (2002 Pesos), Mexico, 2003



Source: WB staff calculations based on ENE 2003, 2nd quarter.

Factors Explaining Rural Wages

This section looks at factors correlated to rural wages and investigates the characteristics that differentiate low and high paid workers. We saw in chapter 2 the importance of education and other personal and context characteristics as correlates of poverty. We focus here instead on the impact of these characteristics on rural wages. The results are of course largely connected, since wages are an important component of rural incomes.

We compare workers located at different points in the wage distribution to analyze this issue, using quantile regression based on the ENE survey from 2003 (2nd quarter). Details of this exercise are discussed in Annex 3.F, with the main results presented in Annex Table 3.F.1. Wages are compared across workers grouped by gender, education, experience, labor status, and location. Findings indicate that wages are by no means determined in the same way for high and low paid workers. For

example, female workers are paid much less than males workers in the high end of the wage distribution relative to their peers in the low end of the distribution, and returns to lower levels of education are far smaller in the upper income quantiles than in the lower ones. While the detailed results are discussed in Annex 3.F, the main findings are as follows:

Having completed primary education contributes to better wages, and the premium increases rapidly with the level of education attainment. Better-educated individuals in rural Mexico earn much higher wages than their less-educated counterparts. In 2003, the association with the wage level of primary, lower secondary, upper secondary, tertiary, and technical education relative to no or incomplete primary education was positive at all quantiles, controlling for other individual characteristics. Compared to the wages of non-educated workers and those with incomplete primary, median wages of workers with complete tertiary education were 168 percent higher; the comparable premium for secondary schooling was 58 percent.[26] Workers with complete technical education received a 71 percent higher return compared to peers with no complete education.

Returns across the wage distribution do not vary much for workers with complete upper secondary and tertiary education, i.e. workers in the low end of the income distribution are not being paid comparatively less than their peers in the high end. This would seem to indicate that: (1) there is no wide heterogeneity in the quality of education in rural areas across the wage distribution, and (2) the capacity of workers to convert their educational capital into higher earnings through labor market networks is similar for poorer and richer workers. Hence, poor people with education seem to benefit from good labor market connections to the same degree as richer people.

Workers with complete primary and lower secondary education face decreasing returns across the wage distribution, however: those at the low end are paid proportionally more than those at the high end, indicating that workers with the same level of education are not compensated equally. The very poorest (10th quantile) receive a wage premium from completing primary education of 29 percent, while the rich (90th quantile) receive only a 19 percent premium. In the case of lower secondary schooling, workers in the low end (10th quantile) obtain a premium of 52 percent, while workers in the top end (90th quantile), obtain only 30 percent. One possible explanation is that social networks that facilitate labor market connections operate better among the poorer than the richer segments of the rural labor force. Another is that these levels of schooling are more relevant for employers hiring workers at the low than at the high end of the wage distribution.

[26] The percentage return is calculated as (exp (coefficient estimate) – 1) * 100. All figures presented in the following paragraphs are percentage premiums thus calculated from the marginal coefficients in Table 3.F.1.

General experience –here proxied by the age of the worker– increases wages. We use two variables, age and age squared, to take into account possible non-linearities. We investigate two questions: (1) is experience important to explain wages? and (2) are returns to experience homogeneous across the population? The answer is yes to the first question and no to the second one. The impact of experience on wages is positive and increases until workers reach 49 years of age. Thereafter, the returns fall in all quantiles. One explanation may be that older workers adapt less easily than younger ones to new technologies or they are simply less productive because of their age. Returns to experience tend to fall as we move up the wage distribution, but the variation is not large.

Workers in the informal sector obtain a significantly lower pay after controlling for other variables. The negative impact of informality increases across the wage distribution; a worker in the 10th quantile has an 11 percent wage discount because of informality, whereas a worker in the 75th quantile has a discount of 16 percent. The informal sector generally provides lower quality jobs than the formal one. Since higher quality jobs may require more skills, the informal sector variable may be capturing skill differences not signaled by other variables included in the regression. The wage gap may also be due to lower productivity in the informal sector relative to the formal one not captured by education and experience.

The labor status of workers is another important determinant of wages. Looking at the median of the distribution, employers obtain the highest return: 66 percent, relative to the group "other workers". For the richest (90th quantile), the premium gap is even larger: 103 percent. The self-employed, informal salaried and contract workers are systematically worse off. It is interesting that in the case of self-employed and contract workers the negative gap decreases sharply as we move up the wage distribution. Thus, richer self-employed and contract workers are not as penalized with respect to "other workers" as poorer ones. The opposite is the case with informal salaried workers.

Large inequalities persist in rural areas between men and women. Female wages are significantly different from male wages at all quantiles. Results also suggest that the gender gap is homogeneous across quantiles for women without children (married and single), but heterogeneous across quantiles for women with children (married and single). Married women with children experience the largest wage gap at the low end of the distribution; they obtain 36 percent lower wages than their male peers in the 10th quantile, with the gap narrowing along the distribution to reach 28 percent at the 90th quantile.

Workers in disperse rural areas are paid significantly less than workers in semi-urban rural areas, after controlling for other factors. The semi-urban –disperse rural wage gap is significantly different from zero for all quantiles and varies across the wage distribution. It increases from the 10th to the 50th quantile and declines from the 50th

to the 90th. The semi-urban premium is 12 percent for the median worker. One possible explanation for this gap is that prices, for example that of urban land, are higher in semi-urban areas, and hence the higher wage is a compensation for this — a reflection of the fact that semi-urban workers have a labor supply curve above that of disperse rural workers. Another possible explanation is that work opportunities, i.e. labor demand, are higher in semi-urban areas, pushing up wages.

All regions with the exception of the *Golfo* and *Sur* enjoy a wage premium with respect to the *Centro*, and this is consistent across the whole distribution (except for the *Sur*). The *Norte, Capital* and *Pacífico* regions have the highest premiums. Workers in the *Sur* region have an advantage over their peers in the *Centro* (but not over those in other regions) in the bottom part of the distribution, which they soon lose as we move up to higher quantiles.

THE RURAL NON-FARM ECONOMY

The Growing Importance of the Rural Non-Farm Economy

The rural non-farm (RNF) sector is extremely important for income, employment and poverty reduction in Mexico. The significance of RNF activities is being increasingly recognized in the development literature and in applied programs.[27] In the traditional view of the growth process, the sector is expected to shrink with economic development, as urban manufactured goods and service provision substitute for low quality traditional local products and services in the clothing industry, shoe manufacturing, housewares, construction materials, local finance, local communication services and many others. With economic development, the countryside was supposed to specialize in primary activities where its comparative advantage lied. The opposite, however, has been the case. Today's advanced countries have highly diversified rural areas, with agriculture as only one of many economic activities. Also, RNF incomes and employment have expanded rapidly in low and middle income countries. In Latin America, in the mid to late 1990s, RNF incomes accounted on average for some 40 percent of rural incomes (Reardon, Berdegué and Escobar, 2001).

Four reasons why the RNF sector should be given policy attention have been put forward by Lanjouw and Lanjow (2001): first, because of its potential to absorb a growing rural labor force; second, because it can slow down rural-urban migration; third, because of its contribution to national economic growth; and finally because it can promote a more equitable distribution of income. Yet, it must be remembered that the RNF sector is very complex and heterogeneous and offers very different opportunities depending on its structure (Box 3.1). In this section, we first examine available data on the importance of RNF employment and income in Mexico, and move then to examine

[27] See Lanjouw and Lanjow (2001) and Reardon, Berdegué and Escobar (2001) for two recent surveys.

the correlates of the participation of Mexican rural household in RNF activities, and the type of activities in which they participate.

Box 3.1. Heterogeneous Rural Non-Farm Activities

The RNF sector is a complex and heterogeneous one. This is logical given its negative definition, which embraces all economic activities taking place in rural areas different from agriculture. There are, hence, many different RNF occupations with varying productivities and returns to labor. There are also different barriers to entry to RNF activities in the form of the education, skills, and financial or other assets that may be required. Easy to access activities, like petty commerce, are much more competitive and have much lower returns than better-protected ones.

For empirical purposes, some authors distinguish two broad types of activities, which we can refer to as "low return" and "high return" occupations (see for instance Lanjouw, 1999, for the case of Ecuador, and Ferreira and Lanjouw, 2001, for Northeast Brazil). Poor households in poor areas are normally involved in "low return" RNF occupations, which are in a way "the equivalent of 'subsistence farming' –low productivity, low wage, unstable, with low growth potential" (Reardon, Berdegué and Escobar, 2001: 396). These occupations are a "refuge" for poor families with few or no farming assets. They do not offer a route to escape poverty but serve to complement income and make productive use of little tradable family labor, thus alleviating poverty and diversifying risks. They are, hence, useful to the poor.

In our analysis of ENIGH income data by occupations, we have distinguished between low return and high return occupations, using the assets poverty line as the cut off. Occupations providing average earnings below the poverty line are classified as "low return", those above as "high return".

EMPLOYMENT AND INCOME IN THE MEXICAN RNF SECTOR

RNF Employment

RNF activities now account for an important share of employment in rural areas. In 2003, about 44 percent of the rural working population declared non-agricultural activities as their primary source of employment. As already mentioned, these figures are likely to be highly conservative estimates of the importance of RNF activities because they do not take into account seasonality and do not consider secondary occupations. Also, the figures refer to a definition of rural as disperse areas. If we include semi-urban areas, the share of workers declaring non-farm activities as their primary occupation rises to 55 percent.

Growth in RNF activities from 1995 to 2003 has been rather general affecting most occupations but in particular construction, food processing and clothing in manufacturing, and within the services sector personal services, hotels and restaurants, and education (Annext Table 3.D.1). There are however some exceptions (beverages, tobacco products, footware, printing, chemicals, plastic and rubber goods, metal goods,

electronic goods, transport, communications, and financial services), which are revealing because are occupations that tend to be of relatively good quality and demanding in skills.

RNF Income

We should make a distinction between income coming from RNF *occupations* in the form of wages or entrepreneurial earnings, and income from public and private *transfers*. Both are non-farm incomes and both have increased much in the rural areas of Mexico at the expense of farm incomes. The implications, however, are different: while the former can indicate a certain dynamism of the rural economy, the latter points to an expansion of private and public social protection systems in rural areas.

Table 3. 5. Income Shares in Rural Mexico[a], 1992 and 2002

Income Shares	1992		2002	
	All Households	Extreme Poor	All Households	Extreme Poor
Independent Farming	38.5	38.1	12.6	16.8
Agricultural Wage Labor	12.3	19.6	11.3	21.9
Sub-total Agriculture	***50.8***	***57.7***	***23.8***	***38.7***
Independent Non-Farm Activities	8.1	4.8	5.7	6.8
Non-Farm Wage Labor	20.4	15.9	36.1	17.2
High return	4.9	1.3	23.8	4.4
Low return	15.5	14.6	12.3	12.8
Transfers	8.0	6.0	16.5	25.4
Other Sources	12.6	15.5	17.8	11.9
Sub-total Non-Agriculture	***49.2***	***42.3***	***76.2***	***61.3***

[a] Rural defined as localities of less than 2,500 residents.
Source: WB staff calculations based on ENIGH.

We look first at the composition of rural incomes in 2002. Our results, derived from ENIGH data, are rather consistent with those obtained by other authors from other data sources, e.g. Taylor, Yúnez-Naude and Cerón (2004), and de Janvry and Sadoulet (2001). The main findings can be summarized as follows:

- **Independent farming has little importance for the average rural household but** somewhat more importance for the extreme poor, amounting respectively to 12.6 and 16.8 percent of income (Table 3.5.).

- **While crop income and self-consumption are more relevant for the poor, other** farming activities (mostly livestock) are more relevant for the better off (Annex Table 3.G.6).

- **Agricultural wage labor is a significant source of income** (22 percent) for the extreme poor, second only in importance to transfers (Annex Table 3.G.6)

- **On average, agriculture accounts for 23.8 percent of income**, but its weight grows as we move down from the top to the bottom quintile where it accounts for 46.6 percent of income (Annex Table 3.G.6).

- **Income from RNF occupations is 41 percent of the total for the average** rural household, but considerably less (24 percent) for the poor. RNF entrepreneurial incomes are small compared to RNF employment incomes.

- **High return occupations are a major source of income in general**, more than low return ones, but the latter are of more significance to the poor.

- **Wage income (from farm and non-farm occupations) accounts for 47.4 percent** of the income of the average household and 39.1 percent of the income of the extreme poor. The figure for the extreme poor is lower because of their higher dependence on transfers and independent farm income, and because the figure for the average rural household is inflated by the high wage income earned by comparatively richer households in RNF high return occupations.

- **Transfers, both public and private, are a significant source of income** in general in rural areas, and they are crucial for the poor, amounting to 25 percent of their earnings. *Progresa* and *Procampo* alone account for 15 percent of the income of the extreme rural poor.

- **The significance of remittances grows as we move up the distribution** ladder, whereas that of other private transfers diminishes slightly. In general, remittances are more relevant for the non-poor while other private transfers are more relevant for the poor.

Even among landowning households, the greater share of income is derived from non-agricultural activities. The 1994 and 1997 *ejido* surveys have been used to calculate income shares by several authors. They have the advantage of allowing the breaking down income composition figures by size of family holding (reduced to rain-fed equivalents). In examining these figures we must bear in mind that they refer only to *ejido* households, i.e. households who by definition have access to land, given to them by the agrarian reform. As seen in Table 3.6, even in this sample of land-endowed households, the share of agricultural income for the average household is less than half, and is less than 30 percent for households with 5 hectare or less.The importance of agricultural incomes increases with the size of holdings. Wage income accounts for more than 30 percent of income for all households with less than 10 hectare, and its importance decreases with land size.

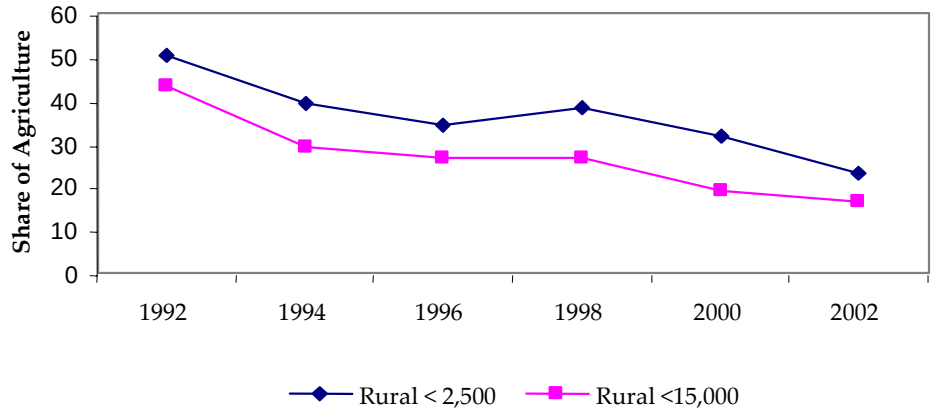
Table 3.6. Mexico: Sources of Income in the *Ejido* Sector by Farm Size, 1997

Farm Size[a]	All	<2	2-5	5-10	10-18	>18
Total Income in Pesos	***25,953***	***12,474***	***17,314***	***28,368***	***30,564***	***44,255***
Income Shares (%)						
Total Farm Income	45.1	22.9	28.1	41.8	50.3	62.0
Total off farm income	54.9	77.1	71.9	58.2	49.7	38.0
Wages	24.6	40.3	36.9	30.4	18.2	11.1
Agricultural wages	4.8	10.0	7.5	4.2	5.7	1.2
Non-agricultural wages	19.9	30.3	29.4	26.2	12.5	9.9
Self-employment	9.4	17.1	14.2	4.6	12.1	6.8
Remittances	6.5	2.6	5.4	8.9	6.0	6.0
Other	14.4	17.1	15.3	14.3	13.3	14.1

Sourcee: De Janvry and Sadoulet (2001: 469), based on the 1997 *ejido* survey. [a] Size in rain-fed equivalent hectares.

As expected, the wider the definition of rural area, the lesser the importance of agricultural incomes. We show this in Figure 3.9. where the evolution of the share of agriculture in total income from 1992 to 2002 is shown for our two definitions of rural. Both shares follow the same pattern, but that corresponding to a wider definition of rural is always below. In 2002, the share of agriculture using a wide definition of rural was 17.1 percent (including both wage and independent farming incomes), 6.7 points below the share corresponding to the more restricted definition.

Figure 3.9. Participation of Agriculture in Family Income According to the Definition of Rural



Source: WB staff calculations based on ENIGH 1992-2002.

Regional differences matter too (see Annex Tables 3.G.7 and 3.G.8). Thus, agriculture is much more important in the *Sur* (41.2 percent) than in other regions, including both wage employment and independent farming, and less important in the

Pacifico (12.4 percent). Domestic private transfers are similar across regions but remittances are much more important in the *Sur* and *Centro-Norte*. There is a difference however between these two regions. The relevance of remittances in the former region is due to the high migration to the USA of *Centro-Norte* population. Instead, migration from the *Sur* to the USA is not as large as from other regions, but the impact of remittances on income is significant in view of the low incomes prevailing in that region. RNF enterprises are important in the *Sur, Centro-Norte* and *Pacífico*, and high return RNF occupations are particularly important in the *Pacífico*.

We look now at the trends in income shares between 1992 and 2002, which are shown in Table 3.6, Annex 3.G. and Figures 3.9 and 3.10. The main findings can be summarized as follows:

- **A substantial increase in the weight of the RNF sector in relation to the farm sector**. Thus, the share of agricultural income fell from 50.8 to 38.7 percent between 1992 and 2002 (43.9 to 23.8 percent for a wide definition of rural). The increase was also significant but less marked for the rural poor.

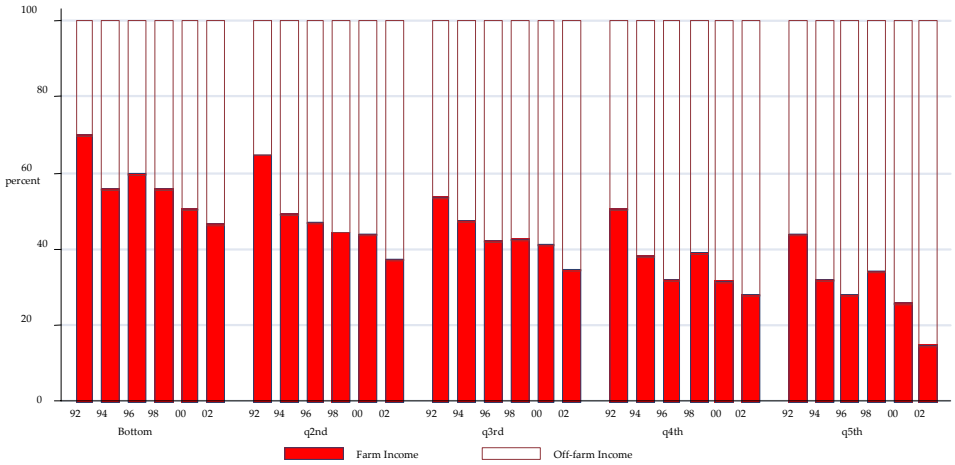
- **A substantial increase of wage incomes (farm and non-farm) relative to** independent or entrepreneurial incomes (farm and non-farm). The share of wage income increased from 32.7 in 1992 to 47.4 percent in 2002 (34.8 to 48.2 percent for a wide definition of rural). The increase was not as important for the poor because they participate little in the opening of high return RNF wage earning opportunities.

- **A substantial increase of public and private transfers relative to earned incomes**. The share of all transfers increased from 8.0 to 16.5 percent (6.6 to 15.6 percent for a wide definition of rural). The increase was particularly marked for the rural poor for whom transfers increased more than fourfold.

- **A substantial increase in wage and salary earnings from high return occupations** relative to those from low return ones. The share of earnings from high return RNF occupations increased from 4.9 to 23.8 percent. This expansion hardly reached the poor, however, for whom the share passed from 1.3 percent in 1992 to 4.4 percent in 2002.[28]

[28] It is not possible from ENIGH data to establish if richer households have a higher percentage of high return RNF income because these occupations are monopolized by them or because access of poor households to these occupations made them able to graduate from poverty. Absence of suitable panel data prevents establishing this. Both things are probably true, but barriers to entry to high return occupations would lead to believe that it was the richer households who benefited most from them.

Figure 3.10.: Rural Income Composition by Quintiles in Mexico, 1992-2002



Source: WB staff calculations based on ENIGH 1992 to 2002.

Shares do not tell the whole story of income changes. We also need to look at absolute values. We do that in Table 3.7, where we present both absolute values and shares of different sources of rural family incomes broken down by consumption quintiles. We observe that while the share of independent farming income falls rapidly as we move from the 1st to the 5th quintile, the value of income increases. Hence, on average, rich rural dwellers obtain more income from independent farming than poor ones, but independent farming earnings mean much less to them as a proportion of all their operations. Agricultural wage labor incomes do not change a great deal across quintiles but the share falls rapidly as we move up the distribution ladder. Income from RNF low return occupations has similar importance for the poor and non-poor, being most important for the 3rd and 4th quintiles. The share, but not the absolute amount, falls to less that half for the 5th quintile. Finally, both the income and the share from high return RNF occupations grow much as we move to the upper quintiles but income grows more rapidly than the corresponding share.

The development of the RNF sector opens economic opportunities to the rural population. But who grasps those opportunities, and do they have an equalizing effect or not?[29] On the basis of the *ejido* sample, de Janvry and Sadoulet (2001) conclude that agriculture is the main source of inequality in the *ejidos*, and that access to RNF employment has an equalizing impact. Reardon *et al* (2000) suggest that the effect of the RNF economy on equity depends much on the circumstances, and that in general in Latin America it has an equalizing effect, whereas the opposite is the case in Africa.

[29] To give a proper answer we would nee to carry out a counterfactual analysis of what would have happened to rural poverty and equity in the absence of RNF growth or with a different type of BNF growth. This type of counterfactual analysis was carried out by Paes e Barros, de Carvalho, and Franco (2004) for Brazil, but we will not attempt it here.

Araujo (2003: 3rd essay) using municipal-level manufacture and service data, along with poverty indicators drawn from the 1990 and 2000 population censuses, finds that rural manufacture and service development tended to decrease Mexico rural poverty in the 1990s.

Table 3.7. Rural Farm and Off-farm Occupation Income by Consumption Quintile and Poverty Condition, Mexico, 2002

	All Househ.	*Consumption Quintiles* *Bottom*	*2nd*	*3rd*	*4th*	*5th*	*Extreme Poor*	*Non Poor*
Total Income (2002 MxP/year)	***37,263***	***11,181***	***18,136***	***25,256***	***33,837***	***97,990***	***11,884***	***51,256***
INDEPENDENT FARMING								
Income (MxP)	4,695	2,068	2,684	3,536	4,331	10,779	1,997	6,048
Share (%)	12.6	18.5	14.8	14.0	12.8	11.0	16.8	11.8
Agriculture Wage Labor Income								
Income (MxP)	4,211	3,142	4,026	5,177	5,177	3,724	2,603	4,921
Share (%)	11.3	28.1	22.2	20.5	15.3	3.8	21.9	9.6
RNF High Return Wage Income								
Income (MxP)	8,869	313	1,505	2,803	4,771	34,688	523	13,839
Share (%)	23.8	2.8	8.3	11.1	14.1	35.4	4.4	27.0
RNF Low Return Wage Income								
Income (MxP)	4,583	1,286	2,612	4,243	6,429	8,427	1,521	6,253
Share (%)	12.3	11.5	14.4	16.8	19.0	8.6	12.8	12.2
RNF Entrepreneurial Income								
Income (MxP)	2,124	481	1,088	1,919	2,267	4,900	808	2,819
Share (%)	5.7	4.3	6.0	7.6	6.7	5.0	6.8	5.5
OtherIncome Sources								
Income (MxP)	12,781	3,891	6,221	7,577	10,862	35,472	4,433	17,376
Share (%)	34.3	34.8	34.3	30.0	32.1	36.2	37.3	33.9

Source: WN staff calculations from ENIGH 2002.

What can we say on this subject in the light of the figures presented above?

Rural poor families seem to have benefited from the opportunities opened by the RNF economy. We do not know, however, if these opportunities were taken up because of the fall in other sources of income, thus substituting for them, or were an addition to these sources. If they were not additional, the conclusion is that they did not serve to reduce poverty. Looking, however, at the figures and in the absence of a detailed analysis, it is reasonable to assume that there has been additionally, and that the impact on poverty has therefore been favorable.

High return RNF occupations seem to have been mostly taken up by the comparatively better off, although the poor have also participated in them to some

extent. Hence, it is likely that the impact has not been equalizing, and the RNF sector has contributed in some measure to the worsening of the rural income distribution. Public and private transfers are a different case; they have definitely helped the poor more than other groups, and have therefore had an equalizing impact.

What Explains Participation in Rural Non-farm Employment?

We have carried out an exercise on the basis of the ENE 2003, 2nd quarter survey, using a Probit model, to determine the probability of individual involvement in non-farm activities as primary occupation, conditional on a range of personal, household and geographical characteristics. Regression results are discussed in detail in Annex 3.H. Because of limitations in the ENE survey, some important variables cannot be considered, including access to land, ethnicity, social networks, and physical infrastructure. The results from other studies using these variables are discussed in Annex 3.H, however. The main findings are summarized below.

- **Women have considerable higher probability than men to participate in RNF activities,** controlling for all other variables. This result holds for married and single women, with and without children, with marginal effects that are not very different among these groups of women. However, women have more limited access to high return occupations and remain confined mostly to low return ones. This does not change with marital status or having children.

- **Age, a proxy for experience, increases the probability of employment in high-return non-agricultural jobs**. The association is negative for low return ones. No evidence was found of the association declining at a certain age. Since this result is at odds with findings in other studies (see Annex 3.H), more research is needed to understand the age factor.

- **Involvement in the non-farm sector is significantly related to education levels.** As education levels rise, so does the probability of being employed in low return and high return occupations. The exception is university and technical education, which, not surprisingly, diminish the probability of engagement in low return RNF activities but increases that of participating in high return ones.[30]

- **Workers living in disperse rural areas are less likely to be employed in RNF occupations than those living in semi-urban areas**.

- **Workers in high poverty regions are less likely to participate in RNF activities.** Regional differences in poverty levels are mirrored in regional patterns for RNF activities. Relative to those living in the *Centro* region,

[30] It should be acknowledged that the exogeneity of education in these models can be questioned.

workers in the *Norte, Capital, Golfo*, and *Centro-Norte* regions are more likely to be employed in RNF activities. Instead, workers in the *Pacífico* and *Sur* are less likely to participate in the RNF economy than their peers in the *Centro*.

CONCLUSIONS AND POLICY IMPLICATIONS

The rural labor market is undergoing a rapid transformation. Labor force characteristics are changing as a result of better infrastructure, education and health services in rural areas, and a general process of social modernization. Agriculture is rapidly losing importance relative to the RNF sector. Wages are becoming the primary source of income for rural dwellers relative to independent entrepreneurial incomes. Public and private transfers have increased dramatically, having become crucial to the survival of the rural poor. Many new RNF occupations have become available in rural areas, although the best of these opportunities can be hypothesized to have been seized by the comparatively better off.[31]

Yet, productivity, employment, wages and income levels remain more or less stagnant. In spite of this structural transformation, the rural economy is not sufficiently dynamic. There is a cleavage between the dynamism of socio-demographic change in rural areas and their limited economic development. Rural employment has fallen by around half a million over the last eight years, notwithstanding population growth and higher women participation in the labor force —a worrying symptom of the effects of the migration process and the paucity of employment opportunities. The latter is also evidenced by the stagnation of rural salaries over the same period. The rural poor, hence, increasingly rely on outside assistance in the form of private and public cash transfers to cover many of their basic needs,

The demographic changes and those in the characteristics of the labor force reflect a rural society in profound transformation —a view reinforced by the increasing extent of migration, and the modification of rural income composition with a substantial rise in non-farm earnings. We have to put these trends in the context of the little encouraging figures on the incidence of rural poverty, the modest performance of agriculture, and the increase in transfer incomes. The picture that emerges is one of a rural society which experiences the impact of social modernization and market exposure but has not yet found a firm way to sustainable economic development.

[31] It is worth repeating here the warning regarding causality problems. We do not know if better off households seized these opportunities or households lucky to profit from them became better off. Two considerations offer some comfort, however, for believing that the dominant causation runs from income position to high return RNF employment. The first is that variables like education, age, location, and ethnicity, positively correlated with high return RNF employment, are negatively correlated with poverty. The second is that it is reasonable to expect comparatively better off households to have access to assets that help overcoming the barriers to entry into high return occupations.

A comprehensive vision of rural development beyond sectoral approaches is forming in Mexico. The rural world is not an agricultural world, and the rural economy is not an agricultural economy; indeed, the combination of economic activities is the dominant characteristic of rural households and communities in contemporary Mexico. Fortunately, there is a trend in Mexico, both in the public sphere and in civil society, in favor of a more comprehensive view of the rural world, evidenced for instance in the *Ley de Desarrollo Rural Sustentable*. The challenge is how to transform this into full policy reality, including appropriate changes in the institutional set up.

Rural policy could benefit greatly by moving from the farm to the family as the unit of analysis for rural development and the receiver of rural policy interventions. Given the various occupations of rural households and their combined sources of income, the family economy becomes a clearer choice of focus than the farm economy. This would also remove the dichotomy between "viable farms", typically the focus of production-oriented programs, and "non-viable farms", generally supposed to be targeted by "social" policy and relief programs. Instead, more modern visions look at the continuum of farms going from the very small to the large, recognize common interests and possibilities of economic and corporate co-operation between farms of different sizes through contract systems, chain arrangements, joint ventures and other means, and acknowledge that small farmers can reap most of the relevant economies of scale from association and the use of competitive rental markets for indivisible inputs. This approach helps placing economic factors and programs and not only "social" and relief programs at the core of poverty reduction.

Secondary education has been repeatedly found to be strongly linked to participation in the RNF economy, and also to enhance the income obtained from a variety of occupations. This is one more reason to expand the coverage and quality of secondary education in rural areas, in particular for those who are falling behind, like indigenous groups and residents of remote areas. Quality is probably as important or more than coverage if we want to increase the impact of education. Raising education is not enough, however; it is the synergy of knowledge with other productive assets that raises incomes (see De Ferranti *et al*, 2002).

Infrastructure and location characteristics are other important correlates of RNF participation where policy can intervene. Road connections, communications, and energy have been shown to be important for the development of the RNF economy, and of manufactures in particular. Disperse rural areas are systematically associated with lower incomes and employment opportunities, and proximity to urban centers favors RNF development. This is another reason why raising the low levels of investment in rural infrastructure (see chapter 4) could pay off. Population dispersion and proximity to urban centers are long-term undertakings from a policy perspective. But much could be gained from a spatial policy that favor the concentration of investment and services, the development of rural towns and intermediate cities, and the establishment of links between these and their rural hinterlands. The decision for instance of the *Microrregiones*

strategy to concentrate investments in some localities to help them become centers of local development, is an encouraging step in that direction.

Rural poor workers need help to overcome barriers to entry to RNF occupations, especially lack of skills and financial assets. Vocational training is a need which could receive more attention. There is a tradition of technical agricultural schools in Mexico, like the CBTAs, but there are not enough comprehensive medium-level polytechnic training centers in rural areas with a modern vision for the provision of vocational training. This is a field with important potential for policy intervention. The promotion of rural finance is recommended in several parts of this study, which is logical in view of the multiple functions of finance in rural development and poverty reduction. Micro-finance institutions have proven in many countries their capacity to promote the growth of micro and small enterprises and help the poor getting started in business. Promoting RNF activities is hence one more reason to advocate for policies to expand the rural finance system and make it friendly to the poor.

Finally, the inherent heterogeneity of the RNF sector would favor a policy approach focused on decentralization through territorial development. A territorial approach to rural development would simplify the implementation of policies to stimulate the RNF economy and would make the specific programs more relevant to the local context. Like in the case of rural finance, we advocate in several parts of this study in favor of a territorial approach to rural development. The reason is that this approach is a policy framework where the many facets of rural development can best be tackled. We summarize in Annex 3.I the characteristics of the territorial approach.

Pursuing RNF growth should not be seen as an impediment or an alternative to pursuing agricultural development; there are strong synergies between the farm and non-farm sectors. In signaling the importance of the RNF sector and advocating more policy focus on the non-farm economy, we do not intend to diminish the importance of agricultural development. There is no contradiction between the development of the farm and non-farm sectors (see Lanjouw and Lanjouw, 2001, and Reardon, Berdegué and Escobar, 2001). The synergies are examined in chapter 4. What is needed is a comprehensive rural development policy where farm and non-farm can find their place and their connections be recognized.

4. AGRICULTURE, POVERTY AND THE SMALL FARMER

This chapter takes a closer look at the agricultural sector to examine what has been and what could be its role in reducing rural poverty.

The main findings of the chapter can be summarized as follows:

- **There is evidence for the case of Mexico that agricultural growth is pro-poor**. The impact is stronger for the worst poverty conditions and is mostly confined to rural poverty.

- **Agriculture experienced modest growth in the 1980s and 1990s of around 1.5** percent per year in each decade, below national growth and population growth. Output of food crops grew more, at around 2.2 percent in 1980-02, mostly as a result of some improvement in the yield of individual crops and a change of crop mix in favor of higher value crops. Aggregate land expansion did not contribute to output growth due to the exhaustion of the crop land frontier.

- **Agricultural growth was higher in the northern states where agriculture is more** commercial, in irrigated lands where commercial farming concentrates, and in the more commercial crops.

- **Land and labor productivity rose in the 1990s at a rate above 2 percent, and total** factor productivity also grew. However, by international standards, land and labor productivity are low in Mexico, and the gap to the nonagricultural sector is high.

- **Federal government expenditure in rural development is high by international** standards. Social and productive development are the major expenditure areas, while infrastructure and environmental expending are small.

- **Value added per hectare does not increase with farm size, suggesting that land is** more productive in small farms.

- **Access to variable capital, which includes seeds, fertilizer and chemical inputs**, is the main factor explaining output in the small farm sector, while labor contribution to output is comparatively small at the margin. Credit

restrictions; however, appear to prevent small farmers from using optimum quantities of inputs.

- **There is no evidence of economies of scale in farm production but there** is evidence of substantial inefficiency in farming.

- **Farmers producing more commercial crops are comparatively more efficient than** others.

The main policy implications deriving from the above findings are:

- **The exhaustion of the land frontier and the comparatively low levels of land and** labor productivity in agriculture point to agricultural intensification as the thrust of agricultural policy to increase output and incomes. This puts focus on how to improve varieties, switch crops, increase yields and reduce the incidence of natural shocks.

- **Poorer farmers need special assistance to move from low to high value crops**. An important element would be the presence of extensive and well functioning research and extension and rural finance systems. These systems are also essential to raise crop yields, which is the other component of intensification.

- **Small farmers tend to face more market failures and need to have services** like research, extension, and rural finance tailored to their needs.

- **While federal government expenditure on agriculture is high, reflecting** the importance traditionally given by Mexican governments to rural areas, its efficiency and effectiveness is called into question by the weak historical performance of the sector.

THE ROLE OF AGRICULTURE IN POVERTY REDUCTION IN MEXICO

Agricultural growth can affect poverty through several mechanisms: (i) higher output of poor farmers, (ii) higher wages for unskilled labor, (iii) indirect demand for rural non-farm activities, (iv) lower food prices, and (v) inter-industry linkages, both upstream, e.g. fertilizers and machines, and downstream, e.g. food-processing industries. Whether agricultural growth is actually poverty reducing will depend on how and where growth takes place.[32] This is discussed in Box 4.1.

[32] The role of agriculture in economic development and the connection between agricultural growth and poverty reduction have been discussed for a long time in the literature. See, for instance, Rao and Caballero (1990) for the first theme and Mellor and Desai (1985) for the second. A recent review of issues and literature can be seen in Mellor (2000).

Box 4.1. How Can Agricultural Growth Help Alleviate Poverty?

Agricultural growth can affect poverty in both urban and rural areas through a wage effect, a production effect, a RNF multiplier effect, a food price effect, and an inter-industry linkages effect (López, 2002).

The wage effect is due to the fact that, because of the high labor mobility observed in many countries, agricultural labor markets are strong determinants of the wage rate for unskilled labor throughout the economy. Agricultural development is likely to raise agricultural wages, and this will translate into higher wages in other parts of the economy. The impact will depend on the distribution of agricultural assets, the existence or not of surplus labor in agriculture, and the way growth came about. If growth resulted from improvements in average labor productivity in the semi-subsistence sector, the wage rate effect may be strong. If, instead, growth originated in the plantation sector and was not accompanied by increased labor demand (or surplus agricultural labor was enough to meet the increased demand), the impact would be small or nil. We can even imagine a negative wage effect, for instance if agricultural growth was the result of widespread labor saving innovations (see, e.g. Arrighi, 1967, who discusses the case of colonial Rhodesia).

The direct production effect is simply the result of growth itself. If growth originated in the small farm sector, through for instance irrigation, improved technology, better prices or new crops, the outcome will be increased by real incomes in this sector with a direct effect on poverty. If, instead, larger farmers were the main actors involved, the poverty impact may be small or nil. It could be negative, if increased output generated by large farmers displaced from markets that of poor farmers.

The RNF multiplier effect consists of the impact of agricultural growth in the RNF economy (see e.g. Mellor, 1976). The relation refers not only to intermediate links, like the increase in farmers' demand for local transport and marketing services when production grows, but also to final consumption and investment demand, like the increase in the demand for entertainment services or housing or agricultural works when there are bumper crops or particularly good prices. To the extent that the rural poor are engaged in the production of RNF goods and services, they will benefit from expanded demand. The impact, however, depends on whether the incremental demand concentrates on tradable or non-tradable items, on the existence of spare capacity in the RNF economy, and on the degree and type of involvement of the poor in the RNF economy. Differences in these conditions have been shown to result in different outcomes (e.g. research on Indian villages by Foster and Rosenzweig, 2003)

The food price effect results from the fall of food prices that may follow increased agricultural production. Lower food prices raise wages and other incomes in real terms throughout the economy, thus reducing poverty. The effect, however, will depend on the openness of the economy, and on whether production increases center on tradable or non-tradable agricultural items. It will also depend on demand elasticities and on how badly hit are poor farmers by price falls. Falling prices could deteriorate poverty conditions in the rural sector if the increased output is generated by rich farmers, who could collect higher revenues even with lower prices, while poor ones receive lower prices for their stagnant output.

We finally have the inter-industry linkage effect, which refers to the incentive that agricultural growth generates in upstream and downstream-connected industries. The incentive operates via prices and quantities, and depends on how open is the economy, how tradable are the sectors where incremental demand concentrates, if there is or not excess capacity in those sectors, and how good is economic coordination along the value chains. The impact on poverty of this effect will mostly work through the labor market, and will depend on what happens to labor demand and the wage rate of unskilled workers when production expands in the industries stimulated by agricultural growth.

Hence, although there is a good possibility that agricultural growth reduce rural and urban poverty, there is no certainty that this will occur. In countries with a very unequal distribution of agricultural assets, especially land ownership, agricultural growth is most likely to concentrate on the middle and large farming sectors without benefit to the poor who may even end up being worst off. Indeed, research suggests that an agriculture-biased growth pattern directly reduces poverty but indirectly raises inequality due to the unequal distribution of land assets (De Janvry and Sadoulet, 1996).[33] In a dual agricultural economy the question of which sector is the main actor of agricultural growth is of great importance for poverty reduction. The direct production effect and the wage effect will be bigger if the small farm sector is the leading actor. The RNF multiplier effect is also likely to be bigger, for it is reasonable to assume that an increase in incomes would translate into larger local demand if it originated in the small farm sector. The fall in food prices that may accompany expanded production would be less consequential to small producers if they were the ones to generate the incremental output. Inter-industrial effects may not be very different if agricultural expansion is led by small or large farmers except that if led by the latter there may be more leakages to imports because of the type of technology they use and the markets in which they operate.

The impact of agricultural growth on poverty has been empirically examined in Mexico by Soloaga and Torres (2003) in the framework of the FAO ROA project.[34] Following the approach used for Ravallion and Datt (1996) for India, and using ENIGH data for 1992 through 2000, the authors analyze the impact of agricultural and non-agricultural growth on total, urban and rural poverty. They estimate poverty elasticities to growth using state- and region-level data for both the extreme and moderate poor as well as the impact of both types of growth on distributional equity in rural and urban areas. Using ENE data the authors also estimate the impact of agricultural and non-

[33] De Janvry and Sadoulet (1996) examine the evolution of Latin American countries between 1970 an 1994 showing that an agriculture-biased growth pattern directly reduces poverty but indirectly raises inequality due to the unequal distribution of land assets. This may lead to an increase in rural poverty as a combined result of both effects.

[34] The ROA (Roles of Agriculture) project is a study undertaken by FAO on the socioeconomic roles of agriculture in developing countries. It covered 11 countries, Mexico among them, and 5 areas of potential importance of agriculture outside the direct production of food and other agricultural goods. These areas are: environmental management, poverty reduction, buffering economic cycles and shocks, facilitating the viability of rural communities, and contributing to cultural traditions. The study was carried out between 2001and 2003 (See http://www.fao.org/es/ESA/Roa//default.htm)

agricultural growth on labor demand to see if there was some wage effect. They finally check for the existence of a food price effect.[35]

Both agricultural and non-agricultural growth have a substantial and statistically significant impact on the reduction of total poverty, both extreme and moderate, but the effect of agricultural growth is stronger (Table 4.1). The impact on total poverty of the two types of growth occurs through their separate effects on urban and rural poverty, since the cross effects are not significant. Thus, agricultural growth promotes poverty reduction in rural areas while non-agricultural growth promotes poverty reduction in urban areas.[36] A one percent increase of agricultural GDP decreases extreme rural poverty by 1.5 percent and moderate rural poverty by 0.8 percent. Similarly, an increase of 1 percent in non-agricultural GDP reduces extreme urban poverty by 1.6 percent and moderate urban poverty by 0.7 percent. The elasticities shown in the table refer to the poverty headcount or FGT(0). Other measures of poverty, like the poverty gap FGT(1) or the squared poverty gap FGT(2), not shown in the table but also examined by the authors, verify that agricultural growth has higher impact than non-agricultural growth on the poorest population sectors.[37] There is variation in the regional impact of agricultural growth, which is related to the share of population in rural areas. Thus, the more rural regions (*Sur*, *Golfo*, *Centro-Norte* and *Centro*) have higher elasticities than the more urban ones (*Norte*, *Capital* and *Pacífico*).

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[35] Soloaga and Torres' approach consist of a reduced form equation with change in poverty rates in the left hand side and agriculture and non-agriculture growth rates on the right hand side. They use poverty rates and growth rates for the 32 Mexican states and 7 geographic regions as observations, and apply both OLS and instrumental variables. They use current consumption rather than income as the welfare variable to measure poverty. They use two-in-two year rates of growth from 1992 to 2000 from the national accounts for all the states and INEGI regions for ag and non-ag sectors from INEGI national accounts, and run these against the changes in poverty in the corresponding two years registered calculated from the ENIGHs.

[36] Unfortunately, available data does not allow separating growth in the rural and urban non-ag sector. Hence, Soloaga and Torres investigate the impact on poverty of *all* non ag growth. Given the very large dominance of the urban sector in non-ag growth, it is not surprising that the elasticity of rural poverty to non-ag growth is not significant. It the elasticity of rural poverty to *rural* non-ag growth could be computed it would probably be significant and possibly even larger in absolute value than that for ag growth.

[37] Thus, the value of the elasticities of the extreme poverty gap FGT(1) to rural growth is –1.7 for total poverty and –2.1 for rural poverty. The corresponding elasticities for the squared poverty gap FGT(2) are -2.1 and –1.1

Table 4.1 Poverty Elasticities of Agricultural and Non-Agricultural Growth in Mexico

Poverty and Growth Sector	Total	Urban	Rural
Extreme Poverty			
Agricultural Growth	-1.3	n.s.	-1.5
Non-Agricultural Growth	-0.9	-1.6	n.s.
Moderate Poverty			
Agricultural Growth	-0.6	n.s.	-0.8
Non-Agricultural Growth	-0.5	-0.7	n.s

Only instrumental variables results reported.. n.s indicates no significance.
Source: Soloaga and Torres (2003: Table 4).

Growth in rural consumption reduces inequality at the national level and also in urban areas but has no effect on rural inequality. The positive effect on urban inequality is probably linked to the positive impact of agricultural growth on the demand for unskilled labor. Soloaga and Torres run regression equations for the demand of skilled and unskilled labor with the growth of agricultural and non-agricultural output as arguments, controlling for wage levels and the rental price of capital. They obtain elasticities of unskilled labor demand of 0.6 for the growth of non-agricultural output and 0.2 for that of agricultural output. The elasticity of demand for skilled labor to non-agricultural growth is 0.9 while that to agricultural growth is not significant.

The real exchange rate has an impact on domestic food prices while agricultural growth does not, signaling the openness of the Mexican food economy. Soloaga and Torres check for the presence of a food price effect by regressing food prices on the growth rates of the agricultural and non agricultural sectors, controlling for variations in the real exchange rate. The results indicate that there is no food price effect. Instead, the real exchange rate shows a significant impact on domestic food prices.

In conclusion, we can say that there is good evidence of a positive effect of agricultural growth on poverty in Mexico. The pro-poor impact is stronger for the worst poverty conditions and is mostly confined to the rural sector itself. In view of the impact on poverty, the next question is how is Mexico's agricultural sector performing.

RECENT AGRICULTURAL PERFORMANCE IN MEXICO

Agricultural Value Added and Food Crop Output

Value Added

Agriculture has experienced modest growth over the past two decades, below that of the national average. In 1980-2003, agricultural growth rates have hovered around 1.5 percent per year, close to one percentage point less than national GDP. In per

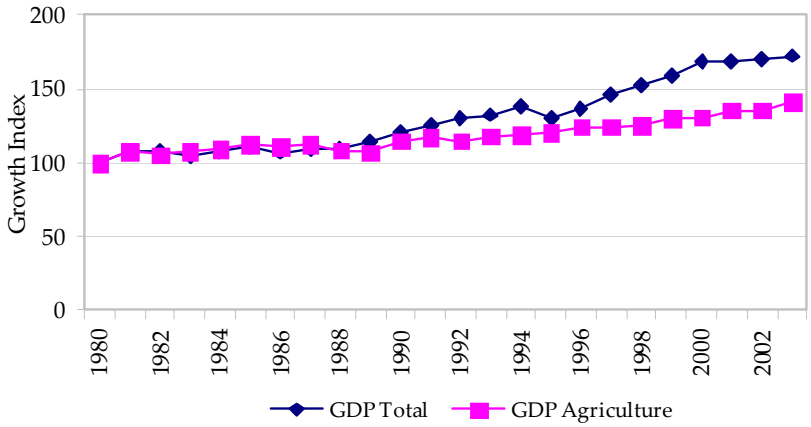
capita terms agricultural growth was negative, although it was positive but less than one percent if computed per capita of the rural population (Table 4.2).

Table 4.2. Mexico: Growth Rates of Agriculture and Total GDP

	Growth Rates (real GDP)			
Periods	**GDP**	**Ag GDP**	**GDP p.c.**	**Ag GDP p.c.**
1980-91	2.08	1.45	0.00	-0.62
1991-03	2.67	1.55	1.00	-0.10
1980-03	2.39	1.50	0.52	-0.35

Source: WB staff calculations based on INEGI's National Accounts.

Figure 4.1. Indexes of Evolution of Total and Agriculture GDP in Real Terms (1988=100), Mexico, 1988-2002



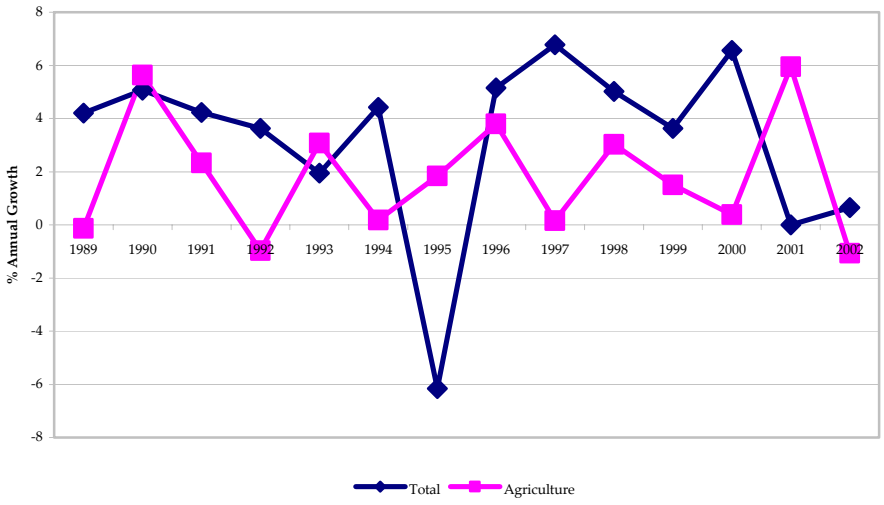
Source: WB staff calculations based on INEGI's National Accounts.

The agricultural and non-agricultural sectors grew in parallel until 1989, when the non-agricultural economy started a faster growth trend (Figure 4.1). Performance was uneven, with "good years" like 1990, 93, 96 and 2001, when growth was above 3 percent, and "bad years", like 89, 92, 94, 97, 2000 and 2002, when growth was close to zero or negative. The performance of the national economy was somewhat less volatile,[38] with a major event, the Tequila Crisis in 1995, and a less dramatic one, the 2002 recession (Figure 4.2). There was no correspondence between agricultural and non agricultural growth,[39] which was evident during the 1995 crisis, when agriculture grew at 2 percent.

[38] The coefficients of variation for the annual growth series are 123% for Ag GDP and 103% for GDP.

[39] The correlation coefficient of the two series is –0.1.

Figure 4.2. Mexico: Real Annual Growth Rates of Total and Agriculture GDP, Mexico 1981-2003



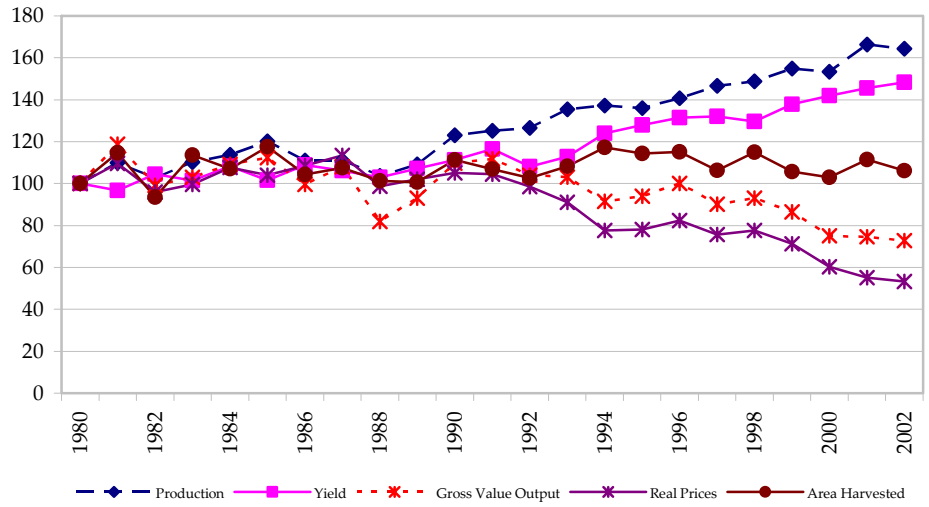
Source: WB staff calculations based on INEGI's National Accounts.

Food Crops

An increase in crop yields, partly due to a shift towards higher value crops compensated somewhat for a dramatic fall in real prices for food crop output. The harvested area increased little in the 80s and nothing in the 90s (Figure 4.3). This points to the exhaustion of the crop frontier in Mexico, a situation which conditions agricultural growth prospects. Real prices fell dramatically, especially in the 90s, largely as a consequence of the opening of the economy. Yields, however, increased; first at a modest rate of 1.4 percent during the 80s, and then at a stronger rate of 2.5 percent in the 90s, which may be interpreted as a positive response to the tightening of international competition. Yield increases were the result of modest and uneven improvements in the yields of individual crops, and of shifts from low to high value crops, particularly into vegetables and fruits, away from cereals and oil crops, with the consequent improvement of the crop mix.

More commercial crops and the irrigated sector provided most of the dynamism to the rural economy while rain-fed farming fell behind. The groups that experienced larger area expansion were vegetables and fruits, whereas oil crops and tubers decreased in area, especially the latter, and cereals remained stable (Table 4.3). Yield expansion was different, however, in irrigated and rain-fed areas, as shown in Figure 4.4. With some ups and downs, food crop yields in rain-fed areas increased in the 1990s somewhat, after being stagnant in the 80s. Yields in irrigated areas increased both in the 80s and 90s through the early 2000s with a particularly strong trend in the latter period. Thus, from 1991 to 2001 the yield index for irrigated production moved from 120 to 180 –a 50% increase, compared to a 23 percent increase for rainfed areas.

Figure 4.3. Agricultural Production, Yields, Area, Value of Food Crop Output, and Real Prices, Mexico 1980-2002. Indexes, 1980=100



Source: WB staff calculations based on SAGARPA agricultural database.

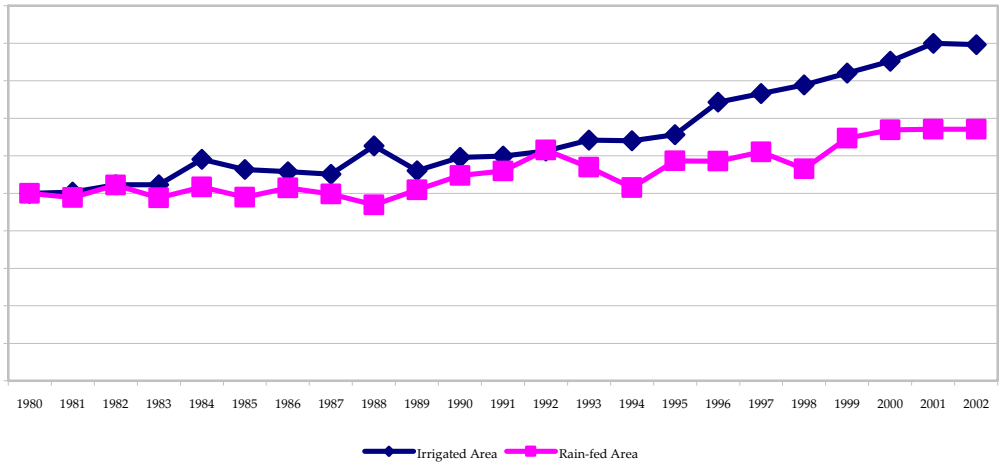
Table 4.3. Mexico: Harvested Area in 2002, and Area and Yield Growth Rates of Food Crop Groups in 1980-2002

	Cereals	Oil Crops	Veget-ables	Fruits	Tubers	Legumes
Area in 2002 (000 ha)	7,848	209	548	1,222	66	2,238
Growth Rates Area (%)						
1980-1991	0.5	-3.7	3.0	1.7	-0.8	2.1
1991-2002	-0.3	-9.1	2.4	2.6	1.4	0.5
1980-2002	0.1	-6.4	2,7	2.1	-1.0	1.3
Growth Rates Yields (%)						
1980-1991	1.2	3.3	2.2	0.3	1.99	0.9
1991-2002	2.1	-3.3	1.2	0.9	3.3	0.9
1980-2002	1.6	0.0	1.7	0.6	2.6	0.9

Source: WB staff calculations based on SAGARPA's agricultural database, SIACON.

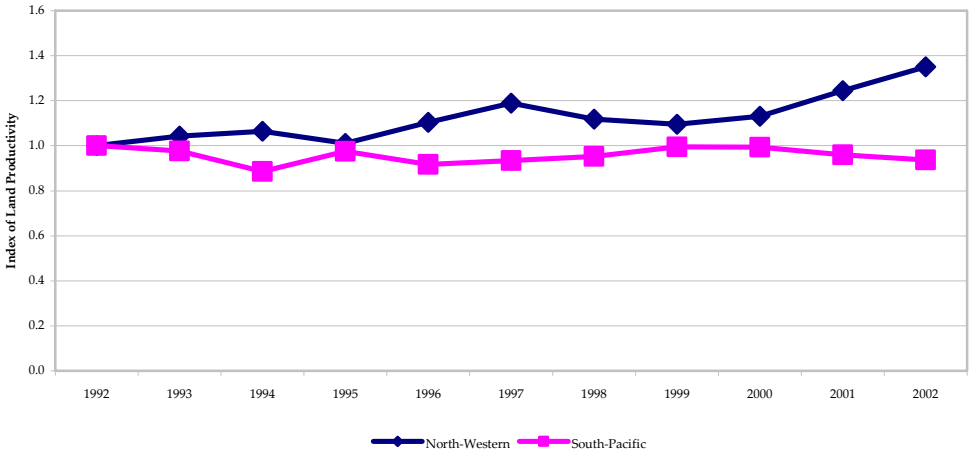
Land productivity stagnated in the 1990s in poorer regions in the South Pacific. Figure 4.5 contrasts the evolution of land productivity in the North Western region (*Baja California Norte, Baja California Sur, Sinaloa* and *Sonora* states) and in the South Pacific region (*Guerrero, Oaxaca* and *Chiapas*). Land productivity increased in the North Western region, characterized by its modern commercial agriculture, while it remained stagnant in the South Pacific region, dominated by a more traditional and peasant type farming. Table 4.4 shows that growth rates for all types of crops were larger in irrigated lands. Not surprisingly, the highest growth rates corresponded to horticultural and fruits crops, which are characteristic of modern commercial farmers.

Figure 4. 4. Mexico: Evolution of Food Crop Yields in Irrigated and Rain-fed Areas. Indexes, 1980=100



Source: WB staff calculations based on SAGARPA's agricultural dataset.

Figure 4. 5. Mexico: Evolution of a Land Productivity Index in the North Western and South Pacific Regions, 1992=100



Source: WB staff calculations based on SAGARPA's agricultural database, SIACON.

No data is available on agricultural growth by type of farm that would allow us to show how different type of farming sectors performed during the decade examined. However, the evidence presented —higher agricultural growth in the northern states where agriculture is more commercial, in irrigated lands where commercial farming concentrates, and in the comparatively more commercial crops—points clearly to an uneven type of agricultural development. Thus, agricultural growth was not only modest but concentrated also mostly in the more commercial farming sector. The evidence points hence to an increase during the decade of the dualism characteristic of Mexican agriculture and corroborates the findings in chapter 3.

Table 4.4. Mexico: Annual Growth Rates of Output 1991-02 of Various Types of Crops in Irrigated Lands and All Lands

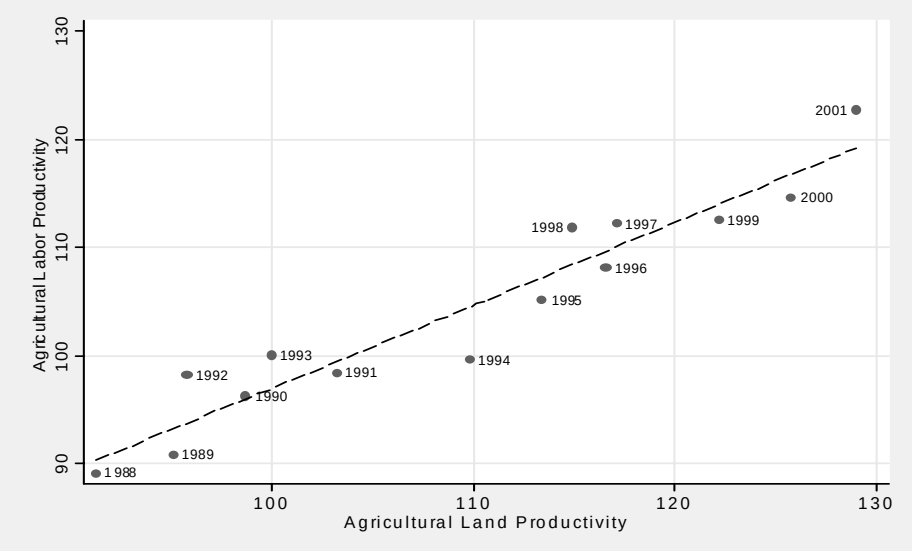
Type of Crop	Growth Rate Output 91-02	
	Irrigated Lands	All Lands
Cereal Crops	2.1	1.9
Oil Crops	-18.7	-11.8
Horticultural Crops	3.7	3.5
Fruit Crops	4.5	0.5
Tubers	2.6	2.0
Legumes	2.9	1.4

Source: WB staff calculations based on SAGARPA's agricultural database, SIACON.

Agricultural Productivity

Land and labor productivity improved in the 1990s. In both cases, growth rates in the 1990s were above 2 percent, which can be considered a reasonable performance. As can be seen from Figure 4.6, the increase in the productivity of land was approximately one third larger than that of labor, indicating a certain land-bias in the technical change taking place.

Figure 4.6. Mexico: Evolution of Land and Labor Productivity in Agriculture, 1988 to 2001



Source: WB staff calculation based on FAO's AGROSTAT.

Land productivity in Mexico is modest in relation to that of comparable countries, however. With the exception of some crops, notably wheat, land productivity, i.e. yields, are fairly low in Mexico. As can be seen from Table 4.6 and Figures 4.7 and 4.8, Mexico is below the LAC yield average in maize and it is also below in the whole cereal group, notwithstanding its advantage in rice and specially wheat. Yields are also below the LAC average in coffee and citrus fruits, and above in sugarcane, cotton and

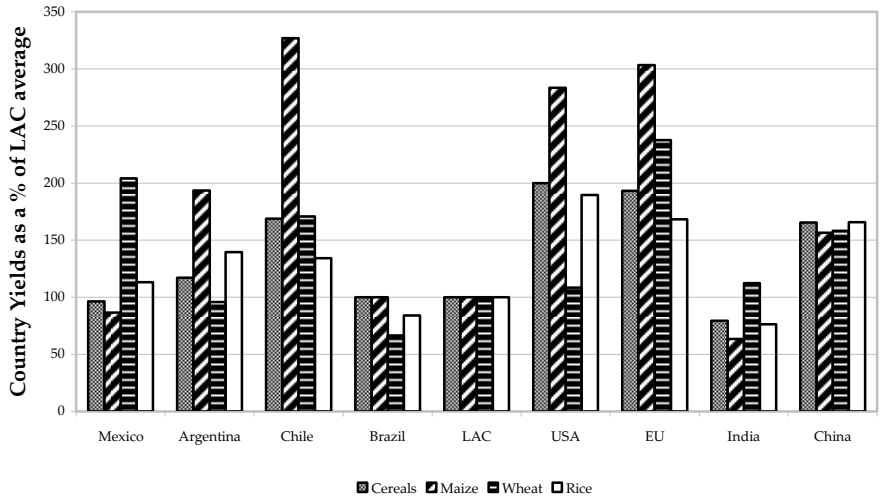
vegetables. LAC averages are a modest standard, however, for a middle income country with a good proportion of land under irrigation, a long farming tradition, and, as we will see, plenty public investment in agriculture. Comparison with Argentina, Chile and Brazil is more appropriate and is not favorable to Mexico, particularly in the case of the first two countries.

Table 4.5 Crop Yields in Selected Countries, Average 2000-2002, (ton/hectare)

	Mexico	Argentina	Chile	Brazil	LAC	USA	EU	India	China
Cereals	2.8	3.4	4.9	2.9	2.9	5.8	5.6	2.3	4.8
Maize	2.6	5.8	9.8	3.0	3.0	8.5	9.1	1.9	4.7
Wheat	4.9	2.3	4.1	1.6	2.4	2.6	5.7	2.7	3.8
Rice	4.3	5.3	5.1	3.2	3.8	7.2	6.4	2.9	6.3
Sugar Cane	74.1	65.4	--	69.6	64.9	77.2	--	67.3	61.3
Cotton (Seed)	3.3	1.3	--	2.7	2.1	1.9	3.3	0.6	3.3
Coffee (Green)	0.4	--	--	0.9	0.8	--	--	1.0	--
Citrus	12.4	20.1	15.4	22.0	17.0	34.7	18.3	17.8	8.2
Pulses	0.8	1.1	1.6	0.7	0.8	1.9	2.7	0.6	1.4
Vegetables	16.5	17.2	25.6	17.9	14.9	27.1	26.7	12.9	19.2

Wheat is the only field crop where Mexico has shown to be able to produce at top technical levels, surpassing Chile, a country with plenty irrigation, good technology, and a strong wheat producing tradition. It also surpasses the USA and comes close to the EU yield.
Source: WB staff calculations based on FAO's AGROSTAT.

Figure 4.7 Comparative Cereal Yields as Percentage of LAC Average, Average Yields 2000-02

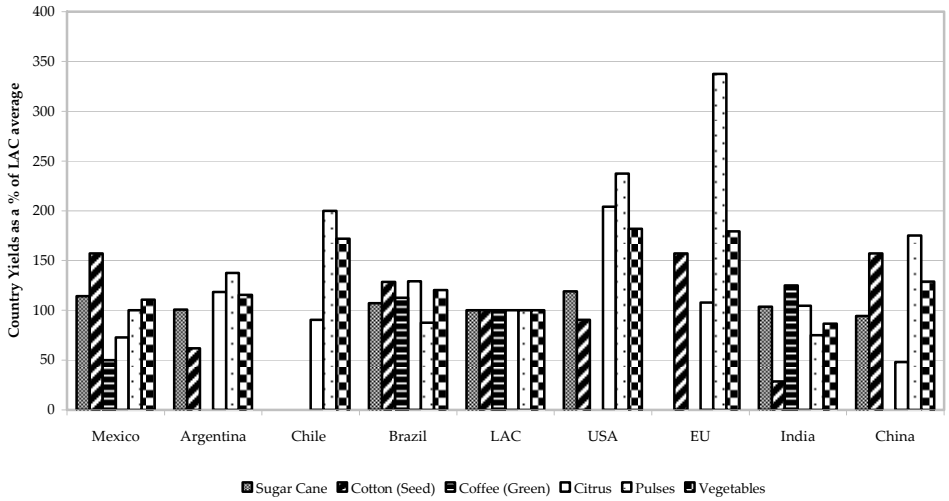


Source: WB staff calculations based on FAO's AGROSTAT.

Labor productivity levels in Mexican agricultural sector have fallen behind and are below the average for LAC countries. Labor productivity is compared across LAC in Figures 4.9, 4.10 and 4.11. Not surprisingly, land-abundant countries like Argentina and Uruguay show the highest productivity, but other countries like Costa

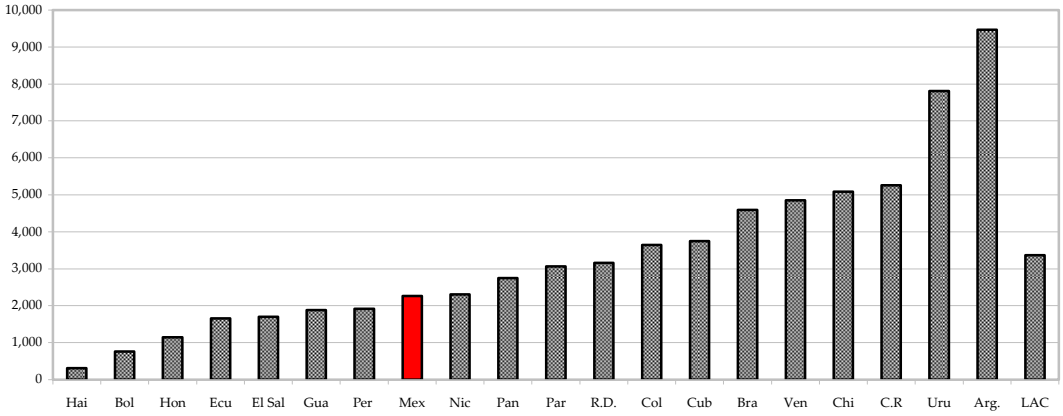
Rica and Chile, which are land-scarce, come next (Figure 4.9). Of the 20 countries reported, Mexico is in position 13, with a labor productivity of USD 2,265, which is one third below the LAC average of USD 3,368. Moreover, Mexico is not catching up *vis-à-vis* other countries in the 1990s, while countries like Peru and Nicaragua who have also low labor productivity in agriculture are closing the gap, and in countries like Costa Rica, Chile and Brazil, where labor productivity is already high, its growth rate is above the LAC trend (Figure 4.10).

Figure 4.8. Comparative Yields as Percentage of LAC Average, Various Crops, Average Yields 2000-02



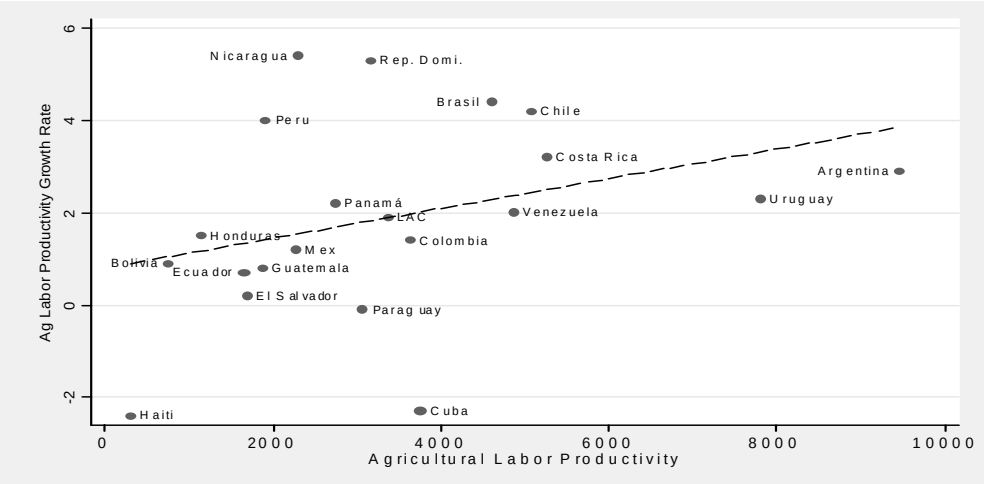
Source: WB staff calculations based on FAO's AGROSTAT.

Figure 4.9. Agricultural Labor Productivity1/ in LAC Countries in 2002 Measured in 1995 USD per Worker



Source: WB staff calculations based on CEPAL (for ag value added) and FAO (for ag labor force) data assembled by Dirven (2004). 1/ Defined as agricultural value added divided by the agricultural labor force and measured in US Dollars of 1995.

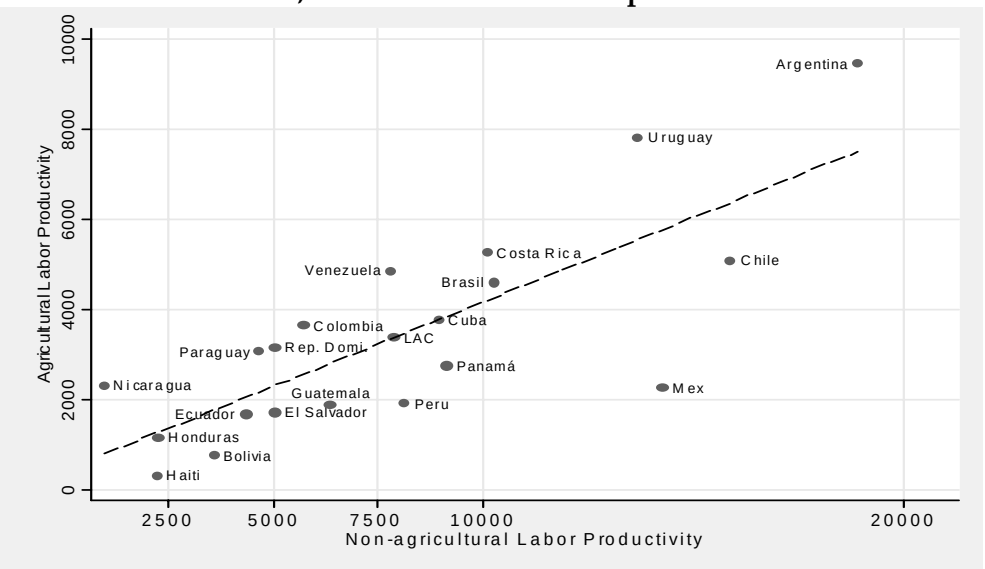
Figure 4.10. Labor Productivity in Agriculture in 2002 Measured in 1995 USD per Worker, and its Growth Rate in 1990-2000



Source: WB staff calculations based on CEPAL (for ag value added) and FAO (for ag labor force) assembled by Dirven (2004).

The gap between agricultural and non-agricultural labor productivity is particularly high in Mexico. In Figure 4.11, we compare labor productivity in agriculture and outside agriculture. In general, it is clear that all countries with the exception of Nicaragua have lower productivity in agriculture. In some countries, like Argentina and Uruguay, labor productivity is high in both sectors, although smaller in agriculture, whereas Mexico shows a marked difference between the high productivity of labor outside agriculture and its low productivity in agriculture.

Figure 4.11. Labor Productivity in Agriculture and Non-Agriculture in 2002, Measured in 1995 USD per Worker



Source: WB staff calculation prepared with data from CEPAL (for ag value added) and FAO (for ag labor force) assembled by Dirven (2004).

Mexico has lost momentum in agricultural efficiency. An increase in total factor productivity (TFP) signals efficiency improvements in the use of inputs (land, labor and capital) due to better technology, better entrepreneurship or both. Using FAO data for 1961-2001, Avila and Evenson (2004) compute rates of change of TFP in crop and livestock production. The inputs considered for crops are cropland, labor, fertilizer, animal power, and machine services. Those for livestock are pasture land, labor, fertilizer, animal capital, and feed. The results, reported in Table 4.6, indicate that agricultural efficiency gains have slowed down in Mexico, passing from a TFP growth performance in 1961-80 which was 63 percent above the LAC average to one 35 percent below the average in 1980-01. The major fall came about in the livestock sector, which performed strongly in the first period falling to more modest levels in the second one.

Table 4.6 Growth Rates of Total Factor Productivity in LAC Countries in 1961/80 and 1981/2001

Regions and Countries	Crops		Livestock		Aggregate		
	1961/80	1980/01	1961/80	1980/01	1961/80	1980/01	Average
Southern Cone	***1.49***	***3.14***	***0.72***	***2.51***	***1.02***	***2.81***	***1.92***
Argentina	3.08	3.93	0.90	0.43	1.83	2.35	2.09
Brazil	0.38	3.00	0.71	3.61	0.49	3.22	1.86
Chile	1.08	2.22	0.24	1.87	0.69	2.05	1.37
Paraguay	3.97	-1.01	-0.36	1.29	2.63	-0.30	1.17
Uruguay	1.29	2.02	-0.32	0.53	0.01	0.87	0.44
Andean Region	***1.11***	***1.71***	***1.73***	***1.92***	***1.41***	***1.81***	***1.61***
Bolivia	1.73	3.14	2.81	1.39	2.30	2.33	2.31
Colombia	2.01	1.27	0.49	2.24	1.37	1.73	1.55
Ecuador	-0.74	2.24	0.98	2.51	-0.16	2.34	1.09
Peru	-0.83	1.86	1.86	2.14	0.36	1.98	1.17
Venezuela	2.42	0.87	3.41	1.07	3.03	0.99	2.01
Central and North America	***1.65***	***1.05***	***2.77***	***1.53***	***2.17***	***1.32***	***1.74***
Costa Rica	2.86	2.09	1.10	0.75	1.74	1.19	1.47
El Salvador	1.22	-0.87	1.99	1.00	1.77	0.32	1.05
Guatemala	3.31	0.53	0.90	-0.28	1.38	-0.08	0.65
Honduras	1.54	-0.39	2.07	1.91	1.91	1.25	1.58
México	*1.53*	*1.43*	*3.02*	*1.63*	*2.26*	*1.51*	*1.89*
Nicaragua	1.33	-0.70	2.94	1.92	2.25	0.99	1.62
Panama	2.29	-1.33	1.61	1.49	1.93	0.02	0.97
Caribbean	***0.66***	***-0.89***	***2.60***	***2.06***	***2.03***	***0.90***	***1.47***
Dominican Republic	0.99	-1.15	1.88	2.60	1.59	1.28	1.43
Haiti	0.60	-1.04	3.44	1.80	2.60	0.50	1.55
Jamaica	-0.65	1.32	3.28	-0.35	2.31	0.12	1.22
LAC AVERAGE	**1.46**	**2.40**	**1.42**	**2.21**	**1.39**	**2.31**	**1.85**

Source: Adapted from Avila and Evenson (2004).

Public Expenditure in Agricultural and Rural Development

The amount spent by the Mexican government on rural development is truly remarkable. It is a fiscal effort without parallel in Latin America, especially when the low tax incidence and fiscal revenues of Mexico are considered. A *Programa Especial Concurrente* (PEC) mandated by the *Ley de Desarrollo Rural Sustentable*, where all federal spending in rural development is lumped together, was assembled for the first time in 2003. *PEC* was not a joint inter-secretaries programming exercise, but was a positive step in that direction. Thanks to *PEC* we have a better knowledge of federal spending in rural areas and of who is responsible for it than used to be the case in the past. We present in Table 4.7 the total amount budgeted for federal spending in rural development in 2003 broken down according to the major expenditure areas considered in PEC. In Table 4.8 we show how federal *secretarías* involved in rural development contribute to this effort.

PEC amounts to some 30 percent of agricultural GDP. The total budgetary figure for PEC is MxP 117.1 bn (Table 4.7), equivalent to some USD 10.4 bn, which compares to a GDP in agriculture in 2003 of the order USD 33 bn. Not all of this, however, is spent in agriculture, because there are social, infrastructure, and other programs included in PEC. On the other hand, this is only federal spending. Since state and municipal governments also spend in rural development –we do not know how much—, the actual amount of rural public expenditure is more than that reported under PEC.

Table 4.7. Mexico: Federal Spending in Rural Development by Major Areas in 2003 (Million MxP)

Major Rural Development Program Areas	Number of Programs	Budget (Million MxP)	%
Social Conditions	20	45,343	38.7
Labor Conditions	4	2,874	2.5
Land Tenure	2	3,257	2.8
Productive Activities	22	50,687	43.3
Basic and Productive Infrastruc.	6	10,030	8.5
Environment	5	4,905	4.2
TOTAL	**59**	**117,096**	**100.0**

Source: WB staff calculations based on SAGARPA (2004).

Table 4.8. Mexico: Contribution of Different *Secretarías* to Federal Spending in Rural Development in 2003, (Million MxP)

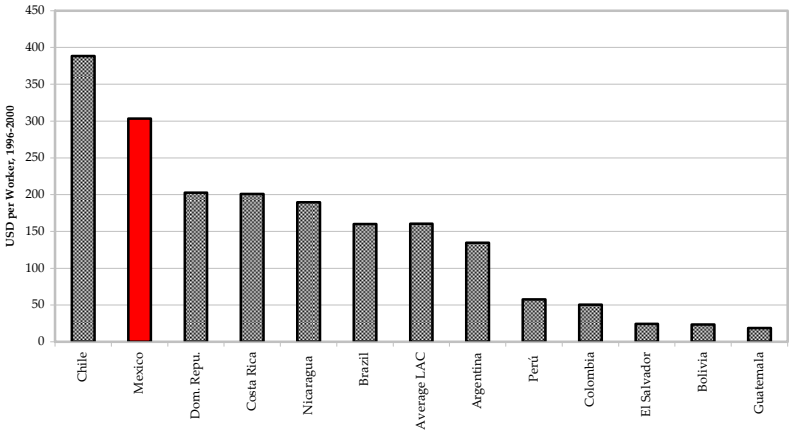
Secretaries	Programmable Budget	%	Rural Development	%
Economía	5,403	2.1	576	0.5
SAGARPA	41,783	15.9	40,583	34.6
Salud	20,867	7.9	6,829	5.8
SCT	23,124	8.8	1,092	0.9
SEDESOL	18,978	7.2	15,574	13.3
SEMARNAT	17,404	6.6	8,977	7.7
SEP	106,355	40.4	17,554	15.0
SHCP	21,785	8.3	10,310	8.8
SRA	2,759	1.0	3,566	3.0
STPS	3,151	1.2	866	0.7
Turismo	1,459	0.6	16	0.0
Others			11,153	9.5
Total	**263,068**	**100.0**	**117,096**	**100.0**

Source: SAGARPA (2004).

Table 4.8 shows the total programmable budget of the *secretarías* involved in rural development and thus participating in *PEC*, alongside with the amount actually spent in rural development. Of the MxP 263.1 bn that the *secretarías* have available, MxP 117.1 bn or 44.5 percent is devoted to rural development. If programmable expenditures of *secretarías* not involved in rural development are also considered, which come to another MxP 83.1 bn, PEC amounts to 33.8 percent of all federal programmable expenditure.

The two major expenditure areas in PEC are social conditions and productive development, which together account for more than 80 percent of the total. Infrastructure is a comparatively small expenditure area compared to its importance and need, and so is the environment. Of the *secretarías*, that which contributes most is SAGARPA, followed by SEP and SEDESOL.

Figure 4.12 Public Expenditure in Agriculture per Agricultural Worker in LAC Countries, Average 1996-2000

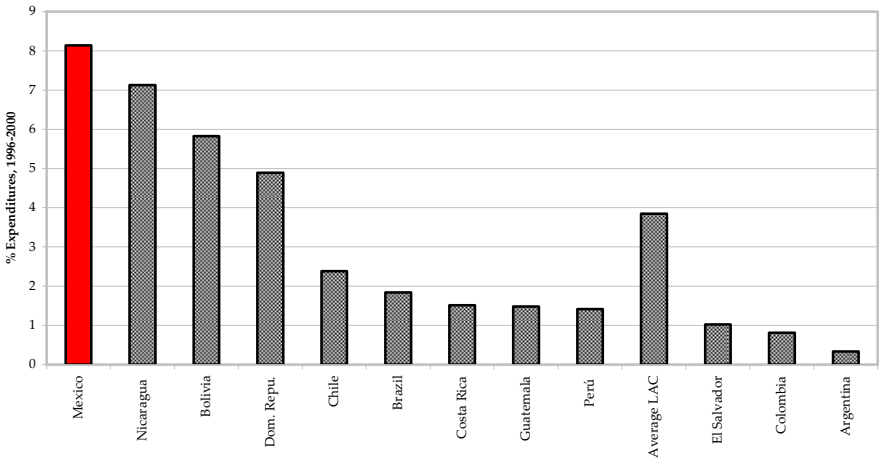


Source: WB staff calculations based on data from Kerrigan (2001).

Mexico spending on agriculture is very high compared to other LAC countries, whether measured per agricultural worker or as share of total public expending. Mexico is the country in Latin America with the smallest share of agriculture in GDP, making the high levels of public spending on agriculture all the more remarkable. Figure 4.12 looks at public expending in agriculture per agricultural worker in LAC countries for the average of 1996-2000. Figures refer to expenditure in production-related programs for agriculture only, not to all rural development expenditures. They are in current US dollars. For some countries the average is for 1996-1999 due to lack of data for 2000. Unfortunately it is not possible to tell from available data how this expenditure brakes down into the provision of public goods, farm modernization incentives, and other subsidies. The dispersion is big, with some countries spending twenty times more per agricultural worker than others. Chile is first, with expenditures per agricultural worker close to USD 400, followed by Mexico with USD 303 per worker. If we consider instead public expenditure in agriculture relative to total public expenditure, Mexico comes out first, followed by Bolivia, Nicaragua and Dominican Republic (Figure 4.13). In contrast to Mexico, these three countries are highly agriculturally oriented, with shares of agriculture in GDP of the order of 14, 35 and 11 percent respectively by the end of the 90s.

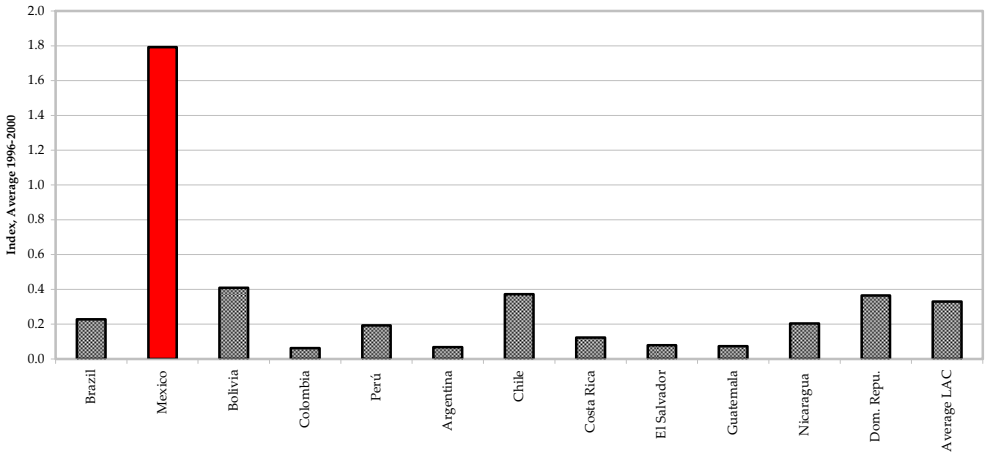
Figure 4.14 shows the distribution of LAC countries according to an "agricultural orientation" index, which is built by dividing the share of agricultural spending in total spending by the share of agriculture in GDP. The index measures the intensity of the fiscal effort in agriculture relative to the economic importance of the sector. Mexico is the only country of those included in the study with an agriculture orientation index of more than one, which is in fact more than four times larger than that of the next countries, Bolivia, Chile and Dominican Republic. Mexico, hence, practices public expenditure discrimination in favor of its agriculture.

Figure 4.13. Public Expenditure in Agriculture as Percentage of Total Public Expenditure in LAC Countries, Average 1996-2000



Source: WB staff calculations based on data from Kerrigan (2001).

Figure 4.14. Agriculture Orientation Index in LAC Countries, Average 1996-2000



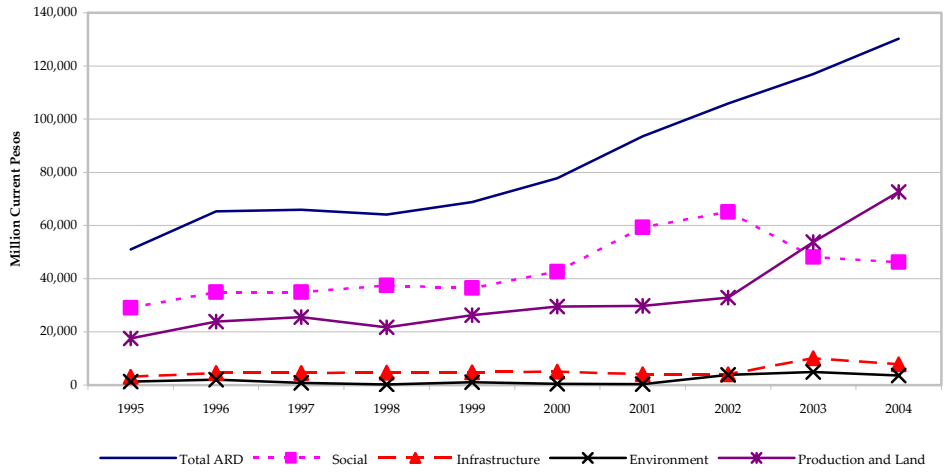
Source: WB staff calculations based on data from Kerrigan (2001).

Rural development expenditures have picked up since the end of the 1990s, due mainly to an increase in productive expenditures. Between 1996 and 1999, while the country was recovering from the crisis, rural development expenditure was stagnant in current pesos and strongly decreasing in constant pesos.[40] Real expenditure recovered

[40] A public expenditure series from 1995 to 2004 (figures for 2004 are programmed) with information from the SHCP was prepared for this purpose. We have aggregated programs in the same areas as PEC, but have combined social and labor aspects, and land tenure and productive aspects. We are grateful to Oscar Diaz Santos, experienced civil servant and graduate student at UNAM, for compiling these figures for us. Since there have been many changes in programs and subprograms, and in the allocations, names, and location of programs in the public accounting system, it is difficult if not impossible to trace with exactitude the evolution of expenditure. A reassuring fact was the correspondence between our own estimate of federal public expenditure for 2003 of MxP 116.7 bn with the MxP 117.1 in the PEC.

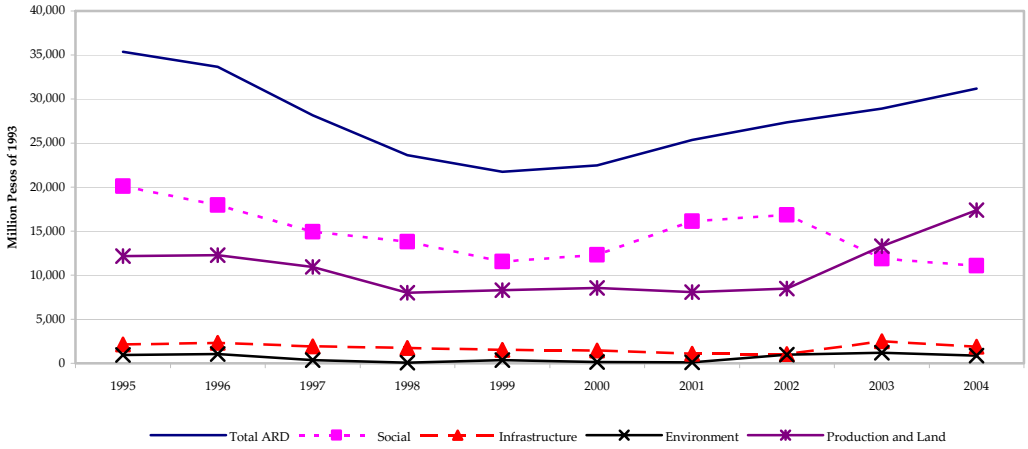
well from 1999 onwards but not completely, resulting in a fall of close to 12 percent between the two extremes of the period.

Figure 4.15. Public Expenditure in Agriculture and Rural Development in Mexico, 1995-2004, in Current Prices (Million MxP)



Source: Annex 4.A.

Figure 4.16. Public Expenditure in Agriculture and Rural Development in Mexico, 1995-2004, in Constant 1993 Prices (Million MxP)



Source: Annex 4.A.

To be noticed are the decrease in social expenditure between 2002 and 2004, and the parallel increase in productive expenditure.[41] Also to be noticed are the low

[41] The classification is largely arbitrary because many programs have characteristics or components that could lead to their classification under different categories. Also, the concepts themselves of social, productive, and environmental spending are not free from ambiguity. We have followed as much as possible the classification used in the PEC. For the evolution of specific programs consult Annex Tables 4.A.1 to 4.A.6.

amounts spent in infrastructure and environmental programs relative to other spending areas. Detailed expenditures by programs are presented in Annex 4.A.

PROFITABILITY AND EFFICIENCY OF THE SMALL FARM SECTOR

Profitability

How profitable is the small farm sector in Mexico today? To answer this question we use 2002 data from the *Encuesta Nacional de Hogares Rurales de México* (ENHRUM) survey which, as described in chapter 1, focused on disperse rural areas and is representative at the regional level. We use a subset of the data covering 661 households of agriculturalists dedicated mostly to crop production. Farm profitability is difficult to estimate (Box 4.2). Thus, for example, we do not investigate the profitability of livestock operations because of the difficulty of establishing for small farms the amount of time dedicated by the household to looking after their animals, and the amount of own inputs used to feed them.

Box 4.2. Estimating the profitability of small farms

Two main problems arise in estimating the profitability of small firms. First, small farms are usually part of larger household operations, and it is artificial to cut farming away from these operations. This is why it is usually better to use "household models" instead of "farm models". We do not follow this advice here, however, because in the present context we are interesting in examining the profitability of agriculture and decision of rural families to participate in different occupations and the income derived from them. We are interested in particular in the income derived from crop production, not that of the entire family economy. Later on, in Chapter 7, we examine the process whereby rural households select different occupations and complement income from various sources. The second problem is the choice of profitability indicator. Small farm behavior in Mexico is generally that of the campesino or peasant producer. As is known, peasant micro-economic behavior is different from that of commercial farmers, in the sense that the objective function and often too the constraints are different.[42] The reasons are the lack of a contractual link between employer and labor, since the own labor of the farmer and his/her family are used, and the overlap of the production and consumption unit.

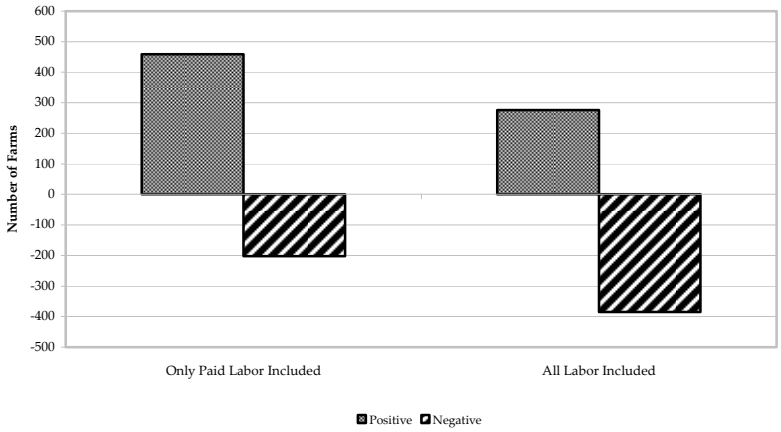
To measure profitability we use several indicators. The first on is the Gross Profit margin (GP), defined as the total value of output, including the estimated value of self-consumption and farm re-employments, minus all direct production costs consisting of labor, bought inputs, re-employments (for instance own seed), and machinery or draft animal services. Managerial costs, depreciation of assets, the rent value of land, and the actual or imputed value of financial services are not included. We use two specifications of GP. In one of them, we include the estimated cost of family labor valued using the

[42] A classical discussion of this is that of Nicolas Georgescu-Roegen (1960).

local wage rate, while in the other we consider only the cost of hired labor and not that of family labor. The latter specification is better suited to the peasant farm, which does not look to family labor as a cost in the same way that it does with hired labor. A second indicator is Value Added (VA), defined as the value of output minus direct production costs, without including labor (either family or hired). The difference between VA and the second specification of GP is that GP includes hired labor. Reemployments in crop production (for instance seed) are included as part of output and as part of costs in both measures, thus canceling out.

The smallest farmers generally have negative or very low profits when family labor put in the farm is valued at the wage rate prevailing in the area. There are 385 farms with negative GP when family labor is valued and subtracted, against 276 with positive GP (Figure 4.17). This is not surprising; negative profitability of peasant farms measured with commercial parameters is a well know fact.[43] It means that family labor used in the farm gets a return smaller than the going wage rate. But there are various reasons why the wage rate is not necessarily a good measure of the opportunity cost of family labor. They include the possible presence of involuntary unemployment, the fact that much of family labor may not be tradable, and the possible effect of risk management considerations that may make farmers prefer to use their labor in their own farm even if at a smaller return. As seen in Table 4.9, the smallest farms have on average negative profits.

Figure 4.17. Number of Farms with Positive and Negative Gross Profit in a Sample of Small Farms, Mexico 2002



Source: Calculated from ENHRUM.

[43] See for instance the analysis of Witold Kula (1970) for the Polish peasant economy during the "refeudalization" period.

Table 4.9. Gross Profit and Value Added per Hectare of a Sample of 661 Small Farms, Mexico 2002 (2002 MxP)

	GROSS PROFIT PER HA (MXP)		
	W/O Subtracting Family Labor	**Subtracting Family Labor**	**Value Added Per Ha (MxP)**
Size Class 1/			
0 -2 hectares	2,415.2	(440.7)	3,752.1
2 -5 hectares	2,079.3	819.6	2,740.1
5 –10 hectares	2,480.4	1,750.7	2,820.6
10 and more hectares	2,210.6	1,784.6	2,354.3
Type of Ownership			
Ejido	1,822.7	657.4	2,578.1
Comunidad	(32.1)	(1,918.4)	583.0
Private	3,614.4	1,381.2	4,494.8
Mixed	2,275.9	1,141.0	2,481.7

Average sizes for size groups are as follows: 0- 2 hectares: 0.9 hectare; 2-5 hectare: 3.0 hectare; 5-10 hectare: 6.6 hectare; more than 10 Has– 29.4 hectare; all farms: 7.7 hectare.
Source: Calculated from ENHRUM.

Value-added per ha does not increase with farm size, suggesting that land is in fact more productive in smaller farms. Gross profits per ha increase by farm size, but value added per ha is actually larger in farms of less than 2 hectare than in bigger farm categories, and farms in the more than 10 hectare category have the lowest VA per hectare (Table 4.9). Hence, under existing conditions, from the point of view of generating income, land is more productive if it is in small than in large farms.

The low profitability of small crop production can help explain high poverty rates in the rural sector, and why rural non-farm activities play a key role in securing income. We can compare our value added figures with the rural poverty lines for 2002, of MxP 5,937 per person per year for food poverty and MxP 11,363 per person per year for moderate poverty. One hectare in our sample generates a value added from crop production somewhere between 40 and 60 percent of the income required for a person not to be food poor, and between 20 percent and one third of that required not to be poor at all. Put in another way, a family of four would require on average between 6 and 10 hectare not to be food poor, and between 12 and 19 hectare not to be poor, if crop farming were the only source of family income. But, as examined in chapter 7, farming families would usually seek other occupations, starting with some livestock, among which they decide whether and how much to participate and from which they obtain income. The above figures point, however, to the low profitability shown on average by small crop production in Mexico, and help explaining why farming families try to access other income sources. There are of course wide variations, and much depends on the

quality of land, the type of crops, and context variables such as road availability and access to marketing infrastructure and channels. For instance, small farms with irrigation producing high value crops can have a much larger value added, and three or four hectares may be enough to keep a family out of poverty without engaging in other activities.

Private farms are also more profitable than farms in *ejidos* or *comunidades* (Table 4.9.). The latter are particularly little profitable.[44] Value added in crop production per hectare in a private farm is nearly eight times higher than in a *comunidad*, and 1.7 times higher than in an *ejido*.

Few inputs are used in small farms. If we compare the gross value of output (GVO) and the GP without subtracting family labor, the difference is the cost of the inputs used in production, including seed, fertilizer, water, chemicals, hired labor, and the cost of mechanical and animal services. The small difference between the two figures shown in Table 9, which on average is of 10 percent, points to the few inputs bought in small crop production. A curious feature is that the difference between GVO and GP is proportionally higher in farms of less than 2 hectare. There may be measurement errors, but a possible reason for this is that the part of output that is re-employed within the farm is more used in crop production in the smaller farms and more in animal production in larger farms. Since we are examining crop operations only, crop reemployments used in the farm's own animals (eg. maize to feed pigs) is accounted as part of output but not as part of costs.

Small Farm Efficiency

How efficient are small farmers? Again using ENHRUM data, we have carried out an exercise to determine the economic efficiency of small farmers. Details of the econometric approach are explained in Annex 4.B. In summary, our method allows to test (i) what explains output, (ii) using this information, which farmers deviate from the efficiency frontier, and to what extent, and (iii) what variables may explain why some farmers deviate from the efficiency frontier.

Table 4.10 reports the results from estimates to explain output. The dependent variable is the gross value of crop output of farms, and the explanatory variables are: variable capital which includes seed, fertilizer and chemicals, fixed capital, which includes the value of machinery and draft animal services, labor, which includes all labor used during the entire production process, and land, which enters in the equation in a standardized form to account for different quality of land (and not only size of land holdings).

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[44] Proper analysis would require controlling for farm size and other characteristics that may vary between the private and social sectors, using econometric methods. That work is currently in process and has not been possible to include here.

Table 4.10 Value of Elasticities in the Production Function Regression Equation for all ENHRUM Sample of Crop Farms

Parameter	Variable	Coefficient	S.E.	P>z
b_1	**Variable capital**	0.430	0.0354	0.000
b_2	**Fixed Capital**	0.159	0.0353	0.000
b_3	**Labor**	0.093	0.3809	0.015
b_4	**Land**	0.232	0.0302	0.000
b_0	**Constant**	3.259	0.3666	0.000

Note: Using a Cobb-Douglas Production Function. The logarithmic specification implies that coefficients can be interpreted as elasticities.
Source: Staff estimates based on ENHRUM

Variable capital is key in explaining output, with a big difference to other factors, followed by land. A one percent increase in variable capital increases output by 0.43 percent. This may be the result of the underutilization of fertilizer and chemicals due to the lack of access of small farmers to seasonal credit (see chapter 5 on this). Lack of credit to buy inputs prevents farmers from using them optimally, i.e. up to the point when the marginal contribution to production equals the cost to the farmer. A one percent increase in land holdings increases output by 0.23 percent. Labor has little weight, signaling the probable presence of surplus labor in many farms. The sum of elasticities is less than one, which in principle would indicate the presence of diseconomies of scale. However, the confidence intervals of the coefficients are sufficiently large not to reject the null hypotheses that the sum of the coefficients is one. Hence, there is no statistical evidence of diseconomies of scale, but there is little likelihood of economies of scale for the entire sample.[45]

Which type of farms are less efficient? Table 4.11 groups inefficiency residuals by categories of farms, where the average inefficiency of each category of farms is measured as the distance to the efficiency frontier. Thus, for instance, at the national level an effort would be required to increase production by 91 percent with existing factors to reach efficiency, i.e. production would almost need to double.

Farmers that experienced natural shocks, maize and beans farmers, and farmers in the *Sur-Sureste* and *Centro* regions, are the least efficient. Producers of coffee, other perennial crops and vegetables, and producers in the *Noreste* and *Noroeste* regions are the most efficient. While farms in the *Centro* tend to be less efficient, the value of land in this region is the highest (see Appendix 4.B2 in Annex 4.B). The reason could be that farms in the *Centro* are better communicated and closer to markets than in other regions, and population pressure is also high, pushing up the price of land.

[45] Notice that economies of scale in this context do not refer to increased farm size, which is the common meaning in usual parlance, but to the simultaneous increase of ALL factors in the production equation, which is the technical meaning.

Another surprising result is the large number of farmers that suffered from natural disasters, and its strong impact on efficiency.[46] We discuss this more in chapter 7 but we must notice here that this is a frequently overlooked element with important repercussions on efficiency.

Table 4.11. Distribution of the Inefficiency Error Term by Category of Farms

Variables	No. of farms	Average Inefficiency	S.D.
Sur-Sureste Region	211	0.94	0.3809
Centro Region	233	1.03	0.3980
Centro-Occidente Region	122	0.78	0.2391
Noroeste Region	36	0.69	0.4104
Noreste Regions	64	0.73	0.4012
Maize and Beans farmers	456	0.98	0.3845
Coffee Farmers	43	0.65	0.2273
Vegetable Farmers	33	0.69	0.2467
Perennial Crops Farmers	79	0.75	0.3419
Oilseeds and Other Grain Far.	55	0.86	0.4288
Farmers with natural shocks	295	1.05	0.4481
Farmers without natural shocks	371	0.80	0.2862
All Farmers	**666**	**0.91**	**0.3870**

Sourcce: calculated from ENHRUM.

There are substantial changes in the elasticities of production factors for different types of producers, although that for variable capital remains always the highest. The stochastic production function regression exercise was carried out separately for various categories of farmers.[47] The elasticities are shown in Table 4.12. For maize and beans producers the importance of fixed capital is higher than for the entire sample of farmers, while that of labor remains low. This indicates that more use of animal power and/or tractor services for these producers would have a large effect on output. Contrarily, reducing the amount of labor put in these crops would not have a large impact on output. Land elasticity in maize and beans production is surprising low, less than half of that for all farms and for farms without natural shocks. Increasing output in maize and beans production depends hence more on improved technology embodied in variable and fixed capital than on increasing the area. This is good news for small peasant farmers who are the main producers of maize and beans, for it means that they could boost output in their small farms if they had access to better technology.

[46] This was defined as farmers who reported having suffered from rains, hurricanes, droughts, frosts or pests and diseases, and whose output was less than 50 percent that of a good year.

[47] We only carried out a separate analysis for these categories of farmers because sample sizes were too small for the other categories.

Under present conditions, however, shifting land from maize and beans to other crops would raise total output.

F**armers who did not experience shocks represent "normal" i.e. shocks free, farming conditions,**[48] **and their elasticity coefficients and efficiency levels are illustrative of this situation**. In the case of farmers who experienced natural shocks, labor is much more relevant than for all farmers in general, and there is no evident explanation for this. Instead, for farmers who did not experience shocks, the importance of land is the highest. Hence, under "normal" conditions land is more relevant than under "abnormal" ones. The presence of a large proportion of maize and beans farmers in the sample, nearly 70 percent, decreases the elasticity of land since, as we have seen, this elasticity is low for these farmers. In farms, therefore, producing other crops under "normal" conditions land must be much more important. An interesting result for the "farmers without shocks" sub-sample is that the inefficiency test failed to reject the hypothesis of no inefficiency. This does not necessarily mean that these producers are all efficient, but points to the strong link between "normality" in production conditions and farming efficiency.

Table 4.12 Production Function Elasticities for Different Crop Farmers in the ENHRUM Sample

Variables	Elasticities			
	All Farms	Maize and Beans	With Shocks	Without Shocks
Kvar	0.430	0.443	0.399	0.391
Kfix	0.159	0.265	0.273	0.183
Labor	0.093	0.107	0.276	0.207
Sland	0.232	0.132	0.171	0.249
Sum Elasticities	*0914*	*0.947*	*1.119*	*1.030*
Constant	3.259	3.669	2.658	2.226

All coefficients significant at 95% level.
Source: calculated from ENHRUM.

Private transfers tend to be associated with less efficiency. One could expect the opposite, thinking that transfers would release liquidity constraints of farmers to buy inputs or fixed capital services or hire labor. But this is already controlled for in the regression carried out on the residuals, and there is no reason why transfers should increase efficiency in this way since the existing utilization of factors is given. A possible interpretation is that the more transfers received by farmers the lesser their dependence on farming for survival and hence the lower their interest in farming operations and good crop husbandry.

[48] But we can see in Table 4.11 that this "normal" condition is not so normal: 295 out of 666 farmers, 44 percent, experienced natural shocks.

More work is needed to understand the causes of inefficiency. Many of the explanatory variables included in the regressions on efficiency, like gender, age, education, existence of services in the community (measured by a services index), land tenure, farm size, and government transfers, were not statistically significant. The reason seems to be that these variables influence more the choice of technology, i.e. the combination of inputs in the production function, than the efficiency of production given a combination of inputs, which is what we investigate by regressing the efficiency residuals on these variables.

HOW CAN PRO-POOR AGRICULTURAL GROWTH BE STIMULATED?

Agricultural growth has a strong potential for poverty reduction in Mexico. As shown, agricultural growth reaches the extreme poor, reduces poverty intensity, and lowers income inequality in society at large. Resolving the challenges faced by the agricultural sector, including increasing labor productivity, and ensuring that smaller farms and the rain-fed sector become more competitive, is therefore essential to rural poverty alleviation. Federal expending in agriculture and rural development is very substantial in Mexico, and a true mark of the importance that Mexican governments have traditionally given to rural areas. We discuss here in general terms how policy could respond to the trends and conditions depicted so as to promote agricultural growth in a way that is friendly to the poor. More specific policy options are discussed in chapters 5, 6 and 7. We organize our discussion around four areas: agricultural intensification; the small farm economy; competitive conditions; and public programs. We should note, however, that land scarcity and surplus labor require also policies to promote the development of non-farm activities in rural areas. This could create a virtuous circle: by raising incomes, intensification stimulates demand for RNF activities, and conversely RNF development absorbs agricultural labor surpluses, improving factor proportions in agriculture.

Agricultural intensification is the best option in view of the exhaustion of the crop frontier and the low average levels of land and labor productivity in agriculture. Labor productivity in agriculture is low in Mexico, and under existing conditions substantial amounts of land are needed on average for a family to pull out of poverty by means of crop farming alone, more than that usually available to small farmers. At the same time, the labor absorption capacity of non-agricultural activities is limited, the rural population is still growing, and the crop frontier is closed. Thus, average farm sizes cannot be increased by enough farmers changing occupation and abandoning their lands, which could then be rented or bought by other farmers. Intensification is hence the best option to increase land *and also* labor productivity in agriculture, and thus agricultural incomes.

Intensification needs to proceed along two ways: changing the crop mix in favor of higher value crops, and raising crop yields. The poorer farmers will need policy assistance to achieve this. Changing the crop mix in line with relative prices and

market opportunities is a difficult and long-term process. There is much rigidity in the farming and marketing systems that hinder crop changes. After nearly 20 years of liberalization policies and relative price change, it is reasonable to assume that the "easy" part of substitution has been achieved. The uncertainties and the transaction and other costs of substitution are probably increasing at the margin. As we have seen, commercial crop farming is more efficient than maize and beans, and there should be market incentives to move from the latter into the former. But there are barriers to that process that many farmers willing to substitute cannot overcome. These barriers are technological, financial, commercial, in knowledge, and in the capacity to bear risk. These are all areas where policy can intervene, and in fact Mexico has a variety of programs to this effect, some of which we examine in the next chapter. Better off farmers, endowed with more agricultural assets, are better equipped to break these barriers if they have not done it already. It is the poorly endowed farmers who face the major difficulties and need more assistance.

This will require a series of programs -research, technical assistance, extension, rural finance, infrastructure, and market information— that jointly create the conditions enabling farmers to carry out this movement by themselves. Some specific interventions may perhaps be required to accelerate the process, for instance in export marketing, the identification of market opportunities, and the linking of small farmers to new major sources of demand such as supermarkets. Work may also be needed in specific crops and production chains. But the essential thing is the presence of extensive and well functioning research & extension and rural finance systems, for both crop diversification and yield increases.

The small farm economy encounters most market failures and must be at the center of a poverty-friendly agricultural growth strategy. Although enabling conditions will often be similar for small and larger farmers, markets tend to fail more for small than for large farmers. Given that there is no evidence of economies of scale, the small-farm sector is a potential carrier of agricultural growth. A "diffuse" intensification strategy should embrace all type of farms, irrigated or rain-fed, small or large, and instruments like research and extension and rural finance need to be specially calibrated to be able to reach small farmers. Raising value added in small farms would not only reduce poverty directly; it would also have a general equilibrium impact on rural and urban poverty through the wage effect. Although we do not advocate a separate agricultural growth program for small farmers, there are interesting experiences of government programs for small farmers in LAC countries, like *PRONAF* in Brazil and INDAP's programs in Chile, which could serve as inspiration for an enhanced policy effort in favor of small agriculture in Mexico.

Rental markets for lumpy inputs are important. We saw that in the case of maize and beans, typical small farm crops in Mexico, fixed capital is an important element to increase production, more than land and labor, and second to variable

capital. This points to the importance for small farmers of promoting the development of rental markets for lumpy inputs such as machinery and draft animals.

How can the impact of natural shocks be mitigated? Our research shows that efficiency, and thus competitiveness, is hampered by shocks. Technologies less vulnerable to prevalent risks in particular regions can be developed and promoted through appropriate research and extension, by promoting for instance varieties more resistant to water stress or to pests or maturing at a suitable time according to the local weather calendar. Another possible intervention is facilitating farmers' change to crops less vulnerable to recurrent shocks in the particular location. Pest control and sanitary measures in general are also means to reduce natural shocks.

Infrastructure is another area of policy intervention to enhance competitiveness. The importance of infrastructure on competitiveness is well known, and we will not expand on it here. The World Bank study of Mexico's Southern States shows how the lack of communication infrastructure hampers the development possibilities of this part of Mexico (World Bank, 2003a). We have seen that investment in rural infrastructure is a minor part of public spending in rural areas, and the same is pointed out with respect to infrastructure in general in the Public Expenditure review of Mexico carried out by the World Bank (World Bank, 2004a).

5. POVERTY FRIENDLINESS OF RURAL POLICIES

In this chapter we examine policies and programs relevant for agriculture and rural development. By design, many policies and programs are not directly addressed to poverty reduction but have other legitimate objectives. Yet, a country with high poverty rates and limited fiscal resources like Mexico may need to focus its public resources more clearly on programs which can help remove the dualism of the agricultural sector and target the rural poor. Thus, we look at rural development programs from the perspective of the rural poor, asking if there are ways to make them friendlier to the rural poor without prejudice to their primary objectives.

The main findings and policy implications of the chapter are summarized below.

- **Liberalization policies embarked upon in the late 1990s and carried out throughout the 90s tended not to favor the small-scale farming sector,**

- **The 1992 land reforms brought significant benefits to the rural poor, including more security of tenure**. The impact, however, on land productivity and benefiting mostly instead the more commercial and export oriented farming sector. Since there was little support for poor farmers to reconvert to more promising crops and take advantage of new market opportunities, liberalization was not, overall, pro-poor.

- **This points to the need for liberalization policies to be accompanied by support measures needed for seizing export market opportunities from which small farmers could benefit.** Important programs like *Procampo* and *Aserca* were adopted in connection to the opening of the economy but they were compensatory programs not programs to enhance agricultural investments and hence competitiveness. *Alianza para el Campo* was introduced in 1996 but its subsidies did not follow a restructuring strategy and were only limitedly oriented to small farmers, particularly during the early years. Nor was the economic opening accompanied by the development of a sound financial system for rural areas and the promotion of an agricultural knowledge system friendly to the poor farmers' incomes was small. A major concern is the difficulty faced by young *ejido* residents in accessing land.

- **Agricultural programs have had varied success and are by and large not targeted to the poor.** The most important program, *Procampo*, is comparatively friendly to the poor because of its extensive coverage, but (i) large farmers absorb a majority of the resources, (ii) landless farmers and

agricultural workers are not included, and (iii) the program will be discontinued in a few years, and it is not clear what policy initiatives will replace it.

- **Nonagricultural programs could generally be considered to have been more pro-poor.** Programs like *Microrregiones*, *Microcuencas* and the decentralization of infrastructure investments have in general favored a territorial and multi-sector approach, making them more successful in reaching marginal areas and focusing on local priorities.

POVERTY FRIENDLINESS OF AGRICULTURE AND LAND POLICIES

Commercial Policies

Economic liberalization, including that of the agricultural sector, was a main thrust of economic policy in Mexico since the mid-eighties through the late nineties. Agricultural liberalization was stimulated by GATT, which Mexico joined in 1986, and a number of bilateral treaties in the 1990s (Japan, EU, some LAC countries and, of course, in 1994, NAFTA). Most of the conversion of quantitative restrictions to tariffs and of tariff reduction was accomplished before NAFTA. Economic opening was accompanied by internal liberalization of agricultural prices and marketing, the elimination of most subsidies, the phasing out of the state marketing company, *Conasupo*, and the introduction of compensatory programs like *Procampo* and *Aserca* Price and Marketing Supports, and a farm modernization program, *Alianza para el Campo*.

What has been the effect of NAFTA on the agricultural sector? The main conclusions are summarized in the following paragraphs.[49]

There was a large expansion in agricultural trade with a trend of the agricultural balance of trade to deteriorate (Figure 5.1). Imports, particularly those of feed grains, increased much, from US$ 3.4 billion in 1994 to 5.9 billion in 2003. As a proportion of total apparent demand of agricultural goods, imports increased from 23 percent in 1994 to 39 percent in 2001. In turn, exports rose from US$ 2.7 billion in 1994 to 4.7 billion in 2003, particularly non traditional exports of fruits and vegetables (which rose from US$ 1.6 billion in 1994 to US$ 3.3 billion in 2003, see Figure 5.2). The agricultural balance of trade deteriorated and the agro-food balance (including agro-industrial products) deteriorated even more.

Agricultural prices fell markedly in real terms (Figure, 5.6), following rather closely in nominal terms the evolution of international prices.

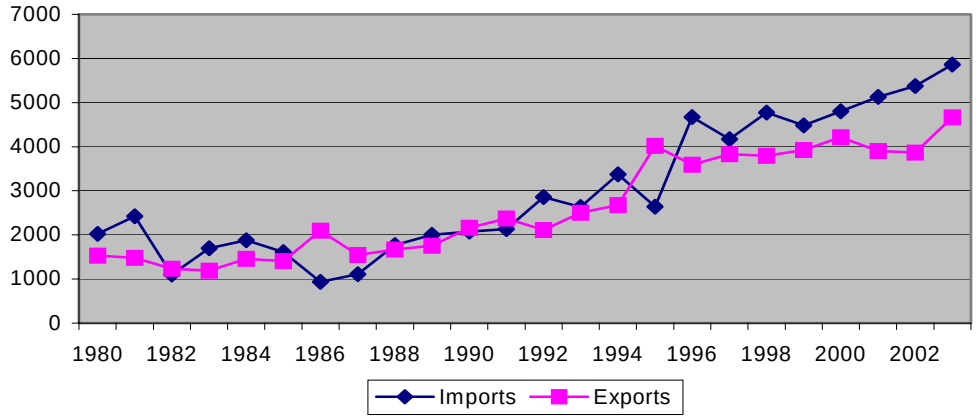
[49] The conclusions should be considered as a first approximation. More definite conclusions would require decomposition analysis to isolate the impact of commercial policies from that of other variables.

Production of wheat, soy beans and rice fell but not that of maize, contrary to what had been anticipated (Figures 5.4 and 5.5). This was probably due to the fact that (1) maize is largely a subsistence crop, with a good part of output being self-consumed or circulating in local markets only, and is the base of the rural diet, (2) the stimulus to maize production provided by *Procampo* and *Aserca* subsidies, and (3) the fact that maize is a comparably low risk crop, adapted to most parts of the country, well known to farmers, requiring simple technology, with low production costs and well established marketing channels. It is hence difficult to substitute.

Overall production and yields of food crops increased, contrary to expectation, although modestly so (Figure 5.5). As discussed in chapter 4, most of the increase in production and yields took place in irrigated agriculture, commercial farms, richer regions and export-oriented crops, while most of the increase in surface occurred in rain-fed areas. There was a clear rise in fruit and vegetable areas, a significant reduction in that of oil crops, and no obvious difference in cereals, pulses and tubers. Changes were not sufficiently large to constitute a major transformation of the overall crop mix.

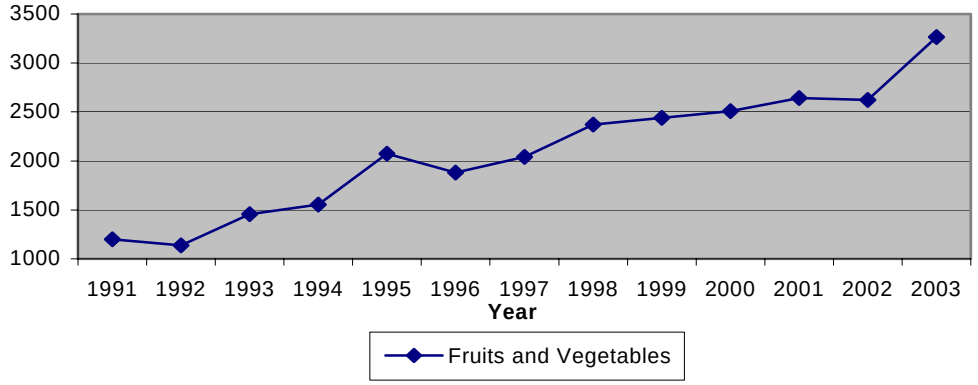
As anticipated, agricultural employment decreased (from 8.1 million in 1993 to 6.8 million in 2002), but there was no sign of factor price convergence with NAFTA partners, particularly in wages.

Figure 5. 1. Agricultural Trade. Mexico 1980-2003
(Millions Dollars)



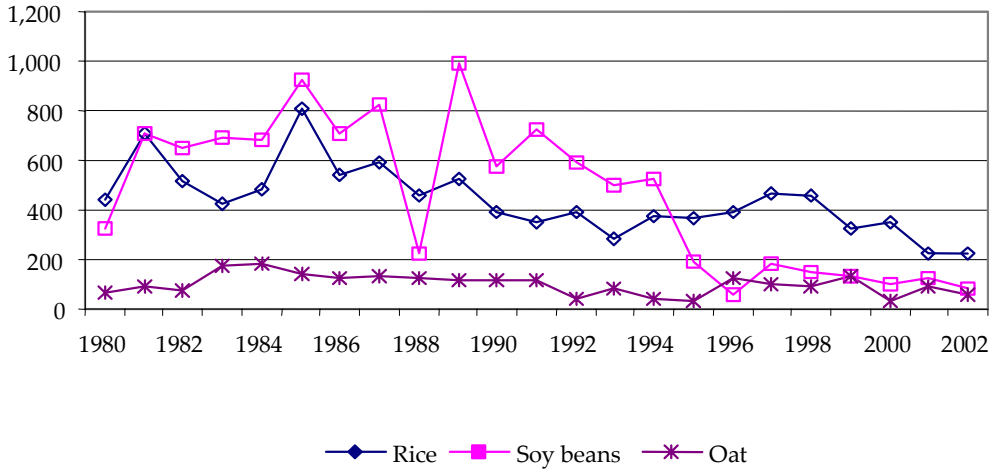
Source: World Bank staff calculations based on SIACOM.

Figure 5.2 Exports. Non traditional Agricultural Products.
Mexico 1991-2003. Millions of Dollars



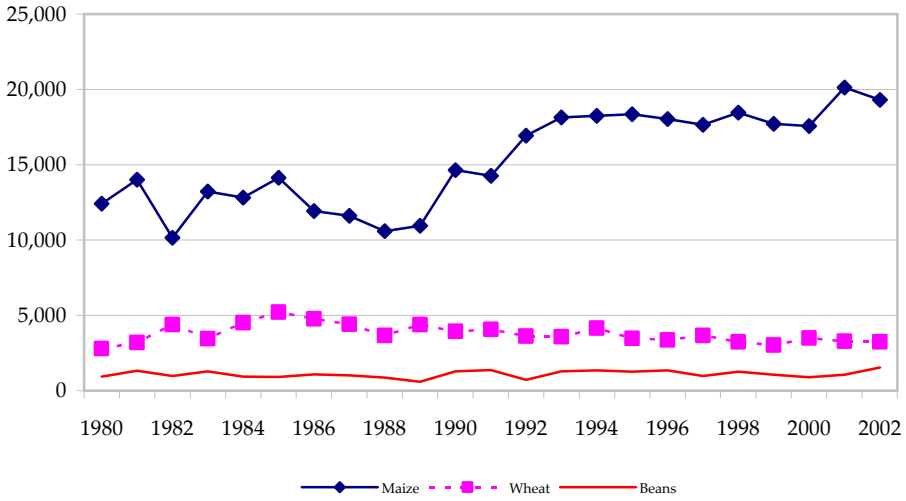
Source: World Bank staff calculations based on SIACOM.

Figure 5.3. Grain Production
Mexico 1980-2002 (Thousand Tons)



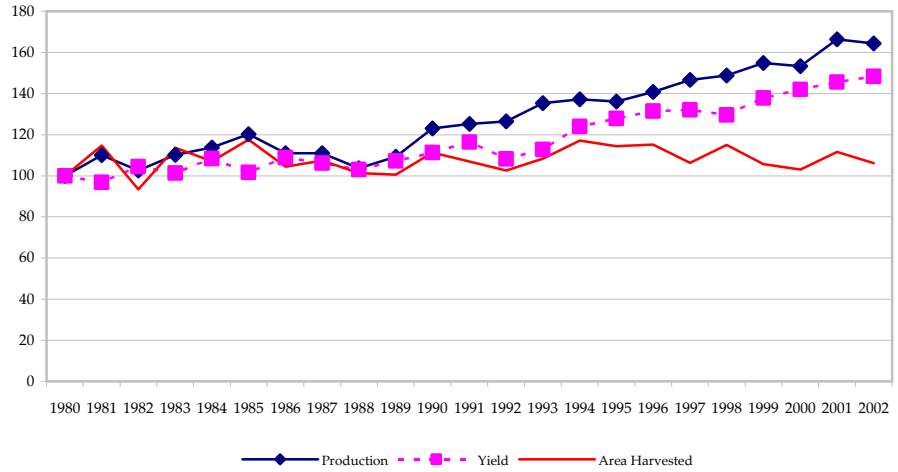
Source: World Bank staff calculations based on SIACOM.

Figure 5.4. Grain Production
Mexico 1980-2002 (Thousand Tons)



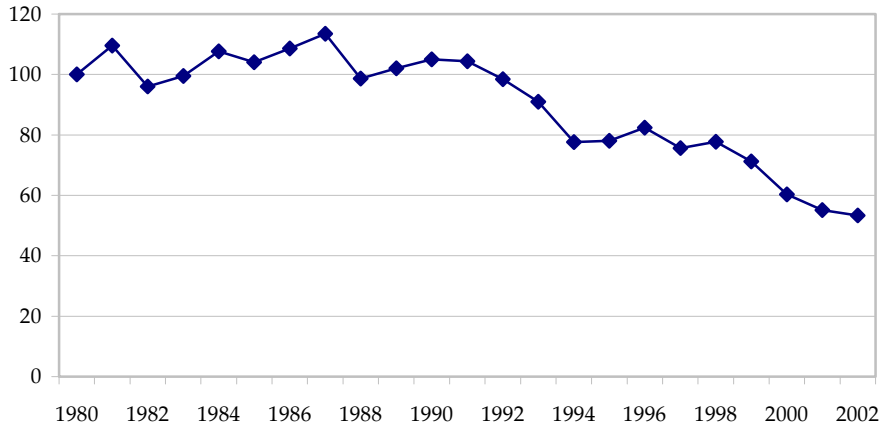
Source: WB staff calculations based on SAGARPA's agricultural database, SIACON.

Figure 5.5. Agricultural Indices
Mexico 1980-2002 (1980=100)



Source: WB staff calculations based on SAGARPA's agricultural database, SIACON.

Figure 5.6. Agricultural Real Price Index
Mexico 1980-2002 (1980=100)



Source: WB staff calculations based on SAGARPA's agricultural database, SIACON.

In summary, there is no evidence that liberalization policies had the catastrophic effects on agriculture that many feared nor is there evidence that they served to bring the big leap forward that others hoped for. As shown in the previous chapter, the evidence points to an unequal distribution of benefits and losses which generally tended to increase the distance between irrigated and rain-fed areas, between rich and poor agricultural regions, and between commercial entrepreneurs (particularly export oriented) and poor small farmers. The direct effects of commercial policy do not seem therefore to have been particularly friendly to the rural poor. There may be indirect, general-equilibrium type effects through other markets, particularly the labor market, linked to trade liberalization that could partly compensate for this. No systematic assessment is available of these effects, but the evidence on rural poverty and its evolution presented above seems to indicate that if they existed they were weak.

Stronger support measures could help ensure that small farmers can take advantage of liberalization. The outcomes of commercial policy must however be examined in conjunction with what happened to other policies that affect them. The opening of the economy was accompanied by important programs like *Procampo*, *Aserca* and *Alianza para el Campo,* but these were not sufficient (or indeed intended) to enhance the agricultural competitiveness of smaller farmers. Important elements like the development of a sound financial system for rural areas and the promotion of an agricultural knowledge system friendly to the poor were also lacking. These areas are discussed individually below.

A new economic order and regulatory system in rural markets seems to have emerged. Some authors have stressed that deregulation and the withdrawal of the state from the type of heavy handed rural intervention of the 70s and first part of the 80s (powerful institutions for input provision, output marketing and product support,

farmers' organizations co-opted by government, and a large, clientelistic extension system), did not result in an institutional vacuum or a complete retraction of the state from the countryside, as could be expected. There was a process of "reregulation" of markets and occupation of positions of economic and social command by new actors (Snyder 2001), which took different characteristics in different regions and economic arenas and resulted in diverse outcomes for the rural poor.[50] The federal government itself maintains new forms of intervention in the rural economy through "new agencies that attempt to reach producers as individuals rather than as members of organized groups, as in the past. (...) This shift completely changed the terrain of bargaining between the state and peasant movements, since agencies that had been the main targets for producer movements withdrew from their role as shock absorbers between peasants and the market" (Fox, 1995).

Rural Finance[51]

Mexico's financial markets are shallow compared to other middle-income LAC countries, and the situation is particularly acute in rural **areas**.[52] An extremely limited supply of credit results in credit rationing, with many farmers willing to obtain loans at the going interest rate unable to get them. The 2002 rural finance survey showed that only 6 percent of farmers and 5 percent of rural micro-entrepreneurs received loans from formal banking institutions.

Agriculture accounts for a very small part of bank lending (only 4.5 percent in 2001), and practically no commercial bank lending goes to small farmers. Lending to agriculture from public and private sources has fallen in real terms since 1996 as can be seen in Table 5.1. Due to the fiscal crisis and to a large default portfolio, lending by *BANRURAL*, the government bank for agriculture, decreased much in the last part of the 90s and early 2000s. Also, the decision was made that *BANRURAL* would not continue lending to small farmers whose credit needs would be addressed through special programs such as *Opciones Productivas.* Commercial banks increased their share of agricultural lending upon the reduction of *BANRURAL* operations but within a decreasing total (Table 5.1). *FIRA's* support to private lending through insurance and rediscount schemes of agricultural loans was not enough to attract major participation of commercial banks, partly because of their little specialization in this line of business and

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[50] Snyder (2001) illustrates this with a detailed study of the *reregulation* of the coffee economy that took place in different growing areas of Mexico.

[51] Much of this section is based on a study carried out in 2002-2003 by the World Bank in association with FIRA on financial markets and the rural economy (World Bank, 2003). As part of the study a survey was carried out in 2002 of credit needs and use of financial services of 1,825 individual farmers, 3,301 individual micro-entrepreneurs in rural towns (of 2,500 to 50,000 residents), 954 agricultural enterprises, and 1,073 non-agricultural enterprises. The survey is representative at the national and regional level.

[52] Thus, the ratio credit/GDP was 19 percent in Mexico in 2000 compared to 34 percent in Argentina, 46 percent in Brazil and 74 percent in Chile. Financial depth has fallen since the *Tequila* crisis. Also, private banks do not have branches in 74 percent of Mexican municipalities accounting for 22 percent of the country's population.

due also to the uncertain situation in the banking sector after the 1995 macroeconomic crisis.

Table 5.1. Evolution of Private and Public Lending to Agriculture, 1983-2000 in Million MxP of 1995

	Public	Private	Total
Amount (annual averages)			
83-90	23,193	19,130	42,323
90-94	14,736	40,690	55,426
94-96	14,825	43,806	58,631
96-00	8,674	26,260	34,934
Distribution (%)			
83-90	54.8	45.2	100
90-94	26.6	73.4	100
94-96	25.3	74.7	100
96-00	24.8	75.2	100

Source: Anexo Estadístico del V Informe de Gobierno. 1993 p.374; 1990-2000, e INEGI. Table prepared by A. Yúnez y F. Barceinas

Instead, small farmers resort to seeking credit from various saving and loan institutions –informal, government, micro-finance, and private money-lenders. Smaller farmers turn to more informal institutions like *Cooperativas de Ahorro y Crédito, Cajas Solidarias, Uniones de Crédito,* and other civil associations (some of which are regulated and some of which are not), to government programs, such as SEDESOL's *Opciones Productivas* and the *Fondos Regionales* of former INI, to various micro-finance institutions, and to private money lenders. Finance availability from these sources is extremely limited compared to need, however (see World Bank 2003). The distribution of loans by type of lender is shown in Table 5.2. The importance of trade credit (loans from commercial partners like input suppliers, traders and *coyotes*) is evident for both farmers and rural micro-enterprises: it accounts for 42 percent of all loans to farmers and over 60 percent of all loans to micro-enterprises. The primary source of loans for farmers is thus commercial partners, followed by friends and relatives (measured by number of loans, not amounts) and unregulated non-bank financial institutions (NBFIs). The limited access to private and development bank credit for this clientele is also evident from the table.

Table 5.2. Mexico: Distribution of Loans Received by Individual Farmers and Rural Micro-entrepreneurs by Lending Source (percentages)

Type of Lender	Farmers		Micro-enterprises	
	Number of Loans	Amount Disbursed	Number of Loans	Amount Disbursed
Formal Lenders	*22.8*	*52.3*	*10.5*	*24.2*
Private Banks	2.0	8.7	1.5	7.9
Develop. Banks	5.5	7.2	0.5	1.9
NBFIs Regulated	3.1	21.3	1.8	6.0
NBFIs Unregulated	12.2	15.1	6.7	8.4
Informal Lenders	*35.3*	*15.1*	*25.7*	*17.7*
Friends & Relatives	28.8	8.4	21.0	15.1
Others	6.5	6.7	4.7	2.6
Trade Credit	*41.9*	*32.7*	*63.8*	*58.1*

NBFIs = Non-bank financial intermediaries.
Source: World Bank, 2003: Table 5A.2.

Individual farmers and rural micro-entrepreneurs face many credit restrictions, illustrated in Table 5.3. Of all individual farmers interviewed 52.4 percent declared to be willing to take loans from formal sources and 50 percent from informal sources. Yet, only 7.1 and 9.8 percent, respectively, applied for a loan. It is interesting that most of those who applied received a loan (although not always for the full amount requested). One reason why so many potential demanders do not apply is probably because they anticipate being rejected. Transaction costs are high and may also deter loan application. Lack of information of credit sources and eligibility criteria and lack of local credit facilities may be other reasons for not applying. Research suggests that credit restrictions are depressing investment. Moreover, as is often the case, credit restrictions appear to apply most to those who are in greatest need, including people facing adverse shocks and who have few assets (Box 5.1).

Table 5.3. Mexico: Credit Demand of Individual Farmers and Rural Micro-entrepreneurs by Type of Source (percentages)

Demand	Farmers		Micro-enterprises	
	Formal	Informal	Formal	Informal
No Demand	46.6	50.0	52.7	52.9
Demand but not Applied	46.3	40.2	41.2	35.3
Applied (*)	7.1	9.9	6.1	11.8
Applied and Rejected (**)	16.3	1.1	14.3	1.6
Received Loan(*)	5.9	9.8	5.2	11.6

(*) % of total. (**) % of those applying.
Source: World Bank, 2003: Table 7A.1.

There have been positive policy developments in the last years with respect to rural finance, including regulatory reform. One important step is the recent substitution of BANRURAL for *Financiera Rural*. *Financiera Rural* is designed as a 2nd

level lending institution, although authorized to operate at 1st level. Other positive steps were the strengthening of the regulatory framework through the 2001 *Ley de Ahorro y Préstamo*, and the approval in 2003 of norms facilitating the use of movable collateral. There is finally the creation of the *Banco de Ahorro Nacional y Servicios Financieros* (BANSEFI) as a support institution for the micro-finance sector, whose focus is primarily rural.

It is illusory to assume that the ordinary commercial banking system will provide the financial services needed by small farmers, rural micro-entrepreneurs and the rural poor at large. A different system is required. The new system must move from agriculture to rural credit, and should be able to carry out savings mobilization and provide the type of financial services required by the rural poor (saving instruments, personal loans, insurance, money transfers, etc.).

Box 5.1. Causes and effects of credit restrictions, econometric evidence

On the basis of the 2002 rural finance survey an econometric exercise was carried out to investigate the impact on investment of removing credit constraints. The conclusion was that had there been no credit constraints during the period covered, the percentage of micro-entrepreneurs and farmers making investments would have been about 12 to 41 and 34 to 41 percent higher respectively.

The characteristics of farmers associated with a greater probability of being credit constrained *vis-à-vis* formal or informal loans were also examined using econometric analysis. The results were as follows: receiving remittances, selling goods through informal traders, selling outside the municipality, having irrigated land, having few assets, and being affected by adverse shocks, were factors lowering access to both formal and informal credit. Being a wageworker, selling on credit, and planning to improve one's business were factors which specifically restricted access to formal loans, while having a large family and not having formal savings restricted access to informal loans. Of course, some of these characteristics correspond to being a poor credit subject (like being able to offer no collateral) while others correspond to strong incentives to demand loans (like having irrigated lands or suffering adverse shocks).

Source: World Bank, 2003.

Micro-finance institutions are proving useful in the provision of financial services to the poor, both in Mexico and in other Latin American countries (Bolivia, Ecuador, Peru, El Salvador, Costa Rica, Brazil).[53] Micro-finance institutions have faced some difficulties in the provision of credit to agriculture as a specialized sector, because conventional micro-credit methodologies tend to rely on short-term loans with frequent repayments, which do not fit well the strongly seasonal requirements of agriculture. There are however microfinance institutions in different countries of Latin America

[53] See issues involved and successful experiences in building micro-finance systems in Robinson (2001), Drake and Rhyne (2002), Otero and Rhyne (1994), Ledgerwood (1999), and Rhyne and Rotbalatt (1994).

which have successfully expanded into agricultural lending, and whose experiences the Mexican government might choose to consider for policy reform (see CGAP, 2004).

Based on this experience, expanding micro-finance services in the rural areas of Mexico would be facilitated by the following innovations. First, introducing flexibility in disbursement and repayments to adjust to seasonal requirements. Second, introducing flexible collateral requirements, such as personal and group guarantees, movable assets (like animals, farm machinery and stored crops) and household goods, adapted to what rural dwellers may offer. Third, introducing technological innovations that can reduce infrastructure and employee costs, such as smart and debit cards and information technology. Fourth, use to the maximum extent possible existing delivery mechanisms, such as rural post offices, retail stores, rented rooms in schools, government offices, rural clinics, and office sharing with other institutions. This can be combined with the use of mobile staff and mobile credit/deposit units. Fifth, portfolio diversification across clients, activities and rural communities, using a variety of lending instruments adapted to different clients so as to reduce risks associated with systemic shocks. Finally, introducing other financial products such as saving deposit, money transfer facilities, and insurance schemes. Judicious government incentives to micro-finance institutions could promote the introduction of these innovations.

The Mexican government is making a valuable effort to support the development of rural micro-finance services through BANSEFI, but the repressed demand for financial services in rural Mexico remains large. Isolated rural credit programs from federal agencies such as those under SEDESOL's *Opciones Productivas* umbrella program are clearly of great benefit to those who have access to them, mostly capital constrained rural poor. But these *ad hoc* credit programs cannot substitute for more comprehensive measures *vis-à-vis* the entire system. The option could be considered of reallocating funds invested in these programs to provide more global support to the development of a broader rural micro-finance system, through BANSEFI and *Financiera Rural*.

The new *Financiera Rural* could take an active role in promoting a robust and healthy system of rural financial services based on micro-finance institutions. There are successful experiences in other countries (like Indonesia, Thailand, Chile and Brazil) of development banks setting up micro-finance branches.[54] Jointly with BANSEFI, the *Financiera Rural* could also help widening the system of micro-finance institutions operating in rural areas and providing second level funding support. Medium-term investment financing is a crucial area for rural development where micro-finance institutions often face difficulties, because the structure of their liabilities makes it difficult for them to tie funds for long periods, and because their usually high interest rates discourage demand. This is an area where the *Financiera Rural* could prove

[54] BRI's *Desa* Units in Indonesia, BAAC's microcredit unit in Thailand, *Banestado Microempresas* of Banco del Estado in Chile, and *Credito Amigo* of Banco do Nordeste in Brazil.

particularly useful. The specific regulatory needs of rural micro-finance type institutions should also be assessed, and the possibility should be studied of adjusting the rules to make them more flexible without harming financial soundness.

The Knowledge System

The agricultural research and technical assistance system has seen important progress in recent years in various areas. Competitive funds have been introduced as a way to allocate research funding, a system to which the government agricultural research institute, INIFAP, adapted rapidly (Roseboon, 2004). More producer friendly formulas for applied research and dissemination, with the involvement of producer groups, such as the *Grupos Ganaderos de Validación y Transferencia de Tecnología* (GGAVATT) have been tried out with success. Unfortunately, no similar experience exists in agriculture (with the exception of the *Clubes de Productores* active in some parts of the Northeastern region) probably because of lack of institutional leadership (FAO, 2002). There was also progress in changing the structure and corporate culture of INIFAP in order to reduce its administrative heaviness and bring it closer to the requirements of a scientific institution, and also to open it up more to collaboration with other research outfits, national and international. Finally, the *Ley de Desarrollo Rural Sustentable* created a *Sistema Nacional de Investigación y Transferencia de Tecnología para el Desarrollo Rural Sustentable*.

On the whole, however, little priority and resources were given to agricultural research during the last decade. Thus, for instance, the number of INIFAP's research staff fell from 2,160 full-time equivalent researchers in 1986 to 1,365 in 1996 and 962 in December 2003 (Roseboom, 2004). Mexico spends in agricultural research some 0.4 to 0.5 percent of its agricultural GDP, which is far from the 1 percent usually considered as a satisfactory benchmark (IICA 2003). Also, there are no clear and consistent research priorities and guiding policies. In general, there is insufficient recognition of the importance of the knowledge economy, the complementarities of knowledge with other assets, and the high returns of agricultural research investments (De Ferranti *et al*, 2002), and there is little progress in making agricultural research more poverty friendly.

The focus of technology transfer policy in the last decade was the shift from the public to the private domain. While middle and large farmers were basically left to procure and pay for their own technical assistance, there was recognition of the need of an element of subsidy for poor farmers. A *Sistema Nacional de Extensión Rural* (SINDER) was created in 1996 to provide technical assistance particularly to small farmers. The system met with difficulties due to administrative shortcomings in the selection of extension staff and their economic incentives, inadequate supervision and technical back up, and little client accountability, and was discontinued by the present government. It has not been replaced by an alternative system. Instead, technical assistance functions and budgetary resources are distributed in different programs, particularly in the rural development sub-program of *Alianza para el Campo*. Assistance is given by private

providers (the *Prestadores de Servicios Profesionales*, PSPs) certified by SAGARPA, and paid by the programs.

Systems of privately provided technical assistance to small farmers have been shown to work well in different parts of Latin America but have been less successful in the Mexican context. This is the case for instance in Chile with INDAP, and in the Southern Peruvian Highlands with the *Marenass* project and its predecessors. In Mexico, however, initiatives were less successful due to (1) institutional and administrative aspects, which have resulted in inadequate incentives, many uncertainties and lack of continuity on the part of providers, and (2) insufficient accountability to the beneficiary/client. Also, technical assistance is usually conceived in the limited sense of providing specialized agricultural expertise to farmers, without connection to managerial, organizational and marketing aspects, and to the multisectoral character of the small farmer economy. Private providers are not organized in networks, do not enjoy a support system and do not have systematic connections to research outfits. The M&E system of technical assistance outcomes and impact is weak. Because of these problems and the limitation of funds, the extent to which poor small farmers benefit from technical assistance is small.

Because of budgetary constraints and lack of a comprehensive strategy, INIFAP has not been able to respond to the needs of small farmers through stronger client orientation and a farming systems approach. Nor have environmental concerns been addressed sufficiently, in particular those related to mountainous and other fragile environments. Also, INIFAP has shown difficulties in responding to farmers' growing demands for innovations in the areas of marketing and agro-industrial transformation (see Roseboom, 2004 and IICA, 2003).

The *Fundaciones Produce*, an initiative to strengthen regional knowledge systems, lack sufficient links with smaller farmers.[55] Unfortunately, with some exceptions (mostly the *Fundaciones* of the Northern states, such as those of *Sonora* and *Sinaloa*), the *Fundaciones* have had limited impact, mostly because of limited resources, frequent disagreements with the S*ecretarías de Agricultura* of the states, and insufficient leadership from producer organizations and farmer leaders (IICA, 2003). Also, the *Fundaciones* rely mainly on INIFAP as provider of scientific services, and have not enough access to scientists from universities and other research centers who prefer to work in research projects funded by CONACYT. Since INIFAP has insufficient coverage of innovation in areas of growing demand from farmers like marketing and processing,

[55] This initiative was started in 1996. There are 32 *Fundaciones Produce* one per state, supported by federal and state funds. They are civil society organizations led by local farmers, and have the objective of promoting and funding research projects demanded by farmers, and acting as centers for the dissemination of relevant agricultural knowledge. The total budget for the *Programa de Investigación y Transferencia de Tecnología* (PITT) which is the administrative umbrella and funding source of the *Fundaciones,* was some US$ 30 million in 2002 of which 25 percent from state governments and 75 percent from the federal government. There is hardly any farmers' participation in the funding.

there is some mismatch between farmers' demands and what *Fundaciones* can offer (FAO, 2003). The research projects financed by *Fundaciones* have been criticized for their short duration, normally one year, and delays in the disbursement of funds, both things related to administrative and budgetary problems to be examined in chapter 6. Territorial organizations and organizations consisting mostly of poor farmers rarely participate in the *Fundaciones*, nor do the *Prestadores de Servicios Profesionales*, who could be closer to understanding the needs of small farmers.

A proposal for *Fundaciones Produce*. FAO (2003) has made an interesting proposal in connection with the *Fundaciones Produce*. It consists of converting them into *Antenas Tecnológicas* of the respective states in charge of the identification, adaptation, and massive dissemination of *tacit* knowledge (for opposition to formal or *codified* knowledge) that already exists and is being used by producer organization, agro-enterprises, research institutions and others. This reorientation of the work agenda of the *Fundaciones* would be welcome, particularly if accompanied by organizational changes and the institutional representation of small farmers' interests, if the *Fundaciones* are going to be of service to the rural poor.

Experience in Mexico as well as internationally could serve as guidance for policy design in addressing shortcomings in the agricultural knowledge generation and transfer systems. There are successful examples of promoting applied research oriented to small farmers through competitive funds (for instance in Colombia, Peru and Ecuador), as well as successful experiences with publicly funded but privately provided technical assistance, which could be used for inspiration. Best practices exist also in Mexico whose replicability should be analyzed, for instance with some technical assistance programs carried out by FIRCO in the past, experiences carried out today with *Alianza* funding, such as that of the GGAVATTs quoted before, and valuable experiments from NGOs and *Sociedades de Producción Rurales* in different parts of the country. Even if the assistance is given by private suppliers, there is an important role for government, not only in the funding but also in helping developing or adapting technology transfer models appropriate for different zones and type of producers, assisting in the organization of technical networks of providers, and facilitating the link with research outfits.

Land Policy

Major land policy reforms were carried out in the 1990s. The key land right reforms are discussed in Box 5.2. The reforms were exclusively oriented to the social sector –*ejidos* and *comunidades*- and were of great importance given the size of this sector, which covers more than half of the country's agricultural land and nearly four million landed families.[56] With important exceptions, *ejidos* are land poor (in quantity and

[56] According to the 2001 *Ejido* Census, there were 30,305 *núcleos agrarios* of which 27,786 *ejidos* and 2,519 *comunidades*, with an average of 3,467 ha and 127.8 members with full rights, making a total of 105,067,435 ha and 3,872,979 landed members. In addition, there were 957,638 occupants who were not *ejidatarios* but

quality) and have low farm technology, widespread poverty and an aging population. Rural poverty in Mexico is mostly housed in *ejidos* and *comunidades*.

Legal and administrative reforms in the social sector have brought benefits to a large portion of the rural poor. In particular, they: (1) gave more security of tenure and freedom to decide on their lands to the majority of the small farming population, with *Certificados de Posesión* being issued by PROCEDE to more than 3 million households; (2) gave also security of tenure to close to one million land occupants (*Posesionarios*); (3) improved conflict resolution and social peace in rural areas; and (4) improved the functioning of land markets in the social sector (World Bank, 2001a). Also, the application of PROCEDE was accompanied in many *ejidos* by the division of part or all collective lands and their distribution to *ejidatarios* as individual plots. It has been shown (see Muñoz-Piña, de Janvry and Sadoulet, 2003) that this allocation was equalizing since it benefited proportionally more *ejidatarios* with smaller holdings as well as those of indigenous ethnic origin. Division of collective lands was also used to allocate agricultural plots to landless *ejido* residents and include them as *ejidatarios*.[57]

Box 5.2. Land Policy Reform in the 1990s

The reform of land rights in 1992 centered on the change of article 27 of the Constitution and the land law that followed. The main changes were: (1) the agrarian reform was formally closed, thus ending the possibility of land being expropriated for this purpose; (2) land rights in the social sector (*ejidos* and *comunidades*) were improved and made more transparent; (3) a judiciary system of specialized courts (*tribunales agrarios*) was set up to rule on land disputes in the social sector (previously dealt with by government); and (4) a sort of *ombudsman* institution was created, the *Procuraduría Agraria*, to defend the rights and serve the legal needs of *ejidatarios*, *comuneros* and other small farmers. Other than this, a land titling and registration program of social sector lands, PROCEDE, was launched and has been very active, and a national registry for these lands, the *Registro Nacional Agrario*, was created.

There are three types of land rights in the *ejido*: (1) homestead plots with full, unrestricted ownership rights; (2) farming plots individually owned by the *ejidatarios*, which have some restrictions; and (3) collective lands (usually forest and grazing areas) for communal use, without separate rights. Farming plots (average 5 ha per *ejidatario*) can be rented in and out without restriction, freely sold to other *ejidatarios*, transmitted as inheritance, and used to constitute joint ventures with private capital. Farming plots, however, have three legal restrictions: (i) they cannot be sold to non-*ejidatarios* without permission from the *ejido*'s governing body (the members' assembly), (ii) cannot be parceled up (upon inheritance or otherwise), and (iii) cannot exceed certain size limits.

whose land rights were recognized by PROCEDE. According to the 1991 agricultural census, *ejidos* had 51% of the country's agricultural land. The labor force in the *ejido* sector was 2.3 times that of the private sector, and *ejidatarios* had around 1/3 of the surface per producer and 1/3 of the heads of cattle per producer of the private sector.

[57] There is a large literature on the nature and effects of the *ejido* reforms. An interesting reading is the collection of monographic studies edited by Cornelius and Myhre (1998).

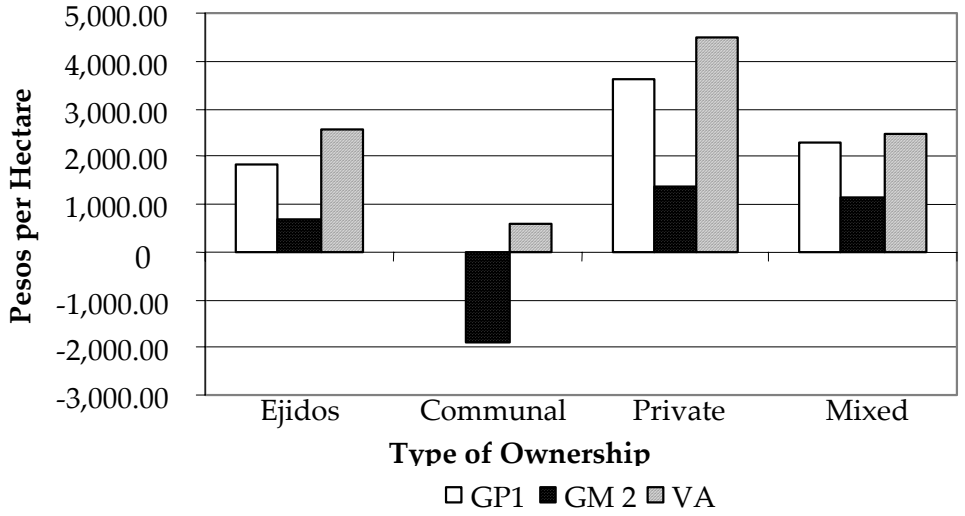
Ejidos can change to a full private ownership system if 2/3 of members so decides. So far, less than 1% of *ejidos*, mostly periurban ones, have used this legal provision.

Land policy issues are complicated by the fact that the *ejido* (like the *comunidad*) is both a land tenure system and a form of social organization. As a land tenure system it consists of a large tract of land with a collective title issued to a community of beneficiaries who practice individual farming and have collective use of forest and grazing lands. As a social organization it is a system of village governance and constitutes a form of social capital in rural areas. Institutionally, the *ejido* is the historical product of the Mexican Revolution and the *reparto agrario* (land distribution), making its reform a politically complex issue.

Source: De Janvry *et al*, 1998, World Bank 1999 and 2001a, Höllinger, 2004.

The impact, however, of the reforms on land productivity and farmers' incomes in the social sector was small. After more than ten years since the reform, profitability in agriculture in *ejidos* or *comunidades* continues to be low. As indicated in chapter 4, we have made an exercise with ENHRUM data to examine the profitability of farm enterprises according to tenure system, measuring profitability with value added per ha and gross benefit per ha (including as cost the imputed value of family labor, and without including it). On either measure farms in *ejidos* and *comunidades* are less profitable than private farms as shown in Figure 5.7

Figure 5.7 Gross Margin per Hectare with Family Labor (GP2) and without Family Labor (GP1) and Value Added (VA) per Hectare in 2002



Source: WB staff calculations based on ENHRUM.

There are essentially three reasons for the lack of impact of reforms on employment and income opportunities. First, property right changes do not create *per se* economic development, although they may open the way to it. The reforms were surrounded of excessive optimism in this respect. Second, little was done to accompany

the reforms with the complementary investments and support systems required to improve land productivity and farm incomes. Finally, under existing business circumstances in agriculture, private capital was not interested in the *ejido* sector with the exception of particularly attractive peri-urban or irrigated *ejidos*.

New major changes in land legislation do not seem politically feasible at present, and it is questionable that they are truly needed at this stage.

For the present legal framework to bring important improvements, the following challenges would have to be addressed:

- **There is a distinct ageing of the farming population in the *ejido* sector**. According to data from PROCEDE, land right holders in regularized *ejidos* have on average 54 years, 60 percent have more than 50 years, and 29 percent more than 65 years. Ageing reduces efficiency in land use since the elder tend to make a more extensive use of the land and are generally less efficient farmers. This has been observed in field studies (Eduardo, Le Moing and González, 2004).

- **The position of young residents of the *ejidos*, who are more educated than their parents but have no access to land, is worrying**. Sons and daughters of *ejidatarios* cannot easily find employment in the *ejido* and hence many are forced to migrate. As residents of the *ejido* but not *ejidatarios*, these young workers are a discriminated group without voice or power in *ejido* decision-making. The market is failing to transfer *ejido* farm land from low productivity users (mostly the elder) to potentially high productivity users (the younger) in a satisfactory manner, and young *ejido* workers suffer from it.

- **The legal norm preventing the fractioning of the land titled to *ejidatarios* obstructs land sales and forces *ejidatarios* to pass it to one heir only, generating efficiency and welfare losses**. The rationale behind the norm is to maintain farm size and if possible expand it through the consolidation of holdings in order to promote a class of viable farms within the *ejidos*. Small farmers, however, have a multisectoral economy. The important thing for them is not viable farms but viable multifunctional family enterprises, of which part-time farming can be a component. Relatively small farms can play crucial complementary roles in the economy of rural families. Part-time farming has proven to be efficient (in terms of both product per ha and family welfare) in many parts of Europe. Finan, Sadoulet and de Janvry (2003) have shown the importance of the welfare effect of even small plots of land in Mexico, an effect very much enhanced by complementary assets and good location.

- **Finally, concern is often voiced about the impact of reforms on the system of local governance**, in view of the double nature of the *ejido* mentioned above. This is very much linked to the issue of the erosion of the social protection and equity functions of social property, and is addressed in chapter 7.

The land-shortage of young landless farmers is being addressed through a new and promising program. The *Secretaría de la Reforma Agraria* (SRA) is starting a program to promote the access to land of young landless farmers through buying and renting, as well as to complementary investments, using as instruments a land fund and an investment fund. This is a welcome response to the above situation particularly in view of the importance that young workers may have in the taking off of the rural economy.

POVERTY FRIENDLINESS OF SPECIFIC AGRICULTURAL PROGRAMS

Alianza para el Campo

***Alianza* is a demand-driven investment support program aimed at farm modernization**, which started operating in 1996. It is a complex program consisting of various subprograms with different rules each that have changed much over the years, but it mostly operates as a matching grant subsidy.[58] The program is large, with a total budget of some US$ 1.1 bn in 2003, some 30 percent of which were contributed by farmers.

***Alianza* is not particularly focused on the poor, with the possible exception of the sub-program *Desarrollo Rural*.** *Alianza* was not designed as a poverty reduction instrument. Initially it was oriented to the type of asset investments preferred by large farmers, like tractors, pressurized irrigation equipment, electric fencing, and others, clearly catering for the more commercial sector of the farming community. Over time, however, it moved to address also the needs of smaller farmers, particularly through the *Desarrollo Rural* subprogram,[59] which in 2003 accounted for 36.5 percent of the cost of the entire *Alianza*. *Alianza* subsidies are not registered separately in ENIGH surveys (contrary to *Procampo's* and, since 2002, *Oportunidades'* subsidies), and hence we do not know how much reaches the poor. FAO's evaluation classifies beneficiaries in five types according to education, farm size, number of animals, value of productive assets, and percentage of output sold, as shown in Table 5.4. (FAO, 2003). The first type and perhaps

[58] The main ones are the *Programa de Desarrollo Rural* (36.5 percent of total program cost in 2003), the *Programa de Fomento Agrícola* (36.7 percent), and the *Programa de Fomento Ganadero* (17.2 percent).

[59] This in turn consists of three subprograms: (i) the *Programa de Apoyo a los Proyectos de Inversión Rural* (PAPIR), an investment fund to finance productive investments, (ii) the *Programa de Desarrollo de Capacidades en el Medio Rural* (PRODESCA), a training/human capital development program, and (iii) the *Programa de Fortalecimiento de Empresas y Organización Rural* (PROFEMOR), a social capital program oriented to the strengthening of farmers' organizations.

part o the second can be identified as "the poor". According to this, 32 percent as a maximum of the beneficiaries of *Alianza* in 2002 were poor (Table 5.5), but the figure is probably lower since not all Type II beneficiaries would be poor. The *Desarrollo Rural* program is clearly more targeted, but even so at least 47 percent of the beneficiaries are non poor. Figures were not available of the breakdown of program expenses by type of beneficiary, but the distribution must be worse than that of beneficiaries since beneficiaries classified in higher types typically received larger amounts per capita than those in lower types.

Table 5.4: Type of Beneficiaries of Alianza para el Campo

VARIABLE	TYPE I	TYPE II	TYPE III	TYPE IV	TYPE V
Schooling (years)	Primary (1-6)	Secondary (7 - 9)	High School (10-12)	University (13-16)	University title (17 or more)
Surface (has)	Less than 3	3 to 10	10 to 50	50 to 100	More than 100
Heads of cattle	Less than 5	5 to 10	10 to 50	50 to 100	More than 100
Value of productive assets (MxP)	Less than 5,000	5,000 to 25,000	25,000 to 100,000	100,000 to 500,000	More than 500,000
Percentage of output sold	Less than 20%	20% to 40%	40% to 60%	60% to 80%	More than 80%

Source: FAO (2003).

Table 5.5: Percentage of Beneficiaries of *Alianza para el Campo* by Type of Beneficiary

Programs	**Beneficiaries Type I**	**Beneficiaries Type II**	**Beneficiaries Type III**	**Beneficiaries TypeIV**	**Beneficiaries Type V**
Rural Development	23	30	33	13	1
Agricultural Development	4	20	43	27	6
Livestock Development	3	13	41	36	8
All *Alianza*	11	21	38	25	5

Source: FAO (2003).

Several aspects of *Alianza* prevent it from being a progressive program, whatever its other merits. First, as we have seen, it is mostly oriented to the non-poor.

The main reasons for this are (i) wide, untargeted eligibility criteria, (ii) only producers with some capital or access to finance can put up the counterpart contribution required, (iii) asymmetric information: insufficient dissemination of the scope and rules of the program makes larger farmers more likely to be better informed, and (iv) the technical assistance provided with the program is more suitable to the needs of the more commercial farmers (FAO, 2003). Geographical targeting is also lacking. High marginality municipalities (identified by the CONAPO index) have not been a priority in practice, although the rules of the *Desarrollo Rural* subprogram indicate that 70 percent of the funds should go to them.[60] Finally, like in other agricultural programs, landless farmers are left out.

The program could be made more poverty friendly without major change in its objectives. One way would be through improved selection by filtering out better off farmers likely to carry out the investments without program support. Assistance could be provided to these farmers by helping them obtaining investment credit from established sources through risk sharing or other mechanisms. Another way would be to enhance the *Desarrollo Rural* program and redesign it using a territorial approach to rural development. Other ways are through better dissemination, more focus on marginal areas, and a better link of *Alianza* supports to small farmers with their access to rural finance so that poor farmers without counterpart funds can participate.

A decentralization of the program brings both risks and opportunities. Some 25 percent of the *Desarrollo Rural* funds were being decentralized to municipalities in 2004, and the present administration intends to fully decentralize the program by the end of its mandate in 2006. This brings both risks and opportunities and it is not clear what the effect would be. On one hand, local authorities could be better placed than central ones to identify priorities. On the other hand, local authorities are experienced in local infrastructure and service investments but not in productive development projects, an area in which they have not been traditionally involved. There is hence risk of atomization and lack of focus of the investments. The implementation of a territorial approach to rural development, explained in Annex 3.I., would reduce this risk.

Procampo

***Procampo* is a cash transfer program launched in 1994 to compensate grain farmers from income losses due to increased competition brought by NAFTA**. It is thus an income support rather than poverty program, and is supposed to finish in 2008 when the transition period expires and there is full market integration. The only conditionality is planting of eligible crops (mostly grains[61]) three years before 1994, and continued cropping of the land. The subsidy is given to the user of the land, not

[60] Thus, for instance, in 2002 only 15 percent of Papir funds (the core subprogram of the *Desarrollo Rural Program*) went to these municipalities.

[61] There was some widening of crop eligibility over the years. The crops currently eligible are maize, rice, wheat, barley, sorghum, beans, soybeans, cardamom and cotton.

necessarily the owner, and is seasonal, so that double cropping farmers receive it twice in a year. The payment is of US$ 80 to 90 per hectare and per season. There is no limit to the number of hectares for which a farmer can receive the subsidy other than the constitutional land ceiling[62] (Davis, 2003). Like *Alianza, Procampo* is a large program with a budget of some US$ 1.2 billion in 2003 benefiting an average of some 2.8 million farmers per year with coverage of some 14 million hectare. Payments are made directly to farmers included in the *Procampo* registry, with bank checks, upon verification that the land is cultivated. It is a very popular program among farmers and in rural areas in general. Table 5.6 shows the evolution of *Procampo*'s budget, subsidy per hectare, surface covered, and number of beneficiaries.

***Procampo* has some pro-poor features, including wide coverage and focus on the social sector.** *Procampo* marks an attempt to move from a conventional price and marketing support system to a more decoupled one. Although not a poverty targeted program, it is a considerable improvement equity-wise compared to the regressive system of protection that it replaced. The most positive feature of *Procampo* for the small farmers is its large coverage, which, even if the program is not targeted, allows the vast majority of poor farmers, most of whom produce grains, to benefit from the subsidy in a stable and predictable way (according to the 1997 *ejido* survey, some 85% of *ejidatarios* received the subsidy). *Procampo* also releases somewhat the severe financial constraint faced by farmers, thus facilitating on and off-farm productive investments, which have an income multiplier effect.[63] This effect, however, is not equitably distributed, being more powerful for large farmers. Finally, the program has the interesting but little noticed effect of drawing poor farmers closer to the banking system and the use of banking services.

Table 5.6. Procampo: Budget, Subsidy and Hectares Covered, 1994-2003

	1994	1995	1996	1997	1998	199	2000	2001	2002	2003
Budget (MxP mn)	4,848	5,864	6,793	7,533	8,492	9,372	10,379	11,005	11,851	14,191
Subsidy (USD/ha)										
Fall-Winter	98.3	63.9	58.4	61.4	61.9	66.2	75.0	83.9	86.4	82.1
Spring-Summer	114.4	96.0	66.6	71.2	76.5	70.6	82.6	86.7	94.8	86.8
Surface (000 ha)	13,625	13,321	14,306	13,885	13,869	13,528	13,571	13,420	13,698	13,900
Beneficiaries (000)	3,295	2,934	2,987	2,850	2,780	2,724	2,681	2,695	2,792	2,800
Social sector	n.d.	2,445	2511	2,390	2,343	2,320	2,265	2,267	2,348	2,352
Private owners	n.d.	432	419	405	385	371	365	376	391	392
Mixed ownership	n.d.	57	57	55	52	51	51	52	53	56

Source: IICA (2004: 279) Based on figures from ASERCA.

[62] In Mexico there is a constitutional limit to land holdings of 100 hectare of irrigated land or the equivalent in less productive lands.

[63] This is partly because of the incremental cash and partly because *Procampo* payments can serve as collateral for loans. By comparing the *ejido* surveys of 1974 and 1997, Sadoulet, de Janvry and Davis (2001) estimated this effect to be between 1.5 and 2.6 for *ejidatario* farmers.

Income from *Procampo* is important for the rural poor. In 2002 it accounted for 4.7 percent of family income of the bottom quintile of the income distribution of the disperse rural population, and 5.5 percent of that of the extreme rural poor. The share of *Procampo* income in poor farming families is of course much higher. A study by Davis, Handa and Soto (2001) estimated an impact of *Procampo* of five points in the national poverty rate in 1996.

The program also has some less favorable features from the point of view of poverty friendliness: (1) it bypasses landless farmers, and (2) since land is unequally distributed and the subsidy is proportional to the size of holdings, the distribution of benefits is biased towards larger holdings. Seasonal payments favor also farmers with access to irrigation, who can double crop and are normally better off than those who cannot double crop. As seen in Table 5.7, in 2004 farmers with land-holdings of less than 2 hectare received only 13 percent of all subsidies, while one third of all funds were allocated to land holdings above 18 has. In terms of consumption expenditure deciles, in 2002, the first three deciles received 20.8 percent of the subsidy while the top decile received 29.2 percent.[64] The moderately poor received 53.2 percent of the subsidy and the non-poor 46.8 percent, but only 26.4 percent of the extremely poor (who typically are land-less) received the subsidy (Figure 5.8). This said, Ruiz *et al* (2002) have shown a positive impact of *Procampo* on nutrition, similar per MxP received to that of *Progresa*, while a study by González- König and Wodon (2003) found a negative impact on migration, both temporary and permanent.

There have been important improvements in the design of *Procampo* in recent times that have made it friendlier to the poor. First, farmers with less that one hectare receive the full payment corresponding to one hectare, and farmers with less than 5 hectare receive a payment per hectare above the norm.[65] Second, there has been an improvement in timing, which gives producers the possibility of receiving the subsidy before planting so that they can use it to pay for crop inputs. Finally, a long awaited scheme was introduced whereby farmers can receive cash the discounted amount of the remaining subsidy, provided they employ that cash in a productive project.

[64] Staff calculations based on ENIGH (2002). Rural defined as localities with less than 15,000 residents.

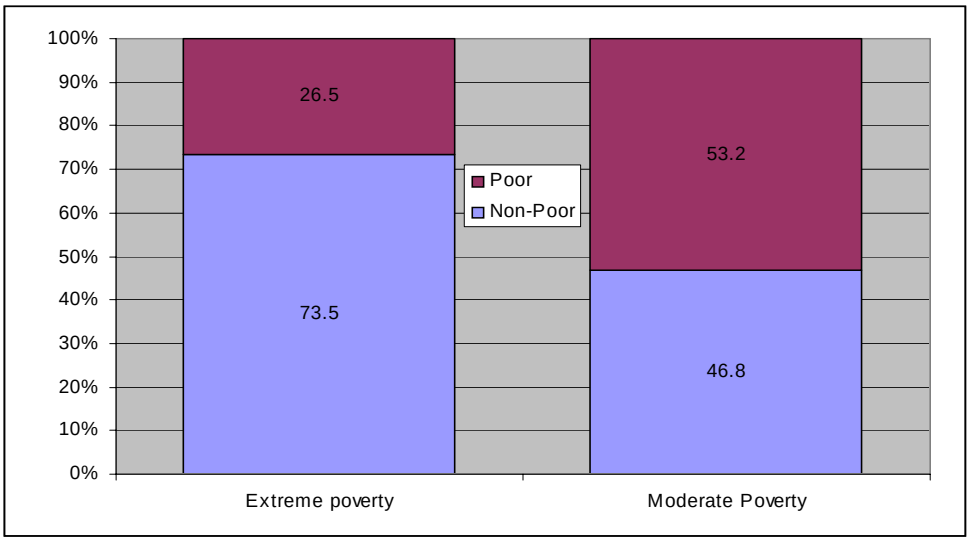
[65] MxP 1,030 per hectare against MxP 905 per hectare in the 2003 spring-summer cycle.

Table 5.7. Procampo: Beneficiary Distribution by Size of Holdings

	Producers		Hectares	
Size of Holding	**Number**	**Percentage**	**Number**	**Percentage**
0 to 1	648,785	23.7	594,305	4.4
1 to 2	672,794	24.6	1,201,075	8.8
2 to 5	804,613	29.4	2,836,562	20.8
5 to 10	391,776	14.3	2,925,391	21.5
10 to 18	113,821	4.2	1,543,079	11.3
18 to 100	97,906	3.6	3,384,032	24.8
More than 100	6,375	0.2	1,148,490	8.4
Total	**2,736,070**	**100.0**	**13,632,934**	**100.0**

Source: IICA (2004: 280) based on ASERCA data.

Figure 5.8. Rural Mexico: Share of Procampo transfers by Poverty Condition, 2002



Notes: (1) Rural areas defined as localities with less than 15,000 residents.
Source: Calculated from ENIGH 2002.

According to its original plan, *Procampo* should be discontinued in 2008. In view of the popularity and many functions of the subsidy in the rural economy, it is difficult to imagine that this will be politically and socially feasible. The design, however, may change. One possibility is to substitute *Procampo* with a different type of subsidy. Thus, SAGARPA is considering the possibility of introducing some kind of social security system for rural elders as a replacement of *Procampo*.

Aserca Price and Marketing Supports

***Aserca* (*Apoyos y Servicios a la Comercialización Agropecuaria)* was created in 1991 to support the marketing of surpluses in an open market environment.** It is a government entity operating under SAGARPA. *Aserca* operates the *Apoyos a la Comercialización y Desarrollo de Mercados* program, which was introduced to ease

marketing problems of surplus producers of grains and strengthen their capacity to compete with imported produce after liberalization. Until recently, the program consisted of a subsidy for surplus farmers (mostly medium and large ones) covering the difference between the local price and the import parity price. The objective was that all beneficiary farmers received the import parity price irrespectively of transport costs, marketing failures and differences in marketing costs.

The volume of the program has almost tripled since the mid 1990s, the volume of produce covered increasing from 4.5 million tons in 1995 to 12.1 million ton in 2002, and the subsidy from MxP 806 million to MxP 4,005 million, as shown in Table 5.8.

***Aserca* subsidies are regressive.** There were some 67,000 beneficiaries in 2002 who received an average support of around US$ 5,200 each, i.e. approximately four times the moderate poverty income line. This suggests that the subsidy goes to medium and large commercial farmers. Also, it mostly benefits rich agricultural states as shown in Figure 5.9. Thus, in 2002, *Sinaloa, Sonora, Tamaulipas* and *Guanajuato* received among them more than 80 percent of the support.

Table 5.8. ASERCA Marketing Support Program, 1995-2002

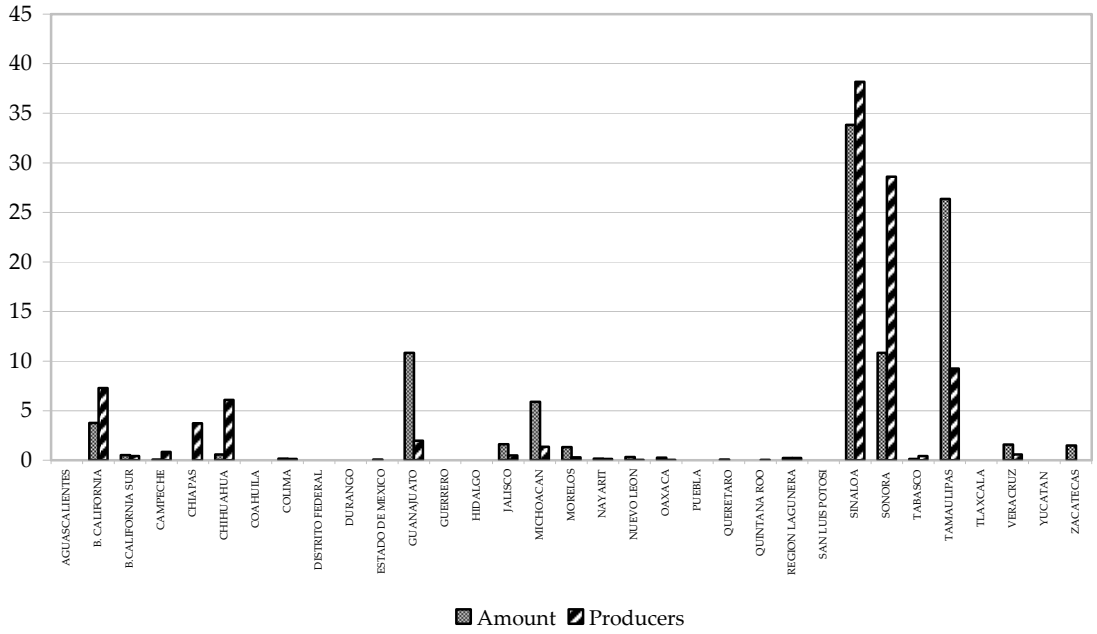
	1995	1996	1997	1998	1999	2000	2001	2002
Volume (000 tn)	4,528	1,726	8,091	6,531	5,915	8,758	16,052	12,085
Value (million MxP)	806.5	555.4	2,068.0	1,930.6	1,573.6	2,928.5	5,133.5	4,005.0
Subsidy in MxP per tn	178.1	321.8	255.6	295.6	266.0	334.4	319.8	331.4

Source: Presidencia de la República. III Informe de Gobierno. Anexo estadístico 2003.

There have been some changes and improvements in recent years. Support has been introduced to compensate for the price fall effect due to international competitors' subsidies. This is done through a system of target income for each product. Also, a 5-year horizon was adopted to give more price certainty to producers. Special programs have been set up to promote shifts from excess supply to excess demand crops, and to promote the rediscount (*pignoración*) of warehouse certificates of deposit.

Poverty aspects aside, the program has some weaknesses. Although *Aserca* supports play an important role in allowing Mexican commercial producers of import-competing grains to compete in better terms, and compensate somewhat for price reducing practices from trade partners, their efficiency and effectiveness may be called into question. One issue refers to the efficiency issues linked to the attempt at pan-territorial pricing implicit in the subsidy. Another refers to the actual possibility of replacing the compensatory subsidy by border protection measures, thus shifting the burden of the subsidy from the taxpayer to the consumer. More generally, it can be asked to what extent a middle income, fiscally starved country with high poverty rates like Mexico can afford in the long run a heavy subsidy program that does not benefit the poor and is not conditional on improvements in competitiveness.

Figure 5.9. Distribution by State of ASERCA Marketing Supports in 2002, Percentages



Source: World Bank staff calculation form ASERCA data.

POVERTY FRIENDLINESS OF NON-AGRICULTURAL RURAL DEVELOPMENT POLICIES

There are three important trends in rural development policies outside agriculture: (1) decentralization of social infrastructure, which has resulted in an increased role of both state and municipal governments, (2) the promotion of territorial development agendas through federal programs, (3) and the introduction of direct cash transfers to the poor.[66]

Decentralization of Rural Infrastructure

Rural social infrastructure funding has been decentralized. Decentralization is important in many areas of social provision for the rural poor, but we will be concerned here with social infrastructure only. Since 1998, the instrument for decentralizing social infrastructure is the *Fondo de Aportaciones para la Infraestructura Social* (FAIS) of *Ramo 33* of the federal budget. Municipalities are the main beneficiaries of social infrastructure decentralization, since most of this fund (88 percent in 2000 according to the *Encuesta Nacional sobre Desarrollo Institucional Municipal 2000*) goes to municipal authorities under a sub-fund called *Fondo para la Infrastructura Social Municipal* (FISM), and the rest to state governments. On average, FISM accounts for 27 percent of municipal resources, but its importance is much larger for rural and semi-rural municipalities for which it goes from

[66] Education and health policies are not considered here since they are included in World Bank (2004)

25 to 75 percent (Cabrero Mendoza, 2002). The largest part of investment (around 22 percent) goes to urban development and the smallest parts to housing improvement and productive infrastructure (around 3.5 percent each). Resources are divided between the municipal capital and other municipal areas in varied proportions according to municipalities but, in general, richer (i.e. less marginal) municipalities tend to devote proportionally more resources to the municipal capital (González de Alba y Garza Navarrete, 2002).

The modification of the *Ley de Coordinación Fiscal* in 1997 and the introduction of *Ramo 33* and FISM brought two improvements in the distribution of resources for social infrastructure: (1) the allocation of funds among municipalities according to objective criteria based on municipal needs –the *carencia municipal*-, which prevents arbitrariness and clientelistic distortions, and (2) the larger autonomy in investment decisions that the present policy gives to municipalities. Some rural municipalities have a system in place that allows the participation of civil society in establishing investment priorities, mainly through municipal development councils operating alongside the *cabildos* as consultative bodies to the *presidentes municipales*. Some of these councils are the heirs of the municipal *Consejos de Planeación del Desarrollo* (COPLADEs) created during the Salinas administration, others are more recent. In some municipalities there is a *Plan de Desarrollo Municipal* approved by the *cabildo*, where the investments are included. Yet, many rural municipalities do not have such councils and municipal plans, and the decision on the use of FISM funds is taken by the *presidente municipal*.

In general terms this system can be considered poverty friendly, but some improvements can nevertheless be made. To the extent that (1) the allocation of funds is made according to municipal needs measured by poverty indicators, and (2) the local use of funds is more efficient and transparent and reflects people's priorities better, the current system can be considered poverty friendly. Some improvements, however, are possible. The first is to introduce an independent monitoring and evaluation (M&E) system for FISM, which does not exist at present. It could consist of either independent systems operated by the states or one single federal system. The latter seems a better choice because of the advantages of having centralized M&E mechanisms for decentralized operations. Another improvement would be the systematic introduction of participatory approaches for establishing investment priorities and to ensure transparent accountability of the use of funds. Finally, it would be desirable that FISM funds are not used in isolation of other sources of development assistance to municipal areas from federal or state programs or other sources. An integrated approach for the municipal territory, consolidated in a strategic municipal program designed in a participatory manner, would be the best way to exploit synergies between different programs and organize the municipal demand for development assistance.

Promotion of Territorial Development

Several federal programs have tried or are trying to create territorial development systems in rural areas. We can single out among them the *Programa de Areas Marginales*, implemented by SAGARPA, which was developed during the Zedillo administration, the *Microrregiones* program, implemented by SEDESOL, and the *Microcuencas* program, implemented by FIRCO, the latter two started under the Fox administration. Also important to the promotion of local development in rural areas is the *Ley de Desarrollo Rural Sustentable*, passed in December 2001, and the sustainable rural development councils whose creation is mandated by the Law.

The *Marginal Areas Program* was an attempt to achieve rural development in marginal zones through the promotion of productive activities. It started in 1997 operated by SAGARPA in the framework of the rural development subprogram of *Alianza para el Campo*, and was supported by a World Bank loan. Six marginal areas were selected for a first phase, 3 in *Oaxaca* and 3 in *Las Huastecas* (in the states of *Veracruz, Hidalgo* and *San Luis Potosi*), and another 11 for a second phase in the states of *Chiapas, Puebla, San Luis Potosí, Guerrero, Michoacán* and *Veracruz*. Matching grants were given to farmers to invest in homestead orchards and small animals, agriculture and livestock projects, land conservation, and transformation units. Funds were also available for extension and training, institutional support, and communal activities and projects. The main novelty of the program was institutional and consisted in the creation in each region of a *Consejo de Desarrollo Rural* of mixed public-civil society composition. According to original design, these councils were to be largely autonomous and strongly empowered with decision making capacity in investment and technical assistance matters, thus capable of playing a crucial role in territorial development as core meso-level economic coordination institutions.

The program is now terminated, but provided some important lessons.[67] There were four main limitations some of which were slowly overcome as the learning process went on. First, the political will to construct truly representative and autonomous councils and empowering them was not always there. Political traditions, administrative limitations, and a less than full understanding of the advantages of community-driven development, particularly by state governments, which had a strong say in the implementation of the program, were the main reasons for this. Second, the program focused primarily on agricultural development and was not really multisectoral. Also, shared long term visions for the regions future and the strategic programs to carry them out were not constructed. Third, there were problems with the extension system that was put in place under SINDER, which lacked continuity and client orientation, and was not up to the difficult technical and organizational challenges posed by poor farmers in these regions. Finally, there were administrative and financial management limitations (timing in the liberation of funds, eligibility of investments, restriction on certain

[67] The program was discontinued in 2003, and the World Bank project supporting it closed.

categories of expenditures, heavy ex-ante controls, and the like), which did not help implementing a program like this which requires plenty opportunity and flexibility in expenditures. Notwithstanding the above limitations, which should be seen as a reflection of the learning process, the program helped improving the incomes and assets of many poor farmers in the targeted areas.

***Microrregiones* is another federal program oriented to marginal areas.** It is implemented by SEDESOL, started operating in 2001 in the framework of *Contigo*, and is currently on-going.[68] *Microrregiones* is not only a program but also an attempt at developing a new strategic approach to rural development. Activities mainly concentrate on municipalities of high and very high marginality measured by the CONAPO marginality index. There are 1,338 municipalities in these categories, which have been grouped into 263 micro-regions. The strategy has three basic features: (1) investments are not dispersed through the micro-region but concentrate on specific localities, the so-called *centros estratégicos comunitarios,* assessed to have the potential to act as development poles within a certain area of influence; (2) although the program has its own development budget, it mostly tries to promote and coordinate investment and service provision to the *Centros comunitarios* by other government bodies;[69] (3) achievement is measured on the basis of the supply of missing development services or assets –the so-called *banderas blancas*. Since the end of 2003 the formation has been promoted of *Agencias de Desarrollo Local*, consisting of professionals of civil society or rural organizations who encourage and assist endogenous processes of territorial development. Up to the end of 2004 there were 81 of these groups operating in 81 *microrregiones*. They are supported and monitored by the *Microrregiones* managment unit.

While the project is pro-poor in targeting, some challenges remain in terms of program implementation. Focusing on marginal areas, working with a territorial approach, clustering investments to achieve critical masses of infrastructure and services, and trying to coordinate the local development activities of different agencies, are all very positive features of the program that make it poverty friendly. Program implementation, however, has come across some difficulties. Thus, it has proved difficult to marshall the type of strong commitment from other federal agencies, state and local authorities and the local private sector and civil society necessary for successful territorial development. One reason is that *Microrregiones* is very much associated in people's minds with SEDESOL, and thus seen as its more or less exclusive responsibility. Also, some technocratic features in the program and some top down approaches, mostly associated with the desire to achieve quick impact, do not help attracting local commitment. It was also difficult to build strategic plans for the micro-

[68] *Microrregiones* can be seen both as a government program with operation norms and a budget line and as a strategic perspective of the rural development process and attempt to coordinate efforts of different parts of government around that perspective.

[69] There are 14 *secretarías* involved in the program plus state governments and municipal authorities.

regions capable of attracting the imagination of the local private sector and civil and political society. A shared strategic plan for the region built from below would help integrating program investments into coherent strategic plans, and setting in motion endogenous growth processes (see Annex 3.I. on this). This could be done in the framework of the *Ley de Desarrollo Rural Sustentable.*[70] Instead, investments tend to consist of the juxtaposition of actions by different agencies based on a check lists of what micro-regions are supposed to have as development assets and services. Finally, most investments go to social infrastructure and services, and only a minority to employment and income generation projects. This is not surprising since promoting local productive projects requires much work with local communities in the identification of opportunities and the accompanying of the processes. This in turn requires two resources in short supply to the program: a large running budget, and a large number of specially trained, highly motivated staff capable of building virtuous cycles of public-private synergy (see Evans, 1996, and Tendler, 1997, on building public-private synergies).

The *Plan Nacional de Microcuencas* has a micro-territorial development approach. The program, administered by FIRCO, centers on small basins of some 4,000 ha and 1,300 residents each on average. It is a low budget[71] and low profile but effective program from which interesting lessons can be learnt. The program is national in scope and currently operates in 1030 *microcuencas* located mostly in the middle and upper ranges of the respective municipalities, where the concentration of rural poor tends to be larger, covering some 1.3 million people. Although operational in all states, it is particularly active in *Aguascalientes, Chiapas, Coahuila, Guanajuato, Guerrero, Jalisco, Oaxaca, San Luis Potosí,* and *Veracruz*. Implementation agreements have been signed with 325 municipalities, 13.4 percent of the 2,427 Mexican municipalities.

The program operates under several principles which can be summarized as follows: (1) natural resources conservation is an important area of intervention but emphasis is also given to economic, social and human development within an integrated approach; (2) program ownership by the municipalities and local organizations is strongly sought; a *Plan de Producción y Conservación* is prepared for the micro-basin in a participatory way jointly with local communities, and must be endorsed and formally approved by the municipal *cabildo*; (3) the program does not have an investment budget;

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[70] The external evaluation of *Microrregiones* says the following in this connection: "La Ley de Desarrollo Rural Sustentable constituye una visión avanzada con relación al desarrollo rural y representa una plataforma –que tiene la ventaja de tener ya el carácter de ordenamiento legal- para la articulación de las políticas gubernamentales de atención al campo, donde se hace énfasis en las regiones de mayor rezago social y económico; esta Ley no vale sólo para SAGARPA pues integra economía, sociedad y medio ambiente e instituye a los Consejos como mecanismos de concertación. Sin embargo la estrategia de Microrregiones, que es de carácter rural, ni siquiera la considera, evidenciando una balcanización de la administración pública altamente lesiva cuando el desarrollo social se quiere económicamente sustentable y en el campo esto es imposible sin la coadyuvancia de SAGARPA" (Instituto Maya, 2003: XVII).

[71] FIRCO's 2003 total budget for this program was MxP 38.4 million.

it organizes local development demand through the planning process, and once the objectives and priorities are well established it assists in bringing in investment and service supply from different sources[72]; (4) emphasis is given to the constitution of a team of motivated technical staff to implement the program[73], who are rigorously and formally trained as part of their job, with the assistance of academic centers, which also help in the development of intervention methodologies.

Although no evaluation is available[74], several elements of the program suggest that it is successful in its objectives as well as cost effective. Contrary to *Microrregiones*, it is not targeted to municipalities with high marginality indexes, but it does work in marginal municipalities, and in general the *microcuencas* selected tend to be located in the poorest municipal areas. Three success elements related to program concept and institutional factors can be singled out: (1) emphasis on ownership by the local population and municipal authorities; (2) the constitution of a well trained and motivated team of implementing staff, which have created positive synergies with the local population, and (3) a long-term approach based on developing a good understanding of local conditions and building good relations with the local population, something difficult to do when there is pressure to disburse budgetary resources and fulfill administrative targets set from the distance. The program, however, cannot be considered a panacea for all rural development ailments. *Microcuencas* programs can be ideal local components of strategic projects for larger territorial spaces, but they are too small to reap the economies of agglomeration and reach the critical mass of assets and supply capacity that are crucial to the development process.

The *Ley de Desarrollo Rural Sustentable* is an ambitious and comprehensive piece of legislation, that favors rural development as a multisectoral endeavor and embraces a territorial approach. It sets the framework for government action in agriculture and rural development. One of its central features in this connection is the creation of *Consejos de Desarrollo Rural Sustentable* at various levels -municipal, district, state and national- with mixed composition of government officials and civil society representatives. Municipal councils are supposed to program rural development in the municipalities, suggest investment programs and clear the use of *Alianza* funds decentralized to the municipalities. SAGARPA has been very active in the formation of these councils particularly at the municipal level and many have already been created.

Shared commitment for the joint implementation of the law is insufficient. One limitation of the territorial rural development system that the Rural Development Law seeks to promote through the councils is that, in spite of being a national law binding all government entities, it is very much associated with SAGARPA in the minds of most state and federal government officials operating in rural areas, many of whom

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[72] By the end of 2003 the total investment carried out in this way in *microcuencas* was estimated in MxP 882 million.

[73] Some 400 technicians have been recruited by FIRCO to implement the project.

[74] An evaluation of six *microcuencas* is being prepared by the *Universidad Autónoma de Querétaro*.

do not know well the law and do not see themselves truly bound by it. Progress has been made in this respect during the last two years, but coordination of activities, budgets and operational norms by the various *secretarías* involved in rural development and also with state governments continues to be a challenge.

Direct Cash Transfers

The main direct cash transfers program and one that has attracted national and international attention is *Oportunidades*. Started in 1997 during President Zedillo's administration under the name of *Progresa*, it continued during that of President Fox under the name of *Oportunidades.* The program consists of a direct transfer of cash to women (household heads or spouses) in poor households with school age children. A supplemental food package is included in case of children malnutrition. Transfers are conditional on children attending school and going through regular medical checkups. The program has three components, education, health and nutrition, and two objectives: to alleviate extreme poverty through a direct cash transfer, and to promote the development of human capital. It is the largest single federal program operating in rural areas with coverage of around 3.6 million rural and 1.4 million urban families and a budget of MxP 25.5 billion in 2004 or some US$ 2.3 bn. The program has been analyzed in the first part of the Mexico Programmatic Poverty work (see World Bank, 2004) and hence it is not examined here.

6. ISSUES AND CHALLENGES IN THE IMPLEMENTATION OF RURAL POLICIES

This chapter examies the implementation process of rural policies. There are many issues and challenges linked to policy and program implementation which Mexico along with other Latin American countries face.

The main findings and policy implications of the chapter are summarized below.

- **A new vision of social development emphasizes the importance of institutions, the role of civil society in development, and the need for a more active developmental** role of the state. This role consists not just in the provision of public goods and appropriate regulatory frameworks but also in the active support to civil society organization, and the search for public-private synergies.

- **Mexico is in transition between program administration cultures**: from reliance on principles of hierarchy and control, to reliance on transparency, creating consensus between those who design and those who implement the programs, and active commitment of the latter to programs' objectives.

- **The challenges faced by Mexico to improve the implementation system of rural development programs can be grouped in five categories**: political and administrative circumstances of a macro type; operational and budgetary norms; organizational cultures; client orientation and beneficiary empowerment; and the incentive system for program operators.

- Among the **macro type political and administrative circumstances** we highlight the electoral system of local authorities, with short mandate and no reelection, little functional to the continuity required by rural development. Also, the annual budgetary system which works against program continuity and the adoption of a long-term perspective. Finally, the organization of the state apparatus along sectoral lines which is little sympathetic to a multi-sectoral matter like rural development. Sub-national levels could play an important role in overcoming "sectoralism". At the federal level, the Secretaría de Hacienda, which has a multi-sectoral view and is responsible for the quality of public investment, is well placed to take an active role in promoting the integration of federal rural programs with a territorial approach.

- **Appropriate operational and budgetary norms are critical to program success.** Simplifying these norms and making them friendly to the realities of rural areas would improve implementation. One problem is the time factor, for timeliness of support is often more important than amount of support. Not only are there no multi-annual budgets but operational and budgetary norms often allow a few months only to spend the allocated budget, thus introducing distortions. Changes from year to year in norms related to issues like eligibility conditions, subsidy amounts, target areas and type of benefits are also detrimental to program implementation because they introduce uncertainty among beneficiaries and operators.

- **Another challenge relates to the few recurrent funds usually made available for program operation.** There is a conservative attitude towards allocating recurrent costs for program implementation, which is understandable in view of the abuses of the past but potentially damaging to program success. This is particularly the case with productive programs where the formula for success could be summarized as "recurrent costs + rural finance".

- **Among the challenges posed by prevailing organizational cultures is there a culture of mistrust**, evident for instance in the reluctance of middle managers to take decisions for fear of breaking the norms, and in the *ex ante* controls that often check operations. The **institutional segmentation culture** adds to the problems created for rural development programs by the sectorial organization of the state. One possible option to overcoming this culture would be through enhanced efforts from SAGARPA to involve more other organizations in the application of the *Ley de Desarrollo Rural Sustentable*. The *Secretaría de Hacienda* and *Presidencia de la República* could also promote more integration of rural development programs in the framework of the law, encouraging the application of a territorial approach to rural development. Strengthening the evaluation culture could be achieved by introducing M&E systems simultaneously with program design, better dissemination of program evaluation results, constructing action agendas for the recommendations made by evaluation teams and monitoring the progress made on these agendas, and adopting participatory M&E methods. Overcoming the culture of short-term achievement could be addressed through the design of a long-term strategy for rural areas as *política de estado* cutting across party lines and administration terms, and the recognition of the importance of "intermediate policy results" and their value to political constituencies. Finally, efforts could be made to move the culture related to decentralized implementation away from the dichotomy between normative functions at the center and operational functions at the periphery.

- **Improving client orientation and beneficiary empowerment is another challenge, which could be addressed in various ways**: enhancing the dissemination of programs and program norms to prevent biases in the beneficiary selection process; disseminating among beneficiaries evaluation results and the action agendas emerging from them; direct accountability from program operators to client/beneficiaries; and measures to detect and prevent opportunistic and rent-seeking behavior on the part of program operators.

- **The last category of implementation challenges discussed refers to improving economic and moral incentives for program operators**. The economic situation of bottom level program operators is generally inconsistent with the importance of their function. It could be revised through linking remunerations to performance and client satisfaction. Maximum performance from bottom level program operators could be sought through a revaluation of their function, consulting with them on program matters, giving them systematic training, disseminating best practices, carrying out systematic performance evaluations of their work, and promoting networking systems, a client orientation ethic, and a sound esprit de corps.

- **Two measures might help advancing in the transformations suggested above**: the creation of a technical committee to examine the implementation issues of rural development programs and make recommendations; and empowering the *Consejo Mexicano para el Desarrollo Rural Sustentable* to take an active role in the evaluation of rural development programs and the monitoring of the action agendas resulting from program evaluations. The *Consejo* would also be the natural institution to promote the preparation of a long-term rural development strategy to propose to the country as política de estado. It would be difficult for the *Consejo* to carry out these functions without appointing a managing council and having a small technical secretariat.

- **Together with the above measures, two innovations could be considered: the introduction of a system of *oidores*,** consisting of well trained individuals or teams who would informally follow rural development programs at the point of service delivery; and the promotion of process certification, carried out by independent consulting firms or NGOs, who would certify that the processes related to program operation and beneficiary participation are sound.

GENERAL ASPECTS

We review in this part some of the issues and challenges found by governments in the implementation of public policies and programs, discussed in the classical literature on public management. The purpose is to understand how and why implementation is a complex process, and also to realize that many of the issues found in the implementation of rural development programs in Mexico examined in the following part are recurrent ones, not exclusively Mexican, on which there is codified knowledge.

Institutions, Civil Society and the Role of the State

An integrated approach to rural development requires building institutions that involve civil society and the state. A new vision and a new mood have gained momentum among development theorists and practitioners after the adjustment processes and disappointing growth of the 80s and early 90s, when development recipes were based on Washington Consensus premises. The upcoming vision stresses, *inter alia*, (1) the importance that strong institutions have for development (Burki and Perry, 1998), (2) the recognition of organized civil society as a major "third sector" and of its contribution to good governance and the development process, and (3) the need for a more active developmental role of the state. Perhaps more importantly, the new vision recognizes the synergies usually established between the public and private domains in successful development programs, and the contribution that these synergies can make to economic and social progress. In the area of rural development, largely established boundaries between urban and rural areas, agricultural and non-agricultural activities, on-farm and off-farm employment, are being crossed over in favor of a more integrated concept of the rural development process (Tendler, 1998, World Bank, 2002b).

Strong institutions are needed as much for equity reasons — the fight against poverty and inequality (World Bank, 2000, and de Ferranti *et al*, 2004)-— as for efficiency reasons —the proper functioning of markets (World Bank, 2002) —, and are important both in the government sector and in the private sector and civil society. Strong government institutions are particularly relevant for the implementation of development programs, because most of the developmental agency of the state is carried out through specific programs, whose characteristics and operation depend crucially on the quality and strength of government institutions.

Civil society organizations play a fundamental role in the promotion of common interests of groups in society. Many also perform public-type functions by providing collective goods to their members as in the management of common property resources (Ostrom, 1990). Of particular relevance for rural development are meso-level civil society organizations that perform economic coordination functions at the regional or sector level (Helmsing, 2001). They are essential for inter-firm economic coordination and public-private interaction, and can be of many types: 2nd level producers'

associations, governance organizations of production chains, business societies, 2nd level rural finance associations, territorial organizations like regional or municipal development councils, 2nd level indigenous peoples' organizations and others. Institutional maturity and organizational thickness have been recognized as conditions facilitating endogenous processes of local development (Putnam, 1993).

The state, on the other hand, retains the overarching responsibility for economic development. Other than the classical roles of making war and enforcing internal order, states have acquired in modern times an overreaching role in contemporary developing societies –that of being responsible for their economic transformation (Evans, 1995). This sets the state apart from other social organizations; for no other organization has the recognized role of designing and implementing development policies and articulating the development process.

The new vision asserts that this developmental role consists not just in the provision of public goods and appropriate governance and regulatory frameworks for the market to operate, but also in (1) the active promotion of civil society organization (Tendler, 1997), and (2) the search for public-private synergies (Evans, 1996, United Nations, 2004). Synergy may consist of exploiting complementarities in the co-production of development assets and services, where each part contributes that in which it has advantage, as in rural housing programs where the responsible government agency provides engineering design and supervision and some building materials while the local community provides labor and complementary materials. Synergy may also consist of state officials and the local population going beyond the public-private divide to create a collective action agenda based on the community of interests set by the development objective. The state is here embedded in the development process, working hand in hand with other actors and enhancing their development role, not substituting for it.

The Complex Process of Policy Implementation

The reality of policy implementation includes plurality of interests which may create a gap between design and realization. Policy implementation is far from being a linear, hierarchical process; it is a rather complicated, potentially conflict-ridden game similar to the assembling of a machine of many different parts, each with its own autonomy: financial resources, administrative processes, public and private providers, government regulations, beneficiary attitudes, and so on. It is a process with a life of its own, usually carried out by large and inflexible administrations, open to the distortions of bureaucratic interests. Different games are possible within the "implementation game", and policy and program objectives can be deeply distorted, even reversed, by these games (Bardach, 1977 and 2001). It is important, therefore, when addressing implementation shortcomings to recognize the plurality of interests that exist in the implementation process, and the ensuing potential distance between objectives and broad design, on the one hand, and hard implementation realities, on the other.

World Bank view on implementation. A World Bank study on service delivery to the poor (World Bank, 2004b) characterizes the process of implementation as a set of relationships among four actors: citizens/clients, politicians/policymakers, organizational providers, and frontline professionals, who "are linked in relationships of power and accountability. Citizens exercise *voice* over politicians. Policymakers have *compacts* with organizational providers. Organizations *manage* frontline providers. And clients exercise *client power* through interactions with frontline providers" (page 48-9). There are two routes of accountability of frontline providers to clients: a long one whereby citizens influence policymakers and these in turn influence providers, and a short one whereby clients are directly vested with power over providers.

Quality of implementation of development programs is better examined at the intersection between program operators —the frontline providers— and the beneficiary public —the clients. It is at the "point of service delivery" where programs succeed or not, and it is there where we can check the extent to which the operation rules and their application respond to program objectives (Williams, 1980 in Aguilar Villanueva, 1993). From this vantage point we can assess what Berman (1978) calls micro-implementation: the way in which local-level operators adapt to program norms and central instructions putting in place their own operational procedures. We can also undertake from there a "backward mapping" of the implementation process until we arrive to the policy or program decision top (Elmore, 1979-80). This is the opposite of "forward mapping", the process normally followed in policy design, which starts from the formulation of the policy decision or program objective, and then traces the always more detailed steps that should lead to satisfactory implementation. "Forward mapping" thus assumes that policy-makers or program designers control the organizational, political and technical processes affecting implementation. "Backward mapping", on the contrary, does not presuppose such control, and questions at each stage the capacity, resources and motivations of the responsible unit or individuals to carry out the operation of the program according to objectives.

Implementation critically depends on bottom-level operators —public servants, contracted individuals, service firms or NGOs— that have direct contact with beneficiaries. It is these "street-level bureaucrats" (Lipsky, 1976) that can make the difference, because (1) they may or may not generate the synergies on which program success will normally depend; and (2) they are the ones who ultimately determine how the program is delivered. To be good, norms must be general since any attempt at disciplining heterogeneous reality by means of complex rules is destined to fail, imposing a straight jacket likely to paralyze implementation. These general norms are interpreted and enriched at all stages in the implementation process. Norm creation thus continues to exist until the beneficiary is reached and the program's relation with him/her is exhausted. "Street-level bureaucrats" are probably more important than anyone else in this process. This is why their technical and context capacity to do well their job, their understanding of and commitment to program's objectives, and their

empowerment to carry out the assigned task with imagination and confidence are essential to program success.[75]

The approach to the implementation of development programs and the quality of implementation processes are affected by how public administration was shaped over time as a system of concrete organizations with their own corporate culture, and the dominant concept of how the system functions. Elmore (1978) contrasts an organizational model that he calls "systems' administration" with another one called "organizational development"[76]. For simplicity we call them Model 1 and Model 2.

In the "systems' administration" model —Model 1— organizations are supposed to pursue the rational allocation of means to ends so as to maximize some objective function, all organizational behavior being determined by this. The organizing principle postulated is that of hierarchical control, with decision-making concentrated at the managerial top. For each of the organization's tasks there is an optimal allocation of responsibilities among subordinate units. In this model, program implementation is a dynamic process consisting of (1) carefully defining the objectives, (2) allocating to the subordinate units the responsibilities and performance parameters consistent with those objectives, (3) supervising performance and distributing rewards and sanctions as appropriate, and (4) making internal adjustments to improve performance, particularly in response to change in program environment or demands.

In the "organizational development" model —Model 2— the organization is supposed to work so as to satisfy the individuals' need of autonomy and control over their own work and the participation in decisions that affect them, and to promote their commitment with the organization's objectives. Consequently, organizations should be structured so as to maximize individuals' control, participation and commitment at all levels, which implies minimum hierarchical relations. In this context, effective operation depends on the creation of consensus, strong interpersonal relations among individuals, and the construction of effective task forces. Program implementation in this model consists of creating consensus and adaptation between those who define the objectives and those who have to implement the program, and seeking the active commitment of the latter to the program's objectives and goals.

The historical process has resulted in Mexico, as in other Latin American countries, in a state administration culture closer to Model 1 than to Model 2. Closeness to Model 1 does not mean that the system operates with the rationality and

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[75] The importance of a committed and innovative attitude of civil servants is recognized in the Mexico's National Development Plan, 2001-2006. Thus: "A través de la innovación buscaremos reemplazar los sistemas burocráticos por sistemas emprendedores (...) Transformar la orientación del Gobierno sólo será posible si somos capaces de sumar las voluntades de todos los servidores públicos, por lo que debemos dejar atrás los esquemas jerárquicos basados en el control, que inhiben la creatividad y la innovación, para dar pasos a esquemas que faculten y fomenten la participación y el trabajo en equipo" (México, 2001: 64)

[76] Elmore considers also another two models called "bureaucratic process" and "conflict and negotiation".

hierarchical control effectiveness implied in the model's description. This is prevented by (1) the unavoidable presence of conflict within and across organizations, and of individuals' and units' own agendas, and (2) the use of routines to avoid change. What it means is that the perception of how the system should ideally work is based on the concept expressed by Model 1. An illustration of the implementation logic implied in the two models is provided in Box 6.1.

Box 6.1. Illustration of the Implementation Logic under Model 1 and Model 2

To illustrate these logics we can imagine the hypothetical case of a central government organization in the process of launching a new development program**.** A way to proceed **under Model 1** would be to: (1) design program details at the central level by a selected group of technicians; (2) prepare program norms; (3) inform of program characteristics and operation norms to de-concentrated government units and sub-national authorities; (4) recruit incremental personnel under short-term contracts to implement the program; (5) train that personal on program norms; (6) centrally develop staff work norms and performance parameters, and (7) start operations based on the operation norms, staff work norms and performance parameters.

Under Model 2 we can imagine the routine for launching the program as follows: (1) once a preliminary concept of the program has been developed, consultations are started through a set of workshops with de-concentrated offices, sub-national authorities, organizations representing potential beneficiaries, and other sectors of government and society who may contribute to the program, with the purpose of checking the soundness of the program's concept, improving it, and developing operation norms; (2) the concept is also presented to relevant government organizations to inquire if they want to associated themselves to it; (3) if the organization's staff is not sufficient, new staff is recruited within a framework that would allow satisfactory salaries and job continuity upon good performance, or alternatively a private firm or NGO (or a set of them) are contacted to conduct implementation in the perspective of a medium or long-term implementation contract; (4) the program concept and norms are thoroughly discussed with the recruited staff (or firms or NGOs); (5) pilot operations are carried out to check the soundness of the concept and the applicability of the operation norms, and serve as an experimental ground for the implementing staff (or firms or NGOs); (6) the experience gained during these operations is discussed with the participants and other stake holders, and the program design and operation norms are revised accordingly; (7) a continuous training program and staff networking and support systems are developed jointly with the staff (or firms or NGOs); (8) work norms and implementation parameters are developed jointly with the staff (or firms or NGOs); and (9) program implementation is started.

ISSUES AND CHALLENGES IN THE IMPLEMENTATION OF RURAL POLICIES IN MEXICO

Where are We?

The situation in Mexico can be described as one of transition between a view of state organization and program implementation based on Model 1 to another based on Model 2. This transition in the implementation model reflects wider changes in public administration taking place in Mexico and other Latin American countries towards **a "New Public Management" culture** (CLAD, 1999, Barzelay, 2003). The essence of the New Public Management view, first developed in the U.K. and rapidly expanding to many other countries, consists of (1) transparency in budgetary processes and administration responsibilities; (2) management by results, including performance oriented budgeting; (3) professional status of public servants and civil service careers; (4) accountability to the client-citizen; (5) decentralization towards sub-national governments and specialized agencies; and (6) program and policy evaluation (Guerrero Amparián, 2000, Arellano, 2001 y 2002, Marini, 2002, Arellano and Gil García, 2003). Advances were made in this direction during President Zedillo's administration, under the *Programa de Modernización de la Administración Pública* (PROMAP), when the reform of Mexican public administration acquired weight in the government agenda. They have continued under President Fox, most notably in electronic government, governmental innovation, *federalización,* and under various programs of SECODAM and SEGOB. Support and stimulus are being received from international organizations, in particular OECD and the World Bank. The National Development Plan 2001-06 emphasizes this transition towards a New Public Management when describing the type of government the country needs (Box 6.2).

Box 6.2. The "New Public Management" View in the *Mexico National Development Plan 2001-2006*

"A fin de que esta administración cumpla con su responsabilidad histórica de dar respuesta a las grandes demandas y expectativas de la sociedad, requerimos acciones capaces de transformar radicalmente los esquemas tradicionales de gestión... Necesitamos un gobierno participativo... que de forma constante se someta a una rigurosa rendición de cuentas, no sólo en lo que se refiere al uso honesto y transparente de los recursos, sino también a la eficacia y calidad con que se utilizan. Requerimos un gobierno con un alto sentido de responsabilidad social... Requerimos un gobierno estratégico y competitivo, que sea la vanguardia de la sociedad, que establezca democráticamente las prioridades sociales e invierta de manera eficaz sus recursos financieros, humanos, materiales y legales... Requerimos un gobierno inteligente, capaz de usar los más avanzados sistemas administrativos y tecnológicos... Requerimos un gobierno ágil y flexible, capaz de captar las oportunidades, atender los problemas y adecuarse a las circunstancias rápida y eficazmente... Requerimos un gobierno abierto y transparente... Requerimos un gobierno descentralizado, que en sus relaciones con los estados y municipios propicie... un nuevo pacto federal. Necesitamos un gobierno

austero … que someta sus procesos a una estricta validación... En suma, requerimos un gobierno de clase mundial, un gobierno innovador y de calidad total" (México, 2001: 64)

We examine here some of the issues and challenges in the implementation of rural development programs.[77] **Recognition by Mexican government and society of the need to reform** the administration system along the principles set by the New Public Administration School is a big step forward, but the challenges are many. Before examining these challenges, it is important to highlight the different degrees of implementation difficulty according to the type of programs, particularly on whether they focus on social infrastructure, productive development or direct cash transfers.

Productive development programs, such as *Alianza para el Campo* or *Opciones Productivas*, are generally much more difficult to implement (and to succeed) than other programs. They require (1) a medium- to long-term perspective, (2) a particular type of synergy and agency on the part of responsible organizations and street-level bureaucrats, (3) a high quality participation of beneficiaries, and (4) a large recurrent budget for implementation, all of which place them on a separate class. Productive programs have thus special needs in terms of planning horizon, recurrent costs, and public-private synergies, which are extremely important to recognize for their success.

Direct cash transfer programs, like *Procampo* and *Oportunidades*, are comparatively simple to implement, once the technicalities of beneficiary registration, check issuing and the like are straightened out. These programs are based on centrally-established objective targeting criteria and a direct link between the central level and the beneficiary, without community involvement.

Social infrastructure programs, such as those under *Ramo 33* and to a large extent *Microrregiones*, require local participation for efficient allocation of the investments.[78] Promoting and managing participation places higher implementation demands on social infrastructure than on cash transfer programs, but the works could be completed and the program fully implemented even in the absence of participation, because social infrastructure is finally a collection of well defined investments of a public good type that governments should be capable to provide on their own. This would be impossible in productive projects, which deal essentially with private goods, and where private-public convergence is of the essence.

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[77] The analysis is based on discussions with managers, operators, evaluators and beneficiaries of various programs, the consultation of evaluation documents of programs and other relevant literature, field visits, discussions with leaders of farmers' organizations and NGO staff, and the many insights in an input paper prepared by Jorge Franco: "Los Programas de Desarrollo Rural: Operación Institucional y Alivio a la Pobreza". The discussion among medium level rural leaders in the consultation "Diálogo para el Desarrollo Rural" that took place in Tequesquitengo on 16-18 May 2004 was also very useful.

[78] Participation can also serve to reduce costs when works are directly contracted by the communities, as shown by the decentralized poverty alleviation projects in Northeast Brazil.

In the remaining part of this section we examine the main challenges faced in restructuring the implementation system of rural development programs. We organize these challenges in five categories: (1) macro political and administrative circumstances; (2) operational and budgetary norms; (3) organizational cultures; (4) client orientation and beneficiary empowerment; and (5) incentive systems for program operators.

Macro Type Political and Administrative Circumstances

Three macro circumstances place severe constraints on the implementation of rural development (and other) programs in Mexico. The first one is the Mexican electoral process whereby municipal authorities have only three years of tenure and cannot be reelected. Although this system may have merits, it hinders continuity in what needs to be a long-term endeavor. *Federalización* has aggravated the situation in this respect as more rural development responsibilities are being devolved to municipal governments.

The annual budgetary system existing in Mexico makes it difficult to design and operate programs with a long term view, especially productive programs. Only with difficulty is it possible to ensure resource availability for rural development programs beyond the annual budget cycle. Because of their long-term nature, productive programs are the ones to suffer most from this. Annual budgeting also results in uncertainty for producers, since it is not known whether program support will last over time or not. The *Ley de Desarrollo Rural Sustentable* has made clear the importance of giving certainty to producers with respect to government supports,[79] and SAGARPA is trying to make it happen, but the existing budgetary system does not make it easy. A multi-annual rolling budget would be friendlier to rural development.

The state apparatus is organized along sectoral lines, whereas rural development is a multisectoral phenomenon that is best approached in an integrated manner. This is the result of how the state was historically conformed and how it evolved over the years, and is common to other Latin American countries (Piñeiro *et al*, 1999) and to countries in general. Multisectoral and territorial development approaches to rural development are inherently difficult to handle with the existing organization of the state. Sub-national levels could play an important role, but state governments tend to reproduce the segmented organization of the federal level, whereas municipal governments, which are more territorial in approach, find it difficult to deal with rural development, particularly with its employment and income generation side. A more integrated and multisectoral administrative organization would probably be easier at the state than at the federal level. It is also in the states where an integrated approach is more needed. Administrative innovations by state governments to deal with rural development would hence be valuable. At the federal level, the Secretaría de Hacienda, which is a truly multisectoral organization and has responsibility in looking into the

[79] See articles 13.III, 70.I, 74.I, II and III, 90.I, and 191 I and II.

quality of public investment, is well placed to play an important role in promoting the integration of federal rural programs within a territorial approach to rural development (see Annex 3.I. on the territorial approach).

Operational and Budgetary Norms

Establishing operational norms that are simple and friendly to the rural environment in which they have to operate and to the characteristics of the beneficiaries is a major challenge. Inadequate norms may create conflict between what Rein and Rabinovitz (1978) call the "legal imperative" and the "bureaucratic rational imperative". The former refers to the need to adhere to the norm while the latter reflects the need of operators to act rationally to carry out their work, even against the norm. A case in point is the system of justification of expenses in development programs, for instance in *Alianza*. The new *Ley de Desarrollo Rural Sustentable* has introduced a most welcome innovation, consisting of allowing program beneficiaries to procure the goods and services that are part of development program investments. In practice, however, the beneficiary has to submit the justification of expenditure before he or she can access the subsidy. Since very few beneficiaries are in a position to advance the required cash, they some times resort to false invoices obtained from accommodating suppliers --at a price, naturally. Although program operators may be aware of this, they may not pay attention because of the pressure to implement the program; the "bureaucratic rational imperative" takes thus the upper hand over the "legal imperative". This may introduce an unnecessary element of irregularity in the program, generating transaction costs and opening a door to rent seeking.

Timeliness is key, especially in rural areas, where seasonality is a basic feature of livelihoods. The budgetary process is one of the factors that may interfere with good timing in rural development programs in Mexico. This is not only because of no multi-annual budgets, but also annual budgets depend on the operational norms for the year being submitted by the responsible organization, approved by *Hacienda*, and the corresponding funds transferred to state *fideicomisos* or other accounts in the field. The process may in some cases not be complete before April or May, and disbursement must be finished by November to close the accounts in December. Six or seven months may be left, therefore, to operate the program. The consequence, when this happens, is pressure to disburse during those months which may affect quality. Under-disbursement is another possible consequence highlighted in program evaluations.[80]

[80] Thus, the external evaluation of Microrregiones says: "Uno de los problemas más fuertes que enfrentó el 100% de las Coordinaciones del Programa Microrregiones en la operación de los programas en los estados fue el relativo a la aprobación, liberación y radicación tardía de recursos lo cual afectó de manera determinante la operación del programa en casi todas sus etapas" (Instituto Maya, 2003: VIII). Similarly, the external evaluation of *Alianza* states: "… la operación de Alianza comienza mucho después del 1 de enero, ya que para su inicio es imprescindible la aprobación de las Reglas de Operación que nunca fueron publicadas antes del 15 de marzo. Una vez publicadas las Reglas, el Gobierno Federal acuerda con cada

Lack of stability in program norms may introduce uncertainty among potential and actual beneficiaries as well as program operators. Change in norms from year to year is a problem faced by some rural development programs. Eligibility conditions, amounts, target areas, crops, and type of benefits may change from one year to the next. This may introduce uncertainty among farmers and other rural dwellers and also among the street-level bureaucracy, who may decide to abstain from action until they know what the new norm would be like (*ver cómo viene la norma*). Stability in program norms is thus another challenge.

Few recurrent funds are made available for program operation. Vigilance from *Hacienda* that program money is well spent, as much as possible of it going to the final beneficiaries, is to be praised, but it must also be understood that shortage of operational funds may jeopardize programs. Recurrent costs are essential for the success of many programs, which often depend on soft more than hard investments. This is particularly true for productive development, where the formula for success could be summarized as "recurrent costs + rural finance". We may notice that one of the most interesting rural development programs in operation, *Microcuencas*, has no investment budget, only a recurrent costs one. If there is no sufficient fiscal space for a program, it may be better to cut its scope than to leave it without sufficient recurrent costs.

Organizational Cultures

The focus on bureaucratic norms based on hierarchical control principles (Model 1 above) results in a system burdened by controls at each level. In such a system, the reluctance by middle management to take decisions because of the fear of breaking the norms, in particular but not only those related to expenditures and financial flows, may result in slow operation and many *ex ante* controls on subordinates. These often check and distort operations.[81]

Due to a segmented state system, rural programs often have different breakdowns of geographical regions, different definitions, norms and procedures for similar things, different timings and disbursement methods, and create their own

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gobierno estatal los Anexos Técnicos que definen la distribución de los recursos... Posteriormente se depositan los recursos federales en los fideicomisos estatales, lo que en la mayoría de los estados provoca que la operación de la Alianza nunca comienza antes de mayo, aunque en algún caso se retrasó hasta agosto... Sin embargo, el mayor problema con este calendario operativo es la obligatoriedad de comprometer totalmente los recursos antes del 30 de noviembre." (FAO, 2003: 14). Finally, the external evaluation of *Opciones Productivas* complains that "Hay un serio problema de retraso en la recepción de los apoyos que afectan su eficacia; el 45% de la población consideró que los apoyos no les llegaron a tiempo. La mayoría de los apoyos de *Opciones Productivas* [an informal credit program for poor farmers] llegaron en agosto, después de la siembra y en las demás vertientes hasta diciembre". (RDS, 2004: 14).

[81] Thus, it was reported in one extreme case that seven signatures and five days of waiting were required in a certain office for a gasoline authorization of MxP 100 for a work visit to a community (Franco, 2004).

separate counterpart organizations. Program evaluations have highlighted this.[82] There are, however, many instances of successful joint action by different programs at the local level. This tends to happen when local organization is strong and there is good identification of local needs, mostly arrived at through local participatory planning, so that local populations know well what they want and from where to get it, and can put pressure on program operators. The *Ley de Desarrollo Rural Sustentable* is an important step towards the integration of rural development actions by different actors, offering a good coordination framework. Not all relevant *secretarías*, however, see themselves equally committed to the type of rural development approach and institutionality espoused by the law, since the law tends to be identified with SAGARPA. Enhanced efforts from SAGARPA to involve more other organizations in the implementation of the Law, and of the *Secretaría de Hacienda* and the *Oficina de la Presidencia de la República* to promote more integration of actions within the framework established by the Law would be a possible option to advance in meeting this challenge.

A solid evaluation system is key to the implementation of programs. Evaluations are regularly carried out of most rural development programs by external evaluators, and there are cases in Mexico like that of *Progresa/Oportunidades* where the evaluation methodology has been praised internationally. Yet, there are still challenges in the evaluation of Mexican rural development programs. One is the introduction of evaluation mechanisms for on-going and impact evaluation at the time of project design, so that evaluation is embedded in the working of the program, and feedback is regularly obtained. This would avoid introducing evaluation systems after the program is designed, as a kind of *ex post* appendix to it. Another challenge is to give more relevance to and make more use of evaluation results. Broad dissemination and open discussion of results would be needed for this. Also, mechanisms could be developed whereby recommendations made in evaluation studies are included in an action agenda after discussion and agreement with the relevant parties, and progress on this agenda is monitored. This would give more relevance to the evaluation process, making managers more responsive to it, and would also force evaluators to provide well thought, feasible recommendations. The systematic adoption of participatory evaluation methods is yet another challenge. These methods are important to develop ownership of programs, and to test how well beneficiaries are informed, if programs respond to client expectations, and how results are affected by local context variables.

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[82] Thus, upon examining program evaluations, Jorge Franco (2004: 18) concludes: "Esta deficiencia de articulación se expresa en la tendencia de cada institución a crear su propia contraparte de organización social con la cual interactuar. Oportunidades, Alianza para el Campo o Microrregiones no dialogan con autoridades o asambleas comunitarias o ejidales, con organizaciones rurales sólidas y estructuradas en torno a sus propios fines. Se dialoga con organizaciones *ad hoc*, sea el Comité de Mujeres de Oportunidades, el Consejo de Desarrollo Rural Sustentable o el Consejo Microrregional, todos ellos formas organizativas creadas desde la acción pública, de acuerdo a sus reglas y con vida útil estrictamente vinculada a la existencia del programa"

Another key issue is how to overcome the culture of short-term achievement often present in rural development activity. This culture is characterized by (1) insufficient strategic focus, and (2) attention to pursuing quick results. This has a number of consequences some of which are highlighted in program evaluations. Thus, synergies among programs and cooperation among different levels of government are made more difficult if there is not a rural development strategy that is well known and broadly shared by rural actors. Also, in the absence of a long-term perspective it is more difficult to have clarity as to the wider objectives of specific programs, and rural development efforts may become disperse.

A broad strategic long-term vision for rural development that cuts across party lines would facilitate avoiding excessive focus on "quick results". It is a political reality that governments, national or sub-national, like to show results, and this is indeed part of the democratic process. Results, however, are of different types. What political leaders often want to show is final results, which leads to concentrating on programs where final results can be achieved in a sufficiently short period of time. Political constituencies, however, are more ready to value intermediate results within a well understood strategy than is often acknowledged. This is because political constituencies are increasingly more sophisticated in the understanding of policy processes, and more influenced by "issue networks" (Heclo, 1978). These networks, made of academics, specialized government agencies, area professionals and practitioners, civil society organizations, interested individuals, and pressure groups, value strategic approaches and appreciate the merits of intermediate results. Mexico is not an exception to this. In the case of rural development, it would be useful to have a strategic *política de estado* cutting across party lines and administration terms in view of the long-term nature of rural development processes, and also because of the urgency created by the large incidence of poverty and dualism in rural areas, with the frustration and social tensions that this generates.

Decentralization and increased participation by local partners in normative and design functions would increase program ownership on the ground. A common view of decentralization stresses a normative role at the centre and an implementation role in the periphery. An alternative view is one where national and sub-national levels are both seen as having normative and operational functions although of different type. As indicated above, there is a normative continuum going from basic norms to implementation details. There is a fundamental role for central authorities in the design of basic program norms, but those norms would be enriched by discussion and agreement with the sub-national units that will apply them. Similarly, sub-national authorities have a fundamental role in designing norms for the specific application of programs in their territorial area of competence, but it is advisable that application norms are discussed with central agencies, to ensure that they are in line with program objectives.

Client Orientation and the Empowerment of Beneficiaries

Improving the dissemination of programs is an important issue. Good dissemination is needed in all programs in general but it is essential in demand-driven ones; otherwise a bias is introduced in the selection of beneficiaries by excluding the uninformed. Since the likelihood is that the uninformed are poorer than the informed, the bias is likely to be anti-poor. Thus, attention to dissemination campaigns and the allocation of sufficient resources to this end is conducive to equity and client orientation. Dissemination campaigns are often insufficient in rural development programs in Mexico, as highlighted in program evaluations.[83] Most of the dissemination of rural development programs is by word of mouth. In the case of *Alianza* much of it is done by the *Prestadores de Servicios Profesionales*. They approach individuals or communities to induce them to submit eligible projects to *Alianza*, which they would prepare. The process, thus, risks turning from demand- to supply-driven, distorting beneficiary and investment selection. Dissemination campaigns need to use means appropriate to rural areas and the characteristics of the beneficiaries, such as the use of local radios, languages, and organization networks.

Direct accountability of program operators to clients/beneficiaries empowers beneficiaries and enhances the quality of program delivery. A classical example is letting farmers choose who provides technical assistance financed with public money. This is done for instance in *Alianza*. Direct accountability is easier when bottom level implementation is carried out by private providers. It is more difficult when it is civil servants who are at the "point of service delivery", and still more difficult with respect to middle-level program managers. Direct accountability would be enhanced by the introduction in these cases of a system of incentives for "street level bureaucrats" and middle managers linked to "client satisfaction" and of suitable ways to measure that satisfaction.

Preventing opportunistic and rent-seeking behavior of program operators is another challenge to foster client orientation. The tendency of organizations to provide services to some beneficiaries and not to others has been observed in the literature (Bardach, 2001). This has also been observed in Mexico where, for instance, clientelistic ties may be established between *Prestadores de Servicios Profesionales* and their favorite producers, generating distortions in beneficiary selection. Distortions may also be introduced if low level managers deliberately withhold dissemination of their programs in the fear that more demand would be attracted than they can meet. Criticism has been voiced of the reproduction of relations of subordination between street-level bureaucrats or independent service providers empowered by programs, and beneficiaries. The

[83] Thus, for instance, the external evaluation of *Opciones Productivas* indicates that "En la mayoría de las delegaciones no se publica la convocatoria en un medio de comunicación masivo, más bien suelen pegarla en las presidencias municipales y dejan que de manera "natural" fluya la demanda... El conocimiento de los beneficiarios de sus derechos y obligaciones, así como del proceso operativo del Programa, es sumamente limitado" (RDS: 2004: 12 and 14)

complain is occasionally heard, for instance, with respect to the *Prestadores de Servicios Profesionales* in *Alianza* and the local teacher or local nurse in *Oportunidades*.[84] Political biases may be another source of distortions. Thus, the evaluation of *Opciones Productivas* asserts that "the operation of the program is frequently distorted by the political-clientelistic biases in the country's entities" (RDS, 2004: 13). The use of participatory evaluation approaches is an opportunity for beneficiary empowerment and for finding out and eventually neutralizing opportunistic behavior by program operators.

Incentives for Program Operators

We reflected above on the importance for program success of the commitment to program objectives of street-level bureaucrats and other bottom-level operators. Yet, the way these bottom-level operators are treated by administration bureaucracies in many countries is not always consistent with the relevance of their function. The challenge is to introduce the material and moral incentive systems required to push these operators to give in their jobs the best of themselves and to do it in a way conducive to achieving program objectives.

Program operators dealing with field activities and the interface with clients are generally poorly compensated. The decrease in size of the rural administration part of the Mexican state that took place in the 1990s, and the increase in the number and importance of rural programs, has led to a situation where the better paid, tenured government staff concentrate on administrative or managerial office functions. Field activities and the interface with program beneficiaries are left to individuals recruited *ad hoc* for the task or to contracted technicians or professional bureaus. There are cases when these street-level bureaucrats have no job tenure, no career prospects, are poorly paid, sometimes with delay, and rotate rapidly. In occasions, they are compensated for the precariousness of their position with mechanisms implying a conflict of interests, like when rural development coordinators are allowed to present projects to *Alianza* as if they were *Prestadores de Servicios* (Franco, 2004). Program implementation would be enhanced by ensuring that bottom level operators are fairly treated economically and have reasonable career prospects as government officials or continuity and improvement of contracts if they are contracted technicians or professional bureaus. Resource constraints are not a sufficient reason, because (1) as mentioned before, recurrent costs are too important to the success of programs to make them a saving target upon budget squeezes; it is usually better to cut the scope of programs than to allow insufficient recurrent costs, and (2) many problems have to do with payment delays, length of contracts, and inter contract blanks, which are not due to fiscal constraints but to inappropriate budgetary and financial regulations or simply inadequate management.

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[84] In *Oportunidades*, teachers must certify the attendance of children to school and nurses the attendance of women to training sessions and of children to medical controls. Since the subsidy depends on certification, teachers and nurses are placed in a position of power, which they are accused to abuse in some cases.

Moral incentives are as important as economic ones. Judith Tendler (1997) has shown with the example of the state of *Ceará* in Northeast Brazil the importance in development programs of virtuous circles, where motivated operators receive the recognition of beneficiaries and are empowered by local communities in their work, increasing their motivation. Other than with fair economic treatment, motivation of bottom-level operators can be promoted by measures such as (1) recognizing in different ways the importance of their function, (2) discussing with them program objectives and implementation procedures, and incorporating their ideas to improve the program, (3) introducing systematic training that allows them to broaden their views in addition to being informed about the norms[85], (4) organizing network systems, (5) disseminating best practices, (5) carrying out systematic and fair evaluations of their work, (6) promoting a client orientation ethic, and (7) valuing their *esprit de corps* as rural development practitioners.

HOW COULD CHALLENGES BE MET?

The challenges above are sizeable but probable not larger or more difficult to meet than in other Latin American countries. They are also mostly long-term, and thus to be met over a long period of time. Government organizations responsible for the design and implementation of rural development programs suffer the tension generated by the institutional transformations taking place in the country. They also have a difficult bridging function: linking the Mexico of formal institutions to a complex rural milieu with varied cultures. They have to confront a rapidly changing world and an inherently multifaceted sector with instruments which are not always the most appropriate. The need for a modern public administration in Mexico and the path to follow to construct it have been laid down in the National Development Plan 2001-06, as illustrated in Box 6.2. The policy options highlighted in this section belong in that framework. For convenience we summarize them in Table 6.1.

Possible Steps to Advance in the Improvement of Program Implementation

We suggest two possible steps to advance in the improvement of program implementation systems. The first is to create a technical committee to examine the institutional implementation processes of rural development programs and make recommendations to improve implementation. The committee could examine administrative and budgetary processes as well as incentive systems and institutional cultures. It could be integrated by a mix of independent specialists, civil servants and legislators. A significant participation of *Secretaría de Hacienda* would be relevant since the committee would respond to the global need of the nation to ensure the quality of public investment. The second suggestion is to empower the *Consejo Mexicano para el*

[85] Thus, for instance, SAGARPA is designing with the assistance of IICA and the *Colegio de Postgraduados de Chapingo* an interesting broad-based training program on the promotion of rural development with a territorial approach, mostly oriented to rural development practitioners, especially those supporting the work of the *Consejos de Desarrollo Rural Sustentable*.

Desarrollo Rural Sustentable created by the Sustainable Rural Development Law to take an active role in the evaluation of rural development programs, including the adoption of participatory evaluation systems. In order to take more operationally relevant roles, the *Consejo* would need to have a small technical secretariat and it could also elect a small managing council to be able to function in a more practical way, in view of its large size. The *Consejo* could have an important role in monitoring progress in the agenda of actions to implement evaluation recommendations. It would also be the natural institution to promote the preparation of a long term rural development strategy to propose to the country as *política de estado*.

Two Possible Innovations

To conclude, we would like to suggest the possible adoption of two novelties to improve the monitoring of rural development programs: a system of *oidores* and a system of "process certification". We discuss them below.

A system of *oidores* could improve the monitoring of rural development programs. We propose considering the introduction of a system of *oidores* (listeners) consisting of well trained independent individuals or teams who would informally follow rural development programs at the "point of service delivery" through *ad hoc* visits, which could follow a randomized system, and inform top management of the "mood" of the program there. They would not be Bardach's type "fixers", and would have no power over program operators; they would just see, listen (especially to beneficiaries and street-level bureaucrats) and report to top management. *Oidores* would work independently from formal evaluators not substituting for them in any way. The rationale derives from the distance that inevitably exists between top management and street-level operations, particularly when programs are large. Administrative mechanisms makes it inevitably difficult for top managers to have a frank and open two-way dialogue with street-level bureaucrats and receive fresh information and imaginative suggestions from them. In all administrative systems information flowing up is modified according to the perceptions of the middle-level bureaucracy to ensure that the information reaching the top poses no danger (real or imagined) to the intermediate level. This makes it difficult for managers to develop a feeling of what is the perception from bellow of how programs work.[86]

Low profile *oidores* sustaining recurrent informal dialogues with frontline professionals and clients would be a way for top managers to have fast and frank information from the bottom on operational problems. Monitoring systems give valuable information on progress in physical and financial parameters, but do not convey much regarding the conditions at the bottom that may or may not facilitate program operation, how beneficiaries and direct operators see them, and a first hand

[86] The work of the *oidores* is similar to that traditionally carried out by Bank project supervision missions, from where the idea is borrowed. Like Bank missions, *oidores* would have the capacity to visit projects in the field, build up an image of how they are working, and report at high level.

impression of the effects of the program. Traditional external evaluations are too distant apart and are focused on impact, which makes them little suitable to give fast feedback of program operation and possible improvement measures. The system of *oidores* could fill this vacuum. It is important that *oidores* have experience and analytical capabilities to reflect on general issues rather than try to meddle with specific situations trying to correct them. To be effective, the system should be kept very small, informal, flexible, and separate from formal evaluation.

A system of "process certification" to be carried out by independent consulting firms or NGOs, would certify that the processes related to program operation and beneficiary participation are sound, in the sense of proceeding according to program objectives and guidelines and to accepted practice. Certification would be most useful when the implementation of the program or of some components are delegated to third parties (consulting firms, NGOs, 2nd or 3rd level rural organizations), serving to reassure program managers that implementation processes carried out by these parties are sound. "Process certification" is different from evaluation and auditing because it does not attempt to assess program outcomes and it does not deal with program financial management and accounting, or only in a broad way and to the extent that this affects implementation processes. The closest parallel is with environmental certification, and the inspiration is taken from there.

Table 6.1. Summary of Options to Improve Program Implementation

Problem Area	Options
Macro type political and administrative circumstances	• Multi-annual budgeting • Administrative innovations at the state level to deal with the multisectoral and territorial nature of rural development • An active role of the *Secretaría de Hacienda* to promote the coordination of federal rural programs
Operational and budgetary norms	• Simplifying operational norms and making them more friendly to the realities of rural beneficiaries • Better timing in the delivery of supports and services and closing the gap between the actual expenditure period and the fiscal year. • More continuity in program norms • Attention to needs of recurrent funds, especially in productive programs
Organizational cultures	• Changing mistrust cultures by empowering middle managers and rationalizing the system of *ex ante* controls • Reducing the institutional segmentation culture through (1) Enhanced efforts from SAGARPA to involve other organizations in the implementation of the *Ley de Desarrollo Rural Sustentable*; and (2) efforts by *Secretaría de Hacienda* and *Presidencia de la República* to promote more integration of rural development programs in the framework of the Law and to encourage a territorial approach to rural development • Improving the evaluation culture by (1) introducing M&E systems simultaneously with program design; (2) disseminating better program evaluation results; (3) constructing action agendas for the recommendations made in evaluations, and monitoring progress in these agendas; and (4) systematically adopting participatory M&E methods • Modifying the short-term achievement culture through (1) designing a long-term strategy for rural areas as *política de estado* cutting across party lines and administration terms; and (2) recognizing the importance of "intermediate results" and their value to political constituencies • Changing the decentralized implementation culture away from the dichotomy between normative functions at the center and operational functions at the periphery
Client orientation and beneficiary empowerment	• Improving the dissemination of programs in order to empower beneficiaries and prevent selection biases • Promoting direct accountability of program operators to clients • Preventing opportunistic behavior from program operators through several means including participatory evaluations.
Incentives for program operators	• Providing appropriate economic incentives to bottom level operators • Revaluing the function of bottom level operators and providing moral incentives to promote their capacity and commitment through consultation with them, systematic training, networking, fair evaluations, dissemination of best practices, client orientation ethics, and valuing *esprit de corps*.

The promotion of a system of "process certification" would require the formation of a market for these services, and this in turn entails that a number of independent consulting firms and NGOs specialize on this. A training *cum* promotion program could perhaps be started to that effect. The system would facilitate the involvement of farmers' organizations in the implementation of rural development programs because it would give government agencies an independent means of knowing if the implementation process is sound. The delegation to farmers' organizations of implementation functions has been impaired by a history of cases of politicization and abuse in the exercise of the functions delegated. This is not however the rule and many rural organizations have the capacity to implement programs and are better placed to do it than other agencies. "Process certification" would be an instrument to facilitate their involvement.

7. HETEROGENEITY AND VULNERABILITY OF THE RURAL POOR

Poverty is a complex and multifaceted concept which can be approached in many ways each highlighting different dimensions. As a result, poverty programs need not only be targeted to "the poor" but also to "the type of poor". In this chapter we examine the heterogeneity of poverty and vulnerability in rural areas, and highlight some policy options to decrease the vulnerability of rural poor households.

The main findings and policy implications are as follows:

- **Different poverty situations are characterized by the type and amount of assets owned by the poor or their lack thereof**, as well as by the return on those assets. Economic assets, both tangible and intangible, are important but political and cultural assets are important too. Different combinations of access to economic, cultural and political assets result in multiple poverty situations. Indigenous groups in Mexico are generally deprived of most of these assets.

- **Family characteristics, in particular family size and the family life cycle, are related to poverty**, especially in their interaction with access to assets. Asset position and demographic family conditions act together to form specific poverty situations.

- **Illness is the main idiosyncratic shock whereas natural conditions like pests and diseases and droughts are at the origin of the main covariate shock, hitting farmers in particular**. Rural households in Mexico typically manage vulnerability combining risk reduction, mitigation, and coping instruments. For the poor, increased labor market participation, is the most important response to shock. Income diversification, migration and subsistence farming are part of risk management strategies. There is evidence that rural households in Mexico are very much affected by both idiosyncratic and covariate shocks, but that they are comparatively successful in smoothing consumption. These practices may come at a high cost in terms of future growth prospects, however. Moreover, many mechanisms become ineffective in the face of systemic shocks (e.g. due to labor surplus or risk-pooling).

- **Existing formal agricultural insurance systems, while not appropriate for the poorest, can be useful for farmers in transition**, especially if they want to diversify into high value crops. Similarly, the introduction of parametric insurance systems would increase the insurance options for the rural poor, especially if it goes together with the development of rural finance.

- **Given the difficulties with coping with covariate shocks, programs like Fonden are useful mechanisms to reduce the vulnerability of the rural poor,** especially vis-à-vis covariate shocks.

- **Rural financial systems are multipurpose instruments that serve for risk management as much as for capital accumulation**, technology adoption and personal welfare. They probably are the single most important formal system to assist the rural poor to manage risks, particularly idiosyncratic risks, because they facilitate savings, personal loans, agricultural insurance, and productive loans that encourage income diversification and migration strategies.

- **Strong support to the subsistence economy is a major policy option** in view of its importance as **a safety net for poor producers**. Support to the subsistence economy is probably best carried out at the local level in the framework of municipal or micro-regional plans like those promoted by the *Microcuencas* program.

DIVERSITY OF RURAL POVERTY SITUATIONS

Poverty is a complex and multifaceted concept which can be approached in many ways each highlighting different dimensions (Box 7.1). Because of this and because of the geographical and cultural differences of Mexico rural areas, there are many ways to be a Mexican rural poor. Differences among the poor are not easily recognizable from the distance, or they are but as positions on an income continuum cut off by appropriate poverty lines. They are, however, all too evident for the concerned families. That is why poverty aggregates, however useful for many purposes, always conceal an element of deceit. And that is also why poverty programs need not only be targeted to "the poor" but also to "the type of poor". Some poverty instruments, such as income support through direct cash transfers or the provision of basic government services (education, health, social infrastructure), have a broad spectrum and can serve many types of rural poor. Other instruments, especially those aimed at employment and income creation or at improving risk and environmental management by the poor, are very specific to the particular circumstances and must be targeted accordingly.

Box 7.1. Different Views and Dimensions of Poverty

Poverty can be seen as failure to keep up with the standard prevalent in a given society or, as the European Union defines it, as the situation of "persons, families or groups of persons whose resources (material, cultural, social) are so limited as to exclude them from the minimum acceptable way of life in the member state in which they live". Poverty definitions can emphasize basic needs, lack of participation and self-esteem, vulnerability, lack of capabilities and opportunities, and constraints to proper human development. Poverty measures can consist of individual or household indicators, include only private welfare indicators or value publicly provided goods too, consider only monetary components or also non-monetary ones, assess poverty at a point in time or over the life-cycle, include only actual poverty or also potential poverty, use flow or stock measures (e.g. income vs. wealth), use input or output concepts (e.g. income vs. welfare), use absolute or relative indicators (e.g. poverty lines or position in a distribution), and adopt objective or subjective approaches (e.g. assessed income vs. community poverty ranking or self-perceived poverty). See Maxwell (1999). Sen's concept of poverty is that currently enjoying most popularity among a broad range of scholars and practitioners of different disciplines and persuasions. It is a philosophical concept which sees poverty as people's inability to choose among different types of possible lives because of the lack of capabilities or opportunities available to them. They are thus deprived of what they could potentially do or be, i.e. have reduced "functionings", as Sen chooses to put it. Poverty is a deprivation of freedom, because there is an economic dimension of freedom related to an increase in the choice set open to individuals that can only come with development. Hence the idea of development as freedom (Sen, 1984, 1985 and 1999).

Rural Poverty and Access to Assets

We start by examining access of the rural poor to economic assets, which following Siegel and Alwang (1999) can be grouped in two broad categories: tangible and intangible. Tangible assets are the best known ones and those usually measured in surveys, but intangible assets can be equally important to family or individual welfare especially in the event of economic shocks. Intangible assets refer to entitlements or capabilities to access certain sources of employment or income, and hence to future flows of income. While tangible assets can only have positive or zero value, intangible assets can be negative because other parties can have claims on our future flows of income. We list economic assets in Table 7.1.

Tangible assets are of three types: production assets, consumption assets, and financial assets. The first include access to own and collective lands, favorable agro-climatic conditions, irrigation rights, plantations, animals, and tools and equipment; the second includes house and household goods, stored produce and standing crops; and the third includes cash and financial savings. Differences in access to these assets determine different types of material poverty and vulnerability. Thus, there is evident dissimilarity between landless rural laborers that have only human capital as a production asset and farmers who also have land and animals. The sources of income

will normally be different and the types of risk and risk strategies too; landless laborers will depend on wage income and face the risk of unemployment, while small farmers will normally depend more on farming income (unless they have very little land) and will face productive and market risks. Vulnerability will also depend on whether the household has cash, liquid savings, stored food or animals to sell in the event of emergencies.

Table 7.1. Economic Assets of the Rural Poor

Tangible Assets	Intangible Assets , with effect	
	Positive	Negative
Own land Right to use collective lands Favorable agro-climatic conditions Irrigation rights Large and small animals Standing crops and ready to sell crops Plantations Stored food or other produce Tools and Equipment Own house and household goods Cash in hand and saving deposits	Formal or informal entitlement to private or public transfers, including rents Personal goodwill: capacity to readily obtain credit on need (depends on reputation, contacts, and availability of other assets) Command over the labor market: capacity to readily obtain employment at the going rate (depends on personal characteristics, including gender, experience, education, commitments to other activities like agriculture or caring after own children, and on location and contacts) Command over off-farm activities: capacity to readily enter off-farm markets as a producer (depends on skills, equipment, access to inputs or operational capital and market contacts) Command over migration: capacity to undertake successful transitory migration (depends on personal characteristics, past migration experience, contacts, and availability of cash to migrate) Human Capital	Economic vulnerability to natural and market risks (depends on physical environment, crop technology and mix, diversification of income sources, type of market and market access, and personal characteristics) Standing debts and commitments to make transfers, including rent payments

Source: Author's construction.

Poverty and vulnerability will be different according to the availability of intangible assets. Thus, for instance a household entitled to *Procampo*, whose family head has a good standing in the community and good market contacts allowing him or her to get local part time employment when required, and has well established migratory links so that he or she can migrate during the low agricultural season and earn a complementary income, is in a much better position than a household without those assets. Access to tangible and intangible assets combine in practice in varying ways producing many different poverty and vulnerability situations.

Poverty is affected by the amount of assets (e.g. land, family members available for work), as well as the return on their asset (e.g. prices, wage rate) Thus, agricultural prices are vital to the owners of farming assets and so is the wage rate to rural laborers. Higher returns on the assets of the poor decreases poverty, and changes in the distribution of returns across different assets affect their value to the poor, altering specific poverty situations.

In addition to economic assets there are other assets not always easy to identify and generally difficult to measure that add new dimensions to the situations of poverty. Political assets are an example of this. By political assets we understand access to things such as not being discriminated on political, religious, ethnic, gender or other grounds, and being able to exercise recognized citizen rights such as voting, parity access to legal, administrative and justice systems, and the right to one's own privacy and identity and to associate with others to pursue specific interests. Political assets are hence an entitlement to citizenship —to be able to fully and equally participate in all things pertaining to the public sphere.

Another example is cultural assets. We can include here things like (1) the confidence and satisfaction derived from having and sharing with others a recognized identity and awareness of ones own origins, and (2) the ability to manage the (often subtle) norms and idiosyncrasies of the forms of life of one's own society, including language, traditions and folklore. Cultural assets can become a form of capital, as when musical or plastic arts traditions are exploited as an attraction in tourist business operations, or when the own style of a community's handicrafts acquires value as a commercial trade mark. As capital, cultural assets can be important to the poor, but they are more than that; they are also a source of self-esteem and a kind of cement binding together many forms of social capital. Social capital is at the crossroads between a productive and a cultural asset. It can generate income or other forms of value and hence it is a productive asset, but it is also "social", thus implying solidarity or connectedness among individuals over and above mutual benefit (Uphoff, 2003).

From this perspective, indigenous groups in Mexico suffer from multiple deprivations. Indigenous groups in Mexico tend to have less political and cultural assets than other groups, and this is generally accompanied by economic deprivation Thus, results from a recent study by Ramírez and García (2004) show that indigenous workers

have much lower earnings than their non-indigenous counterparts after controlling for personal characteristics, education and sector of employment. A 59 percent part of the difference in earnings is explained by those characteristics (higher education of the non-indigenous, better employment sector, and so on), but there is another 41 percent which cannot be explained by them, the only explanation being factors such as quality of education, culture or labor market discrimination. The same is the case with the probability of being poor even within the same educational group or sector of activity. Thus, an indigenous worker in agriculture has a 72 percent probability of being extremely poor against a 34 percent probability of the non-indigenous, and an indigenous person with 6 to 11 years of schooling is twice as likely to be poor and four times as likely to be extremely poor than a non-indigenous person with comparable education. When examining participation of different groups in non-farm income opportunities a similar pattern emerges (Janvry and Sadoulet, 2001). After controlling for other variables, education among them, indigenous groups have more difficulty in accessing non-farm employment. "Young indigenous adults suffer from a double disadvantage for income generation: they lag in educational progress, and they derive lower benefits from education in accessing more remunerative nonagricultural employment" (p. 473).

The distribution of assets is extremely unequal, as shown in Table 7.2 where *Gini* coefficients are calculated for the distribution of different type of rural assets and of rural incomes from different sources. *Gini* coefficients for asset are extremely high with the exception of the average years of schooling. The number of migrants is used as a proxy for migration "capital" and is divided in internal, USA, and total migration assets. All three *Ginis* are very high. Coefficients overstate, however, the extent of asset inequality, because we should not expect all rural households to have access to all assets. Thus, there is no reason why non-farming households should have land or animals. If we could put some value on human and migration capital and estimate the total value of the assets owned by each family, the distribution of this value would probably be less unequal than that of its separate components. This is the case with respect to income figures; the *Gini* coefficient of total income is smaller than that of most of its components. It is interesting, but not surprising, that incomes from wage employment and government transfers are better distributed than those derived from self-employment (in or outside agriculture) and private transfers.

Table 7.2. Gini Coefficients for the Distribution of Different Types of Assets and Income Sources of Rural Households in 2003

Physical & Human Capital and Migration Assets		Net Income from Different Activities	
Type of Asset	*Gini*	*Type of Activity*	*Gini*
Household Average Schooling	0.25	Agricultural Wage Employment	0.51
Household Head Schooling	0.61	Government Transferences	0.53
Total Migrants	0.79	Natural Resources	0.55
Internal Migrants	0.84	Non Agricultural Wage Employment	0.56
US Migrants	0.90	Internal Remittances	0.64
Landholdings (hectare)	0.85	International Remittances	0.65
Steer	0.95	Non Agricultural Production	0.68
Horses	0.89	Cattle	0.77
Pigs	0.95	Staples	0.77
Large Animals	0.90	Cash-Crops	0.83
Tractors	0.95	Other Agricultural Production	0.83
		Small Animals	0.86
		Gini Net Total Income	0.57

Source: Taylor *et al* (2004). Calulated from ENHRUM.

Poverty and the Rural Family

There are different types of families in rural Mexico, influencing the way poverty and vulnerability affects household members. There are also variations in the concept of family as an institution, even if essential functions like bringing up and socializing the children and looking after the sick and the old remain. The two basic types of families are the nuclear monogamist family consisting of parents and children but possibly also of surviving members of older generations, and the extended family with various related nuclear families forming a single household. In some indigenous groups, like the *mazatecos, huicholes, tzeltales, totonacas, coras* and others, there are also polygamist families (Nahmad and Carrasco, 2004). A frequent practice in rural Mexico is the informal adoption of abandoned children or children of migrant relatives or of broken families. Rural families tend to be larger than urban ones, and indigenous families are particularly large. Thus, the average size of rural indigenous families is 6.4, while the size of rural non-indigenous families is 5.8, and that of urban non indigenous families 5.1. The average family size for Mexico as a whole is 5.3.[87]

Family size tends to be an asset in survival strategies and risk management. In principle, large families have four advantages over smaller ones: (1) they have more opportunities of self-insurance through diversified income sources by having family members employed in different works, (2) they have wider networking opportunities because of different member occupations, including more migration contacts, (3) they

[87] Data from the 2000 population census compiled by Ramírez and García (2004: Table 9).

enjoy economies of scale in consumption, and (4) they can mobilize more family labor when required, which may be important for farming families at harvest time or to contribute to communal construction works or to look after animals or collect firewood.

Yet, young large families with high dependency ratios are at a disadvantage. Size cannot be seen independently of the family cycle and the dependency ratio, whose importance was observed in chapter 2, and has long been recognized in the economic literature on the peasantry.[88] Young couples with many young children have a particularly hard time because they have many mouths to feed and only their own labor available to earn income, and labor has to be shared between production and very demanding reproduction work. As children grow up and become increasingly able to contribute to income generation and household labor the situation changes. Thus, as reported in chapter 2, in 2002, Mexico's rural families with dependents below 11 years had a probability of being extremely poor 22 percent higher than families without dependents, other things being equal. The probability falls to 14 percent for families with children between 13 and 14 and to 6 percent for children between 15 and 18, becoming negative for families with children of 18 to 25 years of age still living in the household. The asset position of the family is of course important in this respect, acting together with the demographic conditions to form specific poverty situations. Thus, for instance, having access to land is comparatively advantageous for larger families because they can use family labor in agriculture or animal husbandry, and they can produce their own food (or part of it), hence being more food secure. Landless families of similar size dependent on wage labor do not have productive use for family (particularly children's) labor, and have to buy all their food with their wages. They are hence extremely vulnerable to the vagaries of the labor market. Family size is probably not an advantage in this case.

Poverty and the Rural Community

Rural communities are groups of families living nearby who have close interactions and in some ways depend on each other. They may have a collective title on land, as in the *ejidos* and *comunidades campesinas,* or they may not, although the more cohesive communities typically hold resources in common. Mexican rural communities tend to share five characteristics: (1) a set of relations among member families that were formed over time; (2) a defined territory constituting the community's natural environment, collectively owned or not; (3) productive activities common to many members, and widely shared technical knowledge and practices, which usually go together with other forms of identity and shared culture; (4) an organizational structure to ensure governance and natural resources management; and (5) a system of social stratification, which is more important and visible in the larger communities, with divergent group interests coexisting within the communal system (Nahmad and

[88] Chayanov (1966) is the classic analysts of the peasant family cycle and how resources and needs change along it, based on the experience of the Russian peasantry at the turn of the 19th century.

Carrasco, 2004). Rural communities have different sizes and degrees of cohesion and their formal status may also be different. Households in small *aldeas* of thirty to fifty families tend to be more income poor and less supplied with services than those in larger communities of 2,000 to 5,000 inhabitants. There is a hierarchical system of rural communities, which goes from the *ranchería* and *paraje* to the *agencia de policía*, *agencia municipal* and *cabecera municipal*, with marked differences in their access to communications, social services and economic opportunities. Also, the quality of natural resources is often better in the higher ranking communities, because richer areas were usually populated earlier and have also grown more.

It is difficult to say how large can a rural settlement be while still remaining a community in the sense described above, as this depends much on the degree of cohesion. There are fairly large rural settlements in Mexico of say 10,000 to 15,000 residents which still keep a "sense of community", mostly due to the effective working of communal governance structures and a proud sharing of traditions. There are also rural settlements that never were or were but have stopped being proper communities and function more as pure family agglomerations. Indigenous settlements, even if large, tend to be more cohesive and keep communal traditions more than *mestizo* villages. The special electoral system of local authorities known as *usos y costumbres* that operates in indigenous communities willing to adhere to it contributes to this cohesiveness.[89] Valuable common resources, such as forests and pasture lands, which need to be commonly managed, do also contribute to keeping communities more united and better structured.

Communities can coincide with municipalities: In Oaxaca, for instance, where municipalities are characteristically small, there are many single-community municipalities. In other cases, rural municipalities consist of various communities, one of which is the *cabecera municipal* and the others *agencias* or simple *rancherías* if very small. Indigenous communities usually have an elaborate system of *ad honorem* authorities or *cargos* with functions of responsibility at the service of the collective. Male members are expected to occupy a progressive succession of these *cargos* along their lives, and they must do so if they want to be respected or even to keep their full communal rights. Reallocation of farm land was a major function of communal authorities in the past, but has decreased in importance with the mounting scarcity of cropping land, the advance of privatization, and the clear delimitation of rights under *PROCEDE*. Decision-making with respect to common property resources continues to be a crucial responsibility of communal authorities.

Four economic functions of communities are relevant to poverty and vulnerability. The first **is their role in the generation of social capital**. Community ties

[89] Under *usos y costumbres* indigenous representatives elected in communal assemblies by a show of hands are recognized as valid municipal authorities for political and administrative purposes without need of a formal ballot. The rationale for this system is not to duplicate governance systems at the local level.

and governance systems are themselves an instance of social capital, but they serve also as facilitating frameworks for more private sources of social capital such as privately organized collective enterprises or labor exchanges or the functioning of special interest groups. These forms of social capital enhance income generation and decrease vulnerability, especially to idiosyncratic shocks. The second relevant function is the management of the community's common pool resources. The importance of these resources varies among communities but is large in many of them,[90] allowing members to share in the income and employment generated. Third, communities are distinct providers of public goods. This is the case with many public works, often carried out with voluntary communal labor under *faenas* or *tequios*, and also with things such as the resolution of conflicts and the provision of local policing and petty justice services. Finally, communal authorities and governance systems serve as mediators with the larger society fulfilling a bridging function to attract economic support from government or NGO programs.

Demographic pressures, the advance of the market economy, and increasing migration have diminished the social protection function of communities.[91] The historical decline in the redistribution of communal lands to young generations, mentioned above, is a good example. The same forces that erode cohesion in the communities and reduce their social protection capabilities are the ones that generate increasing inequality. Market development and migration open up new opportunities from which members benefit in different measure. This generates poverty, not necessarily in the sense of some sectors of the community being worst off in absolute terms than in the past, but in that of them falling behind other groups. And, after all, in a very relevant sense, in many political and cultural settings poverty is not but the way in which inequality is historically constructed.

Illustration of Poverty Situations

We present in Table 7.3 three cases of poor rural families indicating their economic characteristics, their social and cultural capital, and their survival and risk management strategies. The cases are hypothetical but are consistent with the figures presented on rural labor structure, poverty correlates and income sources, and also with ethnographic data.

The first family is a young one with children of small age and no land. The characteristics of this family are summarized in Table 7.3.a. We have assumed that this family lives in a small remote location but could also live in the outskirts of a rural town. Other than its crude labor force, the family has practically no assets –a desperate case of lack of "capabilities". The husband is a casual laborer and the wife hires herself to do agricultural labor to the extent compatible with her family obligations. There are no

[90] Thus, for instance, 70 percent of Mexixan temperate and tropical forests belong to *ejidos* and *comunidades*.
[91] See Platteau (2002) for the analysis of a similar process in a different context.

migrant sons or daughters that can send transfers, because the children are too young. And there is no *Procampo* subsidy because the family has no land. They receive instead *Oportunidades*, and this is of critical importance to their well-being. The husband would like to migrate temporally to make some income when the local labor market is inactive, but has no good connections and very little money to travel and survive while he finds work. If the income of this family were measured it would likely be below the extreme poverty line.

The second family, whose characteristics are shown in Table 7.3.b., is a middle-age one living in a small rural community. It has some rain-fed land on poor soils allowing the family to produce some food for its own consumption and to keep some animals. This is not enough, however, and the husband has to complement family income by working as a casual laborer. He had migrated temporally in the past, and that allowed him to accumulate enough to build a house and help raising their children, but he does not migrate any more; with the food the family produces, payments from *Procampo*, some money from *Oportunidades* for the last child attending school, another money sent by a migrant son, the earnings from his casual work, and some income contributed by the wife who helps in a petty commerce operation run by a neighbor, the family has enough to go by. If the income of this family were measured it would likely be between the extreme and moderate poverty lines.

Table 7.3.a. Illustration of a Young-to-Middle-Age Poor Landless Family in a Remote Small Location

Economic Characteristics	Social and Cultural Capital	Survival Strategies and Risk Management
Main asset: small homestead with a mud house of 1 or 2 rooms without electricity or running water, located outside the village. Small kitchen garden with a few chickens, perhaps a pig. Uses wood for fuel Receives *Oportunidades* Does not receive *Procampo* Receives some grain help from relatives with land or from employer Main occupation and source of income is casual labor in agriculture Has few migratory connections	Parents without education or primary incomplete. Children attend primary school, not secondary Wife and small children monolingual (in indigenous areas) No migrant sons or daughters Few or no visits to medical unit (more now with *Oportunidades)*. Use of traditional medicine (especially in indigenous areas) Little participation in religious and communal activities Few relations of reciprocity with relatives and neighbors No participation in political activities of community or municipality Marked subordination to employer Possible alcoholism and domestic violence	Rents or borrows a plot of land for seasonal cropping when possible Tries to develop continuing work relations with a local land owner Wife works occasionally as domestic help or as farm hand or makes some handicrafts (the latter mostly in indigenous areas) In emergencies, they sell small animals and request loan from employer, better off relative or local money lender Temporary migration if and when possible

Source: Author's construction based on Nahmad and Carrasco (2004).

The last family, illustrated in Table 7.3.c., is also a middle-age one living in a small-to-medium rural location. The family owns three or four has of rain-fed land and another two or three hectare of irrigated land. It also has some large animals which are used for work, to provide milk for family consumption, and as a form of investment. Rain-fed lands are used to produce food for the family while a cash crop is grown in irrigated areas using improved technology. The family receives *Procampo* but not

Oportunidades and has other income from various sources: work done by the husband supervising operations in the farm of a distant relative who moved to the state capital, occasional transfers from two migrant sons, one in the USA who has children staying with their grandparents, and income from the wife who participates in a rather successful women's horticultural group existing in the community. As in the former case, the husband has migrated in the past but does not want to migrate any more. If the income of this family were measured it would probably be in the border between poverty and non-poverty. Vulnerability for this family would mean the risk of falling into poverty.

Table 7.3.b. Illustration of a Poor Landed Family in a Small Rural Location

Economic Characteristics	Social and Cultural Capital	Survival Strategies and Risk Management
Main assets: 2 to 5 has of rain-fed land in hilly soils. House with earth floor of 2 or 3 rooms with tin roof, electricity and no running water. Kitchen garden and a few fruit trees for family consumptions. Has a few small animals or one large animal grazing in communal lands Produces maize and beans plus some horticultural products with minimum inputs. Land rotation and fallows. Soil degradation. Stores produce for self-consumption. There is no grain surplus. Does not use credit or receive technical assistance Uses wood for fuel. Collects non timber products from communal areas Receives occasional transfers from a migrant son or daughter Receives *Oportunidades* and *Procampo* Works part time on his farm and also as casual laborer	Parents without education or primary incomplete. Children attended primary school, not secondary Wife and small children monolingual (in indigenous areas) Family has migrant son or daughter Few or no visits to medical units (more now with *Oportunidades)*. Use of traditional medicine (especially in indigenous areas) Participation in minor religious and communal activities Relations of reciprocity with relatives and neighbors No participation in political activities of community or municipality	Family diversifies income and risk with casual work and other occupations Parents support migration of elder sons and daughters helping them to keep linked to the community. Parents try to convince the younger son or daughter to stay in the community to help in the farm and look after them in old age. Husband sticks to his land without fractioning it or passing it to his offspring Wife works occasionally in petty commerce or making some handicrafts (the latter mostly in indigenous areas). She may participate in a women's production or savings group In emergencies, husband participates more in labor market and wife in trade or handicrafts. They may sell animals and request a loan from better off relatives or a local money lender, or ask migrant children for incremental support Husband has been temporary migrant but does not migrate any more.

Source: Author's construction based on Nahmad and Carrasco (2004).

The families discussed do not only differ in their economic condition but also in their social and cultural capital and in the way they manage risk. Culturally, the first family lives in a vacuum of social relations and communal integration that makes its

poverty situation more disheartening because not culturally dignified. Alcoholism and family violence are common features in this situation in rural Mexico, and indeed in many other rural areas of Latin America, for example in the Andes (see for instance World Bank 2002b). The second family is better integrated although it plays a modest role in the management of local collective affairs. The third family is fully embedded in the norms and culture of its community, and manages well the part of that culture that consists of knowing how to use the links with the outside world.

Table 7.3.c. Illustration of a Mature Border-Poor Family in a Small to Medium Rural Location

Economic Characteristics	Social and Cultural Capital	Survival Strategies and Risk Management
Main assets: 5 to 10 has some rain-fed and some irrigated (with water rights). House of brick and *adobe* with cement floor, of 3 to 5 rooms, with tin roof, electricity and running water. Kitchen garden and a few fruit trees for family consumptions. Has several small animals or three or four large animal grazing in communal lands. Produces maize and beans plus some horticultural products with minimum inputs for self-consumption. Produces also some commercial crop for sale Eventual use of credit and technical assistance Uses wood and gas for fuel. Receives occasional transfers from migrant children Receives *Procampo* Husband works part time on his farm and may also have some other occupation but not as casual laborer	Parents without education or primary incomplete. Children attended primary and secondary school. Wife monolingual (in indigenous areas) Family has migrant sons or daughters Family combines formal medical services and traditional medicine (especially in indigenous areas) Active participation in religious and communal activities Frequent relations of reciprocity with relatives and neighbors Active participation in political activities of community or municipality Husband participates in producers' associations and in committees sponsored by NGO or government programs	Family diversifies income and manage risk with crop diversification and other occupations and participating in government or NGO programs Parents supports migration of elder sons and daughters helping them to keep linked to the community. Parents try to convince the younger son or daughter to stay in the community to help in the farm and look after them in old age. Husband sticks to his land without fractioning it or passing it to his offspring Connection with external agents and development programs is sought as self insurance and for petty accumulation Wife works occasionally in petty commerce or making some handicrafts (the latter mostly in indigenous areas). She may participate in a women's production or savings group In emergencies, the family sells animals, requests a loan from outside connections or a local money lender, or asks migrant children for incremental support Husband has been temporary migrant but does not migrate any more.

Source: Author's construction based on Nahmad and Carrasco (2004).

In view of its asset situation and very small risk pool, the first family is extremely vulnerable and has very few instruments to manage risk. It is the combination of having young children, no land and no connections that makes this

family particularly vulnerable. Access to land —if the family could rent it on a continuing basis and had access to credit to farm it— would be a good way for this family to improve its income position and decrease vulnerability. Diversification of income sources and access to public and private transfers make the second family less vulnerable. Not only does it have its own source of food, but has also good command over the labor market which allows it to intensify wage employment if necessary. The risk position of the third family is quite robust; its sources of income are much diversified and it has access to large social capital and a large risk pool. Only under exceptional circumstances, it would seem, would this family fall into an extreme poverty condition. Yet, there are many families in the coffee growing areas of Mexico who were in situations similar to this one only a few years ago, who have been struggling during the last years to keep on the other side of destitution.

INCOME AND CONSUMPTION VULNERABILITY OF THE RURAL POOR

There are different ways in which families can be vulnerable to income shocks and also different ways in which they can manage risk. In this section we examine the vulnerability of the Mexican rural poor to idiosyncratic and covariate shocks, the reduction, mitigation and coping strategies that they use, and the effect of some formal mechanisms, like crop insurance, and some government programs. The conceptual framework for vulnerability used in our analysis is summarized in Box 7.2.

Box 7.2. Conceptual Framework for Examining Vulnerability

There are three aspects of vulnerability: (1) the risk or risk event, (2) the options for managing risk or risk response, and (3) the outcome of the risk event and its welfare impact (Alwing *et al*, 2001). Risk management has *ex ante* and *ex post* facets. Measures are taken *ex ante* to reduce risks, for instance when agricultural risks are lowered by using drought resistant low-yielding seeds. *Ex ante* measures can also be taken to mitigate risk, by diversifying for instance assets or income sources. After the risk event or "shock", steps are taken to cope with its effects, like selling animals or procuring a loan from a relative. A common practice in rural areas is for households to "pool risk", i.e. to form systems whereby those who have experienced a shock can count on the assistance of those who have not. This can be done formally, like in the Mexican *fondos de aseguramiento*, or informally through traditional mutual assistance systems. The extent to which a household can count on the help of others in the event of shocks is its "risk pool".

Consumption smoothing mechanisms, while essential to the survival of a household faced with income shocks, can come at a high cost, especially in terms of future income opportunities. Risk events usually affect directly income and as a consequence consumption. Households try to defend their consumption levels through coping measures. The result is "consumption smoothing", i.e. a smaller variation of consumption than of income. But smoothing is not without cost, and the cost can be dear to the poor, like the distress sale of assets or forced migration. Income itself can be smoothed *ex ante* using risk mitigation measures like those mentioned above. Risk

management strategies by individuals would normally combine risk reduction, mitigation and coping instruments according to their accessibility and cost in the particular circumstances (Siegel and Alwang, 1999). Risk strategies do not only serve to protect consumption levels from eventual shocks, but help also households to take higher levels of risk, like adopting more profitable but risky farming technologies or moving from low input field crops into high input niche market crops (Holzman and Jorgensen, 2000).

Shocks can affect either single individuals or very small groups, i.e. be "idiosyncratic", like most health conditions, or can simultaneously affect a large number of individuals, i.e. be "covariate" or "systemic", like most shocks related to weather situations. Covariate shocks are more difficult to deal with at the local level because risk pooling mechanisms normally fail, and because these risks are as a rule more difficult to insure against.

How vulnerable are the Rural Poor in Mexico?

Rural households are fairly successful in protecting consumption from frequent income shocks, both idiosyncratic and covariate. Using panel data from ENCEL, the survey applied to evaluate *Progresa/Oportunidades,* for October 1998, June 1999, and November 1999, covering 506 poor villages and 24,000 households, Emmanuel Skoufias has shown in a recent paper (Skoufias, 2004) that covariate risks significantly affect household incomes and consumption, although households do carry out income smoothing practices that partially protect their incomes from such risks. Systemic shocks, however, are shown to be of secondary importance with respect to idiosyncratic ones. Also, panel data shows that systemic shocks such as weather related risks and natural disasters can have very different impacts on households, and that shocks leading to income changes do not necessarily lead to consumption changes. Successful practices of consumption smoothing make consumption more protected than income.

Illness comes out as an important source of risk. Households whose head is temporally ill experienced income growth rates 20 to 22 percent below those of other households. Interestingly, consumption decreased by 2 percent only, showing the strength of smoothing practices. Longer illnesses had a milder effect on income, probably because the length of the illness made households resort to income smoothing practices. Among production-related shocks, the one to come out more strongly in these panel data is the incidence of pests and diseases. Households who experienced a problem of pests and diseases had an average income growth rate 16 to 17 percent below other households. Again, the impact on consumption was much smaller; a drop of only 3 percent.

Table 7.4. Economic Shocks in Rural Areas in 1989-94

	Sector						
	All	**Farm**	**Non-Farm**	**Farm & Non-Farm**	**Bottom two quartiles**	**Third quartile**	**Fourth quartile**
Percent of respondents that faced an economic crises	59	63	56	60	51	66	66
Type of Shock (%)							
Low Yields	23	48	5	22	11	27	27
Low Prices	6	11	3	4	4	4	11
Low Sales	21	1	34	33	20	21	22
Weak Demand for Services	12	13	18	13	18	8	7
Illness of Entrepreneur	4	6	3	2	3	7	2
Other	9	11	9	5	12	6	9
Subtotal	75	80	72	79	68	73	78
High Expenditure Due to							
Illness of Entrepreneur or Household Member	18	18	18	17	20	22	15
Other	7	2	10	4	12	5	7
Subtotal	25	20	28	21	32	27	22
TOTAL	100	100	100	100	100	100	100

Source: World Bank (1995).

The incidence of shocks is important. A survey of 1,944 rural entrepreneurial households carried out in mid-1994 in *Guanajuato, Puebla, Tamaulipas* and *Veracruz*, reported economic shocks occurred between 1989 and 1994 (World Bank, 1995). The results are shown in Table 7.4.

Fifty nine percent of respondents reported a shock in the period. Incidence was larger among farmers, reflecting the risk of agricultural activities. For farmers, the most frequent shocks were related to agricultural production resulting in low yield, whereas for non farmers low sales was the most common shock. In both cases weak demand comes second as a source of risk. Illness of the entrepreneur (normally the household head) or other household member is an import source of high unplanned expenditures. Poorer households in the two bottom quartiles experienced less shocks than richer ones, probably because the risk-aversion of the poor make them take lower risks to avoid facing the catastrophic consequences of income shock. Low yields due to production related shocks were significantly smaller in the bottom two quartiles, which can be attributed to the planting of lower risk crops and the use of low risk technology by this group.

Weather related shocks are extremely frequent for small Mexican farmers. The *Encuesta Nacional de Hogares Rurales de México* (ENHRUM) survey of close to 1,800 rural

households conducted in 2002 by the *Colegio de México* and *INEGI* gives information on weather-related shocks in that year for 666 crop farmers. The results are shown in Table 7.5. The frequency of weather-related shocks is worrisome: in 2002, they affected 44 percent of farmers throughout the country. Contrary to Skoufia's results from the ENCEL survey reported above, droughts are in this survey the shock most commonly experienced, more than pests and diseases. The high incidence of shocks is corroborated by information from the survey undertaken by the World Bank and FIRA to examine rural financial markets in Mexico (see footnote 3 to chapter 5), shown in Table 7.6. Almost half of all farmers in the survey experienced adverse events in 1999-2002. Importantly, in contrast to micro-entrepreneurs, more than half of the farmers experienced systemic shocks.

Table 7.5. Weather-Related Shocks Registered by Crop Farmers

Problems	Number of producers	Percentage
With problems	295	44.3
Excessive Rain or Hurricane	71	10.7
Droughts	162	24.3
Pests and Diseases	40	6.0
Frosts	22	3.3
Without Problems	371	55.7
Total	666	100

Source: Computed from ENHRUM.

Table 7.6. Mexico: Incidence of Adverse Shocks on Farmers and Micro-entrepreneurs in Rural Towns in 1999-2002

		Farmers	Micro-entrep.
Incidence of Adverse Events	None	53.0	73.3
	Only systemic	19.8	6.7
	Only Idiosyncratic	8.0	11.8
	Both	19.2	8.2
Number of Adverse Events	None	53.0	73.3
	One	20.9	14.8
	Two	9.8	6.5
	Three or more	16.3	5.5

Source: World Bank (2003: Table 9B.1).

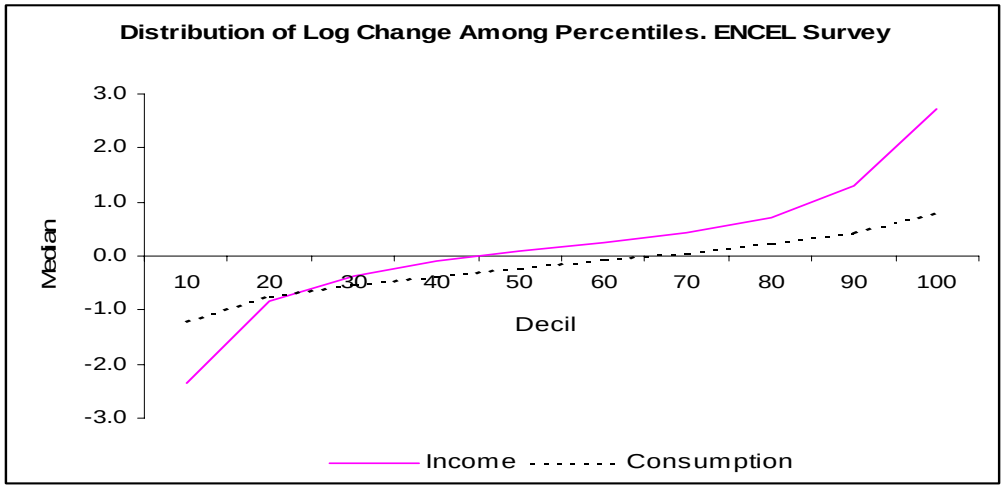
Rural households are affected by shocks differently according to their characteristics. The distribution of shocks is not independent of the distribution of household characteristics such as size, education, field of employment, occupation or location. Using panel data from the national employment survey (ENET) for 2000:2 and 2002:4, Maloney *et al* (2003) have investigated the effects of different household

characteristics on the distribution of shocks in rural and urban areas. The results are reported in detail in World Bank (2004) and will be only summarized here. An important finding is that the effect of household characteristics on shocks are rather similar for rural and urban areas, i.e. characteristics such as education, family composition, being self employed or being formally employed affect the distribution of shocks in the two areas in a similar way. Informal workers and the self-employed show much higher variability in income than formal workers. Thus, income falls in the bottom part of the distribution of shocks and income increases in the upper part between 2000:2 and 2002:4 were much bigger for informal and self-employed workers than for their formal counterparts. Another finding is that higher levels of education do not contribute to reduce negative income shocks. Thus, at the median, less educated households (with primary education or less) experienced higher income increases than those with better education (high school, technical or university levels).

The World Bank rural finance study (World Bank, 2003) examined also the personal and context characteristics correlated to the incidence of shocks. An interesting finding is that the probability of incidence of negative shocks for individual farmers is positively correlated with farms located in *ejidos* and those depending on informal traders (*coyotes)* to sell their produce, and negatively correlated with irrigation and the use of certified seeds. The probability of negative shocks increases for farmers with *Procampo*, for farmers who receive remittances, and for those owning cattle (which may be a consequence rather than a cause of vulnerability).

High income variance does not result in a similarly high consumption variance. Maloney *et al* (2003) use also panel data from the ENCEL survey to compare income and consumption vulnerability between October 1998 and November 2000. Like Skoufias, they observe significant consumption smoothing particularly for large positive and negative shocks. We illustrate this in Figure 7.1 taken from World Bank (2004), which shows how large negative shocks induce a less than proportional fall in consumption and the opposite for large positive shocks.

Figure 7.1. The Pattern of Annual Change in Incomes in a Panel of Mexican Households in Poor Rural Areas, 1998-2000



Source: World Bank (2004: 84).

Risk Reduction, Mitigation and Coping Strategies of the Rural Poor

Households resort to a variety of risk mitigating and coping strategies as a way of self-insurance in order to cope with large idiosyncratic risks combined and in the absence of formal insurance markets and credit constraints. These include the accumulation of assets, income diversification, sending women and children to work, withdrawing children from school, input and crop choices, precautionary savings, migration, marriage, income transfers among friends and relatives, and other informal risk sharing arrangements such as share cropping or input sharing (Skoufias, 2004). The use of these mechanisms is shown in Tables 7.7 and 7.8. According to the survey of rural entrepreneurs in *Guanajuato, Puebla, Tamaulipas* and *Veracruz* mentioned above, one third of households affected by shocks resorted to sending more family members to work (Table 7.7.). Some 26 percent of households could secure loans and donations, while the percentage of affected households that resorted to selling assets was small, only 8 percent of the total. Defense of consumption levels is evident from the data: 57.7 percent of households that experienced shocks did not reduced their consumption.

Table 7.7. Coping with Economic Crises

	Sector						
	All	**Farm**	**Non-Farm**	**Farm & Non-Farm**	**Bottom two quartiles**	**Third quartile**	**Fourth quartile**
Percent of respondents that faced an Economic Shock	59	63	56	60	51	66	66
Percentage that received credit in the form of:							
Loans with positive interest rate, either formal or informal	7	7	7	9	4	8	11
Loans from friends/relatives	5	5	5	9	5	6	3
Delayed loan repayments	1	1	1	3	1	1	2
Subtotal	13	13	13	21	10	15	16
Percentage that received donations from							
Friends/relatives	12	10	16	6	13	14	11
Government or NGOs	1	1	1	2	1	2	0
Subtotal	13	11	17	8	14	16	11
Percentage that balanced income through							
Sales of Assets	8	10	7	4	6	4	15
Increased labor market participation	34	38	31	42	40	37	26
Reduced consumption	25	22	28	19	22	24	29

Source: World Bank (1995).

Income level is more important for the type of response than being a farmer or not. Differences in the way farming and non-farming households reacted to shocks are small, although farming households tended to sell more assets (probably animals), while non-farming households tended to receive more donations from friends and relatives. In all cases the support received from government and NGOs was minimal. The position in the income distribution affected the response. Not surprisingly, households in the top two quartiles resorted to credit more than those in the two bottom quartiles, who turned instead more to an increased participation in the labor market. Consumption smoothing was more marked among households in the bottom quartiles, which is consistent with the view that the poor, being close to subsistence, can hardly afford to reduce their consumption.

Increased participation in the labor market is an important coping mechanism. The coping mechanisms used by the individual farmers and rural micro-entrepreneurs interviewed in the rural finance survey that experienced shocks are shown in Table 7.8. The first thing to observe is that for farmers two thirds of the systemic shocks were due

to climatic conditions, contrary to the case of micro-entrepreneurs for whom economic factors were the main cause of systemic shocks. Increasing the labor supply is the main mechanism to cope with shocks for both farmers and micro-entrepreneurs. Other than this, there are a series of strategies (depleting financial and non-financial assets, borrowing from friends and relatives) which are also used but to a much smaller amount. It is interesting that borrowing is hardly used as a coping mechanism either by farmers or micro-entrepreneurs. The strategies to cope with idiosyncratic and systemic shocks are somewhat different, but not much; they are both dominated by increases in the labor supply, although somewhat less in the case of idiosyncratic shocks.

Table 7.8. Actions Taken by Farmers and Micro-entrepreneurs to Cope with Systemic and Idiosyncratic Shocks

	Systemic Shocks				Idiosyncratic Shocks				
	Total	Climatic	Economic	Others	Total	HH Income	Health	Business Problem	Other
Farmers	100	65.5	33.3	1.2	100	62.0	15.9	19.0	3.1
Borrowing with interest	1.9	1.0	3.5	6.7	4.6	3.8	4.7	6.5	8.0
Borrowing without interest	1.0	0.9	1.2	--	2.0	0.8	3.9	3.2	8.0
Other financial services	1.1	1.5	0.3	--	1.2	1.2	0.8	1.9	--
Depleted financial assets	5.0	4.6	5.7	6.7	8.2	7.7	10.9	7.7	8.0
Depleted non-financial assets	6.6	7.3	5.5	--	5.9	5.0	10.9	5.8	--
Transfers from institutions	2.4	2.8	1.5	6.7	1.4	1.2	0.8	0.7	12.0
Transfers from friends & relatives	5.6	5.8	5.2	6.7	7.3	6.3	11.6	6.5	8.0
Increased labor supply	63.3	61.9	63.4	53.3	57.6	64.4	51.2	45.8	28.0
No strategy	13.1	14.2	10.7	20.0	11.9	9.7	5.4	21.9	28.0
Micro-entrepreneurs	100	38.2	58.8	3.0	100	36.1	22.4	35.5	6.1
Borrowing with interest	0.9	--	1.5	--	0.7	0.3	1.4	0.6	1.7
Borrowing without interest	1.9	0.8	2.4	4.8	1.8	1.7	1.4	2.1	1.7
Other financial services	4.0	4.5	2.9	19.1	3.0	2.9	1.9	4.1	1.7
Depleted financial assets	6.0	6.0	5.4	19.1	6.2	6.1	7.9	5.3	5.2
Depleted non-financial assets	2.6	2.3	2.9	--	6.1	3.8	13.6	3.8	5.2
Transfers from institutions	2.0	4.1	0.7	--	0.6	0.6	0.9	0.6	--
Transfers from friends & relatives	5.9	10.2	3.2	4.8	10.5	9.6	19.2	4.4	19.0
Increased labor supply	63.6	54.9	70.2	42.9	57.5	64.9	43.5	61.1	44.8
No strategy	13.2	17.3	10.7	9.5	13.6	10.1	10.3	18.0	20.7

Source: World Bank (2003: Table 9B.8).

Systemic shocks, such as the *Tequila Crisis*, are more difficult to cope with because mechanisms that work for idiosyncratic shocks fail at the systemic level. Thus, the response to the systemic shock epitomized by the 1995 *Tequila Crisis*, examined by McKenzie (2003), is different from that of idiosyncratic shocks indicated in the tables above. Most specifically, rural workers during the *Tequila* shock could not as a whole resort to increased labor market participation, because of the depressed condition of

rural labor markets. Nor could they profit from domestic loans and donations from friends and relatives because of the generalized impact of the crisis on the household economies; only transfers from friends and relatives in the USA, i.e. sheltered from the impact of the crisis, increased, mitigating the shock to some extent. The situation was also different with respect to consumption smoothing. There was some consumption smoothing during the *Tequila* crisis, but less than that observed upon the idiosyncratic shocks reflected in the ENCEL and ENET panel data and those in Table 7.4. Thus, for families engaged in agriculture, the average fall in income between 1994 and 1996 was 17 percent, that in monetary consumption 13 percent, and that in non-monetary consumption also 17 percent. The main smoothing that took place was through the reallocation of consumption expenditures in favor of the most essential ones, especially food spending which fell only 5 percent (McKenzie, 2003: Table 5).

Risk reduction, mitigation and coping mechanisms cannot always be separated, because some decisions by the rural poor affect simultaneously all of them. Also, decisions which have risk implications may not just be related to risk management but also to economic strategies linked to income and accumulation.[92] We analyze below some strategies typically followed by the rural poor that have a variety of implications for the management of income, investment and risk. They are: the diversification of income sources, the reliance on the subsistence economy as a safety net, and migration. We also examine some specific features of risk management in old age.

Diversification of Income Sources

Diversifying income through non-farm occupations has been an important way for Mexican rural households to concurrently increase income and mitigate risk. We illustrate this with the diversification of rural incomes that took place from 1994 to 1996 and 1998 as a consequence of the *Tequila Crisis*, already mentioned in chapter 2. Table 7.9. shows rural households reacting to the crisis between 1994 and 1996 by increasing their involvement in non-farm occupations, particularly low return ones which are easier to access. This was probably related to the difficulty of increasing their participation in the labor market due to its depressed state, and to that of increasing farm incomes which requires investment in inputs and labor. The situation was somewhat reversed between 1996 and 1998 when the worst impact of the crisis was over. The shares of independent farming and agricultural wage incomes increased, and that of non-farm occupations decreased.

[92] As Roumasset once put it, the risks with risk hypotheses is not that they explain too little but that they explain too much (Roumasset, 1976)

Table 7.9. Share of Different Sources of Income in Total Income of Rural Households (percentage)

TYPE OF INCOME	1994	1996	1998
INDEPENDENT FARMING			
All households	25.0	22.3	23.8
Extreme poor	27.7	26.7	23.1
AGRICULTURAL WAGE LABOR			
All households	14.6	12.8	15.0
Extreme poor	23.4	20.5	22.3
NON-FARM OCCUPATIONS			
All households	32.7	38.4	34.9
Extreme poor	18.7	28.2	26.7
of which low return activities			
All households	16.5	18.3	17.9
Extreme poor	11.6	17.7	16.1

Source: WB staff calculations based on ENIGH 1994, 1996 and 1998.

Taking the four years between 1992 and 1996, we have estimated from ENIGH data that the number of individuals in rural areas belonging to what we have called "diversified income households"[93] passed from 4.4 million (19 percent of the total) in 1992 to 6.5 million (26 percent of the total) in 1996. While income diversification is a structural trend in the rural areas of Mexico, there is little doubt that it was accelerated by the *Tequila Crisis*.

What conditions explain the diversification of income sources? We examined this in chapter 3 with respect to participation in non-farm employment, distinguishing between low return and high return occupations. We saw there that gender, education, region and the larger or smaller size of the rural settlement are all correlated to household involvement in these two types of non-farm activities. Using data from the ENHRUM survey, Taylor, Yúnez-Naude and Cerón (2004) have studied the process whereby rural households decide to participate in different occupations and the incomes derived from them. We show in Table 7.10 the average income shares of rural household from different sources resulting from this survey. The most important source is non-agricultural wages (41%) followed by farm production (18.2%). Transfers account for 17.1 percent of average rural household incomes, of which two thirds from remittances

[93] Households with less than 50 percent of their income coming from a single source.

from abroad. These figures confirm our previous finding of large diversification of sources of income in rural areas. Taylor, Yunez-Naude and Cerón further examine how different household characteristics (size, education, experience), asset endowments (land, livestock, tractor, migration capital for domestic and international migrations), and region explain participation in different income sources. They then examine how these variables explain the income obtained from different sources, after controlling for household participation in them.

Table 7.10: Share of Income Sources of Mexican Rural Households According to the ENHRUM 2002 Survey

Activities	Shares
Farm Production Activities	**18.2**
Livestock	3.7
Staples	2.4
Commercial Crops and Plantations	10.0
Other agricultural	2.1
Local Non-Farm Activities	**8.3**
Commerce	6.1
Services	2.1
Handicrafts	0.1
Renewable Resource Extraction	**2.3**
Public Transfers	**4.4**
Private Transfers	**12.7**
Domestic	1.7
From USA	11.0
Salaries and Wages	**54.1**
Agricultural	13.0
Non-Agricultural	41.1
Total (Average Household Income in MxP = 53,456)	**100.0**

Sample Size: 1,782 households.
Source: Taylor, Yunez-Naude and Cerón (2004).

Results are interesting. **Not surprisingly, household size is directly related to diversification.** Larger households tend to participate more than smaller ones in most activities: traditional and modern agriculture, large and small livestock, the exploitation of natural resources, non-agricultural occupations, and labor markets. They also receive more government transfers. Large households not only participate more in these activities but also obtain more income from them (after controlling for participation). Thus, for instance, an increase in one household member is associated on average with 23 percent more income from agricultural wage employment and 34 percent more income from non-agricultural wage employment. Migration, instead, is not related to household size in the regression equations, probably because of the endogenous factors involved between these variables: larger families may have a higher propensity to migrate, but migration reduces the size of the household. Human capital (family education, experience of the household head) encourages participation in modern

agriculture and non agricultural activities, and discourages traditional agricultural, small livestock and participation in the agricultural labor market. Income from migration, both international and domestic, is very much enhanced by the existence of migration networks or "migration capital"[94]; families with members resident in the USA have on average a 65 percent higher probability of receiving remittances, and families receiving remittances have on average an income 1.4 times higher than those who do not. The corresponding figures for internal migration are 32 percent for receiving transfers and 0.67 times for the increase in income. Land increases the probability of participating in traditional and modern agriculture and in livestock, but the contribution in the margin of land to income from these activities is small.

The Subsistence Economy as a Safety Net

The subsistence economy is commonly understood as the production of food crops carried out by farmers in one or several small plots of land for self-consumption, using family labor. Other components could also be added, like the raising of small animals, a vegetables and fruit orchard close to the homestead, and in most cases access to communal lands for grazing animals and collecting fire wood, wild plants, construction materials and other products. Lands are commonly on fragile or little fertile rain-fed soils, often steep, which forces farmers to use rotations, with fallow periods that have been decreasing under demographic pressure. Maize and beans are normally produced in association, and often a horticultural crop like *calabacita* is also included. Technology is simple and low risk consisting of well-tried *criollo* seeds usually resistant but low yielding, manual and animal labor (the latter if the family has animals or can rent the service), organic manure from own animals and domestic waste, and in some cases a small dose of chemical fertilizer if the family could afford buying it.

Subsistence farming is not exclusive to poor farmers, and is part of a wider family production system. Two things are important to understand about subsistence production. The first is that it is rarely practiced alone, but as part of a wider income and occupation plan of the family, i.e. of its production system. Subsistence production may be combined with other agricultural activities, for instance with the production of coffee or other cash crops, the commercial exploitation of communal forest resources, participation in the local labor market or non-agricultural occupations or temporary migrations. The second important aspect is that it is not exclusive of very poor farmers. Most farmers practice subsistence production to a smaller or larger extent. It coexists side by side with the commercial operations of medium or comparatively rich small farmers intricately woven into them. It is only when the family stops participating directly in manual work that subsistence production is abandoned by commercial farmers.

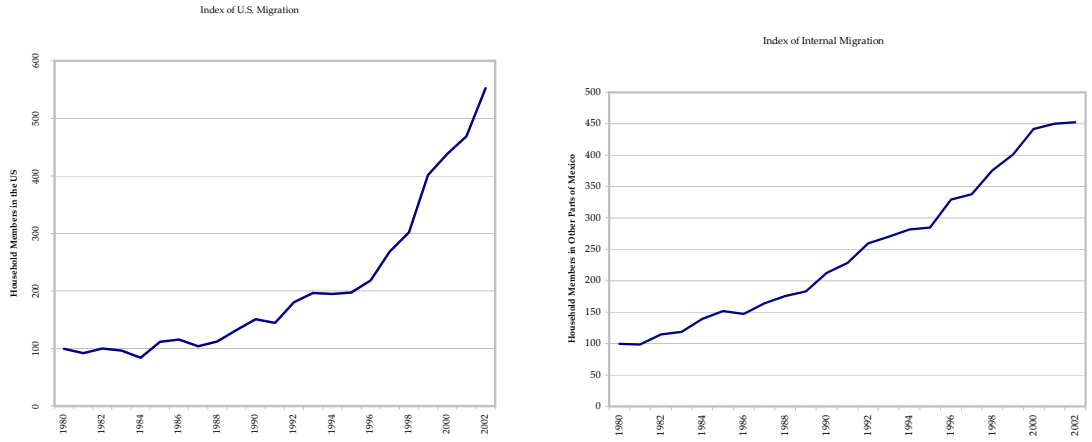
[94] We will see later that not only migration income, i.e. migrant transfers, depends on migration networks, but migration itself also depends on these networks.

The importance of the subsistence economy has been declining but it still probably is the number one safety net in rural areas and it will probably be for many years. This is why among our recommendations we include that of strong policy support to the subsistence economy. Its role in food security is evident but there are also other more hidden roles which need to be highlighted. Thus, cultivating the soil and producing (some of) one's own food is strongly associated with belonging to a community. It is part of tradition and of what local society expects of an *ejidatario* or a *comunero*, and is a sign of being diligent and having some measure of independence.

Migration

Out-rural migration is an important income, employment, and risk management option for rural households in México. It has accelerated since the mid-90s as can be seen in Figure 7.2, where migration indexes calculated by Taylor *et al* (2004) on the basis of migration histories contained in the ENHRUM survey are presented. Acceleration since 1995 onwards, particularly of migration to the USA, is probably related to the *Tequila Crisis* and can be seen as one more mechanism used by rural households to cope with this economic shock. Migration to the USA is growing more rapidly than internal migration, but this is still much larger; approximately 70 percent of rural migrants in 2002 had migrated within Mexico, and only a small proportion of them (less than 10 percent) were employed in agriculture (Taylor *et al*, 2004).[95]

Figure 7.2 Trends in Rural Out-Migration, Internal and to the USA, 1980 -2002



Source: Taylor, Yúnez-Naude and Cerón (2004), calculated from ENHRUM.

It would be wrong to assume that most rural households have migrant members. We have survey information on this from three sources: the 1994 and 1997 *ejido* surveys, the 1997 ENCASEH survey, and the 2002 ENHRUM survey. Comparison of the 1994 and 1997 *ejido* surveys indicates that 15.9 percent of the 5,260 individuals in the sample migrated at least once in that period, with 5.2 percent going to the USA, and

[95] Large migration to the USA after the *Tequila Crisis* is also observed by Davis and Winters (2001) among *ejidatarios*.

10.7 percent to other locations in Mexico, of which 1.4 percent to do agricultural work and 9.3 percent non-agricultural work. Of all migrants, 71 percent were male and 29 female, and of migrants to the USA, 80 percent were male and 20 percent female (Davis, Stecklov and Winters, 2002: Table 1). In the ENCASEH 1997 survey, 10.6 percent of the 2,574 rural households in the sample had members who had migrated temporarily during the last year (González-König and Wondon, 2003: Table 1). Finally, in the 2002 ENHRUM survey, 16.2 percent of the 1,782 families in the sample had one or more members living in the USA and 25.8 percent of the families had members living in other parts of Mexico at the time of the survey (January-February 2002).

The figures above are not as large as might be expected given the known importance of out-rural migration in Mexico, but there are two reasons why these figures could be somewhat deceptive. First, there may be, and often are, more than one migrant per household. Thus, when in the ENHRUM survey we measure all migrants against all rural families the result is that at the beginning of 2002 there were on average 0.35 migrants in the USA and 0.71 migrants within Mexico per rural family (Taylor *et al*, 2004: Table 3). Second, the figures refer to members of the nuclear family only. The situation changes if we include siblings and past migration experience. Thus, for instance, it has been worked out from the 1997 *ejido* survey that 44 percent of *ejido* families had some connection with the USA, either because the parents had migrated themselves in the past or had children or siblings living in the USA (Davis and Winters, 2001: Table 1).

There are different types of migration of the rural poor according to their duration, purpose, and role in the life cycle and accumulation strategy of the migrant. Ethnographic data from field studies (Edouard, Le Moing and González, 2004) suggest various types of migration with different functions.

Seasonal migrations of short duration (one to six months) normally have an income diversification function and take place during the low part of the agricultural cycle. Short migrations are often part of a regular pattern where continuing arrangements exist with an employer. This is particularly the case in rural-to-rural migrations when the migrant recurrently returns to the same farm or agricultural area to help during the harvest. Recurrent short migrations involve different types of workers but are typical of middle age individuals, mostly males, and mostly small farmers, often from communities of origin in the south to agricultural areas in the central and northern parts of the country. There are three common routes. Along the Pacific Coast, migrants work seasonally in the harvest of fruits and sugar cane, and year-round in vegetables. In North-Central Mexico migrant workers help produce key crops such as cotton, apples, and various vegetables (primary between August and January). Along the Gulf Coast, farm operators employ migrants to produce sugar cane, cotton, oranges and coffee, except during July-September. Short migrations can also serve as a coping mechanism upon an income shock, in which case they would not be recurrent, and we would expect them to involve individuals of different age and gender. The use of this coping

mechanism is likely to depend on the depth of the migration network of the incumbent, for this determines the possibility of finding work and shelter at the place of destination. Individuals who do not have good migration contacts are likely to use other responses to income shocks.

Resource accumulation is generally the purpose of temporary migrations of much longer duration (one to four years). They are mostly rural-urban and many are to the USA. Their purpose is accumulation more than income diversification. Young rural workers are typical candidates for this type of medium-term migrations, for they need to accumulate in order to *establecerse* (get established), which mostly means buying or building a house and getting married. Migration often works in this case as a sort a passage ritual –a passport to the adult world. Young women do also participate in these long temporary migrations, more probably than in short-term ones. Contact networks are of great importance in these migrations for both USA and domestic destinations and for both men and women but perhaps more for the latter. When migrations are to the USA, male networks are important for the decision of women to migrate but female networks are more important to decide the destination (Davis and Winters, 2001). Middle age married individuals also participate in medium-term migrations. In this case it is mostly the husband who migrates, and the purpose could be either capital accumulation in order to buy property or start some line of business, or to complement income probably to attend the needs of a growing family when local opportunities are very scarce and there are good migration contacts. The situation in these cases of the women left behind is ambiguous; on the one hand they take on new responsibilities as managers of the household and of family property in the absence of the husband, hence becoming more autonomous, but on the other hand the continued absence of the husband generates many uncertainties and incremental work loads.

Land Assets and Risk Management in Old Age

Current inheritance patterns which tend to discriminate against younger generations are part of an old age risk management strategy. Attention has been called in recent years to the inheritance patterns in rural areas in Latin America with respect to the main rural asset, land, and their impact on agricultural productivity, youth exodus, and demographic imbalances (Abramovay *et al*, 1998, Dirven, 2002 and 2003). Mexico is certainly not an exception to this, as indicated in Chapter 5. The resistance of Mexican small land holders of advanced age to pass on their lands to the young generation is part of a broader survival *cum* risk management strategy identified in field studies (Edouard, Le Moing and González, 2004). Being males the main owners of land in rural Mexico, the strategy refers mostly to them rather than to women, and is briefly describe below.

Keeping land ensures control of assets as well as bargaining power over other household members' income. The main perceived risks faced by old land-owning men, whose possibilities of migration, participation in the labor market and venturing into non-agricultural activities are diminished by age, are (1) to be left alone without anyone

to look after them, and (2) to be unable to earn enough income to survive. A response to this situation commonly observed in *ejidos* and *comunidades,* which probably extends also to small private land owners, consists of three aspects. First, old owners cling to their land resisting any pressures to pass it on in life to their heirs. This allows them to keep control of an asset which (i) provides a flow of income, (ii) embodies the main family wealth and hence helps keeping the family together around the parents, (iii) can be bequeathed to the wife or any of the sons or daughters at his discretion, thus giving a good bargaining power to the title holder, and (iv) gives power and status in the community.[96] Old owners are often afraid that if they pass on the land to a son or daughter, these may sell it and leave, so that he would be left with nothing. This is not an overly unreasonable assumption in view of the breaking of family ties observed in some communities. Second, parents try also to retain in the household at least one of the sons or daughters to look after them and help tilling the land, often with the promise that they will inherit it.[97] Finally, parents try to keep the family bound together even if physically separated by migration, and try to ensure that transfers keep coming in from distant children. Maintaining uncertainty with respect to the inheritance is a way of achieving this. Another way is helping migrant sons and daughters to maintain ties with the community, by for instance keeping a house there, and also providing services such as looking after the grand children and after the children's property in the community while they are gone. This behavior from old land owners has important consequences on the use of land, the farming practices, and the access to land by young workers.

Government Programs Affecting Vulnerability

We review here various ways in which the Mexican government helps reducing the vulnerability of rural poor people and support their risk management strategies. Many government programs have some direct or indirect effect on the vulnerability of the rural poor, but we will be only concerned here with programs that are either directly oriented to reduce vulnerability, such as agricultural insurance, or have (or could have) a major impact on it. We only deal with economic vulnerability, not covering issues and programs related to health and education.

Agricultural Insurance Systems

Most agricultural insurance in Mexico is oriented to middle and large commercial farmers. Crop and livestock insurance is not relevant for very poor farmers but can be important for sectors of small farmers who are moderately poor but have the conditions to escape poverty through farming. There are three main ways in which government intervenes in agricultural insurance. The first is through the 2nd level activities of *Agroasemex*, the government's agricultural insurance company. The second is through the support provided to the *fondos de aseguramiento*, a private cooperative-

[96] Thus, for instance, only title holders can vote or hold office in the *ejidos.*

[97] The situation in the *ejidos* is complicated by the fact that, as explained in chapter 5, according to law, properties cannot be divided by inheritance or otherwise. In practice, however, they often are.

type risk pooling system funded and run by the farmers themselves. The third is through *Fonden*, a natural disasters government fund. We examine here briefly these systems and their impact on the rural poor leaving some recommendations to the latter part of this chapter.

***Agroasemex*, which replaced the former government insurance company in 1990 has an overarching role as reinsurance company and insurance development agency.** Unlike *Anagsa*, *Agroasemex* did not try to insure all loans from *Banrural* and concentrated mostly on high potential and moderate risk areas. It also left room for private companies to participate in the rural insurance market. Private companies at present cover some 57 percent of the 1.5 million hectare insured area and more than 90 percent of livestock insurance. *Agroasemex* main clients were small commercial and middle producers with productive potential. In 2001 *Agroasemex* withdrew from the retail insurance business and became a 2nd level institution with two functions: reinsurance company, and insurance development agency. As a development agency, *Agroasemex* promotes new instruments and links between the finance and insurance markets, and carries out training. It also has two important development roles: to administer the *Programa de Subsidio a la Prima del Seguro Agropecuario*, a subsidy program to the agricultural insurance premium[98], and to provide technical and organizational support to the *fondos de aseguramiento*, mainly through promotion and technical assistance services. There are no specific activities of *Agroasemex* targeted to small farmers, but those among them who have access to insurance benefit from the subsidy on the premium. Also, the support given to the *fondos* benefits small farmers participating in them.

The *fondos de aseguramiento* have been fairly successful, concentrating on weather, biological and crop establishment risks. These *fondos* are farmers insurance associations, originally started in the early 90s in the prosperous irrigated *ejidos* of the *Mayo* and *Yaqui* valleys in the state of *Sonora*. Although hardly hit by the financial crisis of 1995, they have been rather successful and expanded fast among commercially oriented farmers of small or middle size, mostly in irrigated and good rain-fed areas. They specialize in crop insurance, having gone little into livestock insurance, which is the province of the private sector. *Fondos* currently insure some 622 thousand hectare (42 percent of the insured area) and receive some USD 40 million in premiums. Premiums are collected from participants, and insurance is paid upon assessed damages. They basically insure against weather, biological, and crop establishment risks. There are different types of insurance with different coverage: the investment cost of the input package, the value of the plantation (in the case of plantation crops), and the value of the expected crop. On average, *fondos* have some 350 members with an insured area of some

[98] The subsidy amounted to some US$ 31 million in 2003 distributed over some 1.5 million hectare and 16 million animals, approximately 60% for agriculture and 40% for livestock. The subsidy was equivalent to 30% of the premium and 3.5% of the insured value (9.2% in agriculture and 1.7% in livestock), and an estimate of 2.8% of production costs in agriculture or MxP 140 per hectare (Instituto Superior Tecnológico de Monterrey, 2004).

3,000 hectare each, and an average premium of close to USD 60 per hectare, of which 30 percent is paid by *Agroasemex* subsidy. To deal with covariate risks, *fondos* reinsure with *Agroasemex*, which has a program to that effect. As mentioned before, *fondos* also receive support from *Agroasemex* for training, technical assistance and computing equipment.

The *Fondo de Desastres Naturales* (*Fonden*) is a federal government insurance fund against natural disasters, which is part of the *Sistema Nacional de Protección Civil*. It covers all major natural disasters, financing the reconstruction of public infrastructure and compensating the rural poor for their losses following large covariate shocks. Small farmers and other rural poor are protected in four ways: (a) they receive support to rebuild their houses if affected by the disaster, (b) receive compensation for crop and livestock losses for a maximum of 5 hectare and 25 heads of cattle at a rate of some USD 33 per hectare and USD 23 per head, (c) they may also qualify for temporary income and employment support, and (d) they benefit from the reconstruction of local public infrastructure (Secretaría de Gobernación, 2003). *Fonden* is a useful instrument to absorb part of the income impact of large covariate shocks of natural origin, but it compensates for part only of the losses and depends on a number of procedures and discretionary actions such as the declaration of emergency that limit its impact. Although useful to the affected individuals, it is probably a better instrument to compensate for the loss of infrastructure and facilitate its reconstruction.

Other Government Support Programs

With the exception of work fare programs, there are no government programs specifically focused on mitigating the impact of risks. Cash transfers programs such as *Oportunidades* and *Procampo* are important at ensuring some minimum income and hence help smoothing consumption in the presence of income shocks. They are not, however, insurance mechanisms as such. Using ENCEL panel data Skoufias (2004) has shown that *Oportunidades* does not provide additional insurance for consumption over and above existing formal and informal insurance systems although it helps smoothing income over time. On the other hand, he also found that cash transfers increase the means available to households to cope with shocks rather than displacing existing informal means of insurance. There is no similar panel data with respect to the impact of *Procampo* but one would expect the situation to be similar.

Other rural development programs such as *Alianza para el Campo*, *Microrregiones* and *Opciones Productivas* do not have a specific social protection function against income shocks, although the credit programs included in *Opciones Productivas* may facilitate some coping strategies following idiosyncratic shocks. Being mostly a social infrastructure program, *Microrregiones* is not expected to have a major short time effect on income vulnerability, although it could have medium and long-term effects if the infrastructure built served to attract other investments and promote local development thus generating more income earning opportunities. Something similar could be said with respect to the support offered by *Alianza* to farm modernization.

The *Programa de Empleo Temporal* (*PET*) promotes employment of poor people, particularly the extreme poor, in public works in rural areas. This program is mostly the responsibility of SEDESOL but has also some funding from SAGARPA and SEMARNAT. Although its primary function is employment provision to the poor during the low season, it does have an insurance function since incremental funds are usually made available for additional employment in areas that have been affected by systemic shocks due to natural disasters or other causes. The program is oriented to the extreme poor and consists of the provision of employment in labor intensive public works to build infrastructure or in works related to environmental or sustainable agricultural improvements. *PET* is particularly oriented to poor municipalities prioritized in agreement between the federal and state governments. Beneficiaries receive 90 percent of the minimum wage for unskilled workers in the area and can only work for a maximum of 88 days. Under the ordinary program, works are carried out during the low agricultural season.

***PET* successfully combines a poverty alleviation function with a shock mitigating function.** *PET* serves two purposes: absorbing seasonal unemployment in rural areas affecting especially the very poor, thus alleviating poverty, and providing especial assistance in situations of emergency. These two functions are entirely compatible and even synergic, because the experience and capability gained in the implementation of the regular program are very valuable in emergencies situations. It is hence appropriate for *PET* to be both an employment and a social protection program.

POLICY IMPLICATIONS AND OPTIONS

Two Views of Poverty and Vulnerability in Rural Areas

To close the chapter we contrast two views on poverty and vulnerability. Much of the current policy debate can be interpreted as product of the tension between two contrasting views of poverty and vulnerability in rural areas. These models represent different views on poverty, the poor, poverty measurement, poverty correlates, anti-poverty instruments, poverty targeting, migration, social protection and actions to promote rural development. For reasons of simplicity we label these views "social-liberal" and "rural-corporate" and compact them under Model A ("social-liberal") and Model B ("rural corporate") in Table 7.11.

***Model A* stresses the importance of individual agents, private assets and the market as engines of rural development, but recognizes the need for government intervention in the supply** of public goods and basic services in underserved rural areas, and in supporting with cash transfers the incomes of rural families fallen into the worst poverty situations. Education, health, social infrastructure and direct cash transfers targeted to the poor are the principal, albeit not only, items in the policy agenda. These items are market compatible and also tend to increase competitiveness by increasing human capital. Education and health in particular result in individual

improvements in knowledge and strength. These are portable assets of varied application, which increase labor productivity and hence returns to labor. If the market makes local opportunities scarcely attractive, especially to the young, migration is the answer. Migration under *Model A* is seen as a Pareto improving individual decision that people freely make, rather than as a social process explained by general economic circumstances. People are viewed as individuals rather than structured groups. Vulnerability is something, therefore, more related to individual situations than to that of groups. Self-insurance through the promotion of appropriate financial assets is a fitting answer. The rural poor are seen as an undifferentiated collection of individuals or families with similar needs who have incomes below certain levels. Since measuring the income of each individual or family is not possible, poverty targeting should focus on the observable characteristics that make the individual or family more or less likely to fall under the specified levels.

***Model B* focuses on rural organizations, especially rural communities, and collective action by these organizations**. The need of state intervention is recognized under this model with similar functions to those in *Model A* (education, health, social infrastructure, direct poverty alleviation), but also with emphasis on the promotion of rural economic development through support to productive activities. Migration is seen as an unavoidable process in many rural areas, but one that imposes hardships on the individuals and families concerned as well as socioeconomic disequilibria in the communities. The model is optimistic as to the possibility of reducing migration through the promotion of local development, and proposes working towards situations where people can have a better choice between migrating and taking up local employment opportunities. Population is seen not as an agglomeration of individuals but as a structured set of organizations —territorial, interest-based and others— embodying valuable social capital for development. Participation of these organizations in the targeting and operation of development programs, and unconditioned outside support with freedom for them to decide on investments and development paths, are strongly emphasized. Poverty situations are seen as heterogeneous and hence requiring differentiated actions. Economic development policies coupled with people's participation and reliance on rural organizations are the policy recipes of this view. The alleviation of extreme poverty situations through direct cash transfers is seen as a positive but transitory and partial measure, secondary in importance to production oriented policies**.**

Table 7.11. Visions on Poverty and Vulnerability in Rural Areas: Two Contrasting Models

VIEWS ON	**Model A "Social-Liberal"**	**Model B "Rural-Corporate"**
Poverty	Emphasis on objective and absolute dimensions	Emphasis on subjective and relative dimensions
The poor	Emphasis on characteristics and needs that are similar among the poor	Emphasis on differences among the poor
Poverty measurement	Emphasis on monetary measures, particularly income-poverty	Emphasis on basic needs, human development indicators and stock measures
Poverty correlates	Emphasis on observable variables: assets, education, location, gender, family characteristics, occupation, ethnicity	Emphasis on both observable variables and little observable ones like social capital and cultural dimensions
Anti-poverty instruments	Emphasis on investment in "mobile assets" (mostly human capital) and direct cash transfer	Emphasis on productive development, CDD and territorial approaches
Poverty targeting	Emphasis on objective, centrally established criteria	Emphasis on self- and community-targeting, importance of context variables and community perceptions
Migration	Emphasis on the virtues of migration as an equilibrating economic mechanism and an opportunity to escape poverty	Emphasis on migration as a "necessary evil" and on the suffering and social disequilibria generated by it
Social protection	Emphasis on market mechanisms and cash transfers	Emphasis on social capital
Actions to promote rural development	Emphasis on the individual, private assets and markets	Emphasis on the community and on collective action

Source: Author's construction.

A measured policy response to rural development challenges should take into account the views from both models. Each model has its strengths and weaknesses. *Model A* rightly emphasizes the importance of human capital and the need to protect the freedom of individuals to migrate and to place them in the best position to be successful migrants. Its understanding, however, of the migration process is unsophisticated, too narrowly focused on the individual and on existing conditions, without proper attention to the social dimensions and the circumstances generating migration in the first place. The insistence of *Model B* on active policies to stimulate rural pro-poor economic growth is sound; income supports through direct transfers cannot substitute for them, regardless of their possible income multipliers. Direct income supports, however, are important because of their immediate welfare effects, and cannot be dismissed, which is

a risk under *Model B*. By recognizing the importance of rural organizations, social capital, and the heterogeneity of the poor, *Model B* takes a more "organic" view of rural society than *Model A*, which is a strong asset for the formulation and implementation of rural policies. Insisting on local participation and the need to support communal and other organizations while allowing them a free hand to decide on the use of resources, is another strong point of *Model B*, but limits and risks need to be recognized. Capture of benefits by local elites is a well-known risk. Also, central authorities and other supporting partners are entitled to their own views and priorities with respect to development programs, and hence to discuss and agree priorities and implementation guidelines with local organizations. They are also entitled to a close watch on the soundness of local processes. These considerations serve as a background for the analysis of policy options below.

Policy Options

Formal agricultural insurance schemes are not particularly useful to the extreme rural poor since for many of them income does not come mainly from independent farming, and when it does agricultural insurance can be comparatively expensive for small rain-fed producers growing traditional crops. Also, these producers use low risk technologies in their farming operations, hardly use seasonal credit, are not exposed to input or output market risks because they buy very few inputs and sell little if any output, and to a certain extent are covered from large natural disasters that trigger the intervention of *Fonden*. For these reasons other type of insurance systems are more appropriate for this bottom sector of the rural poor.

Agricultural insurance, however, can be important to farmers in transition, located between the extreme and moderate poverty lines or immediately above the latter line, especially if they want to diversify into high value crops, which is always a risky operation. *Agroasemex* could make additional efforts to assist creating more insurance groups among this sector. This could best be done in the context of projects promoting crop diversification or technological change among small farmers in a certain area with a modicum of potential for such changes, even if at a small scale, preferably as part of a larger territorial development effort.

An interesting proposal has been made to introduce parametric insurance systems in rural areas linked to weather parameters (World Bank, 2001, Skees *et al*, 2002). The system would be useful to farmers in general, including small farmers. Even the non-farm rural poor could benefit since many rural enterprises and labor opportunities on which they depend are related to weather. To be most effective, the parametric insurance system should work in synergy with the development of rural finance. Micro finance institutions could hold weather derivatives as part of their portfolio to protect themselves against defaults originated in covariate weather shocks. They could also make loans available to the rural poor to buy these bonds. Weather derivatives would also help taking part of the covariate risk off insurance groups, and

hence facilitate the formation and operation of risk pool groups such as the *fondos de aseguramiento*. The system has the advantages *inter alia* of being simple, easy to administer and free from the adverse selection and moral hazard problems that affect most insurance schemes. Parametric insurance criteria could also be applied to public insurance programs. Thus, *Fonden* could consider moving to a parametric system of triggers (World Bank, 2001).

Modifying existing cash transfer programs in rural areas to enhance their insurance function is not seen as a favorable option. These programs already fulfill certain social protection functions in addition to their own objectives and it would be dangerous to ask them to perform too many functions. It is better to use other instruments.

Rural financial systems are multipurpose instruments that serve for risk management, capital accumulation, technology adoption, and personal welfare. The possibly are the single most important formal system to assist the rural poor to manage risks, particularly idiosyncratic risks. Their main roles are as follows: (1) they promote savings and facilitate keeping them in forms more adequate to needs than those traditionally used by the poor (cash hoardings, animals, produce, land), thus favoring the use of savings as a self insurance mechanism; (2) they facilitate obtaining personal loans in response to shocks; (3) they also facilitate obtaining crop insurance, which is usually bought together with seasonal crop loans; (4) rural financial intermediaries may directly provide certain types of insurance, such as life or burial insurance; and (5) personal and productive loans facilitate income diversification and migration strategies, which are important self-insurance instruments.

Given the importance of subsistence production as a safety net to poor rural producers, strong support to the subsistence economy is a major policy option. The subsistence economy, like the poor, is there to stay with us for many years, although (hopefully) with a waning away trend over the very long run. As argued in chapter 1, this is a matter of the inability of the economic system to provide high productivity jobs to surplus laborers who take refuge in subsistence production, many in the *zonas de refugio*. The same logic that leads to adopting a social policy of cash transfers to the extreme poor —an underprivileged structural part of society whom we recognize society must help— applies to supporting the subsistence economy. Only that in supporting subsistence production we are not just doing "social" policy; we are also doing production and environmental policy.

There are various ways in which government programs could support subsistence production. First, soil management programs in fragile areas would help redressing one of the main problems in subsistence agriculture: the degradation of soils because of erosion and falling fertility due to shorter fallows, use of steep hill sides for annual cropping, and lack of conservation practices. Second, programs to enhance kitchen gardens, the production of small animals, and some tree crops could be

expanded. Third, environment friendly yield increasing technical packages could be promoted for traditional crops. Finally, access to communal resources could be improved and better managed through the promotion of community self-regulation norms that would avoid tragedy of the commons type situations following migration, market development and income differentiation. Communal resources could also be the basis of accessing environmental service markets in the benefit of the community. Support to the subsistence economy is probably better carried out at the local level in the framework of municipal or micro-regional plans such as those promoted by *Microcuencas*. The federal government could have an important role, however, in developing technological and methodological options, disseminating best practices, coordinating efforts and providing financial resources.

8. SUMMARY OF POLICY OPTIONS TO FIGHT RURAL POVERTY

This chapter presents policy options to intensify the fight against poverty in rural areas, building on the Mexican government's policy reforms underway in areas like local development, program implementation, and education. We bring together in this chapter the options discussed in the previous ones.

Policy options for improving rural poverty interventions are organized around four areas:

1. Deepening the territorial approach to rural development as a form to achieve local economic development and reduce poverty through territorially based economic coordination rather than purely sectoral approaches.

2. Revitalizing the rural economy in favor of the rural poor, raising overall productivity in the farm and non-farm sectors, and working to help the poor increase their labor productivity.

3. Improving the design and effectiveness of rural development policies and programs; and

4. Supporting the rural youth as a critical factor for a dynamic rural economy.

GENERAL CONSIDERATIONS

This report has shown that strong policy action will be needed to overcome poverty in Mexico's rural areas. Rural Mexico is marked by poverty. Poor families in rural (and urban) areas are still reeling from the effects of the macroeconomic crisis in the mid-1990s. Extreme poverty exists in all of rural Mexico, but the southern pacific states, far away from economic centers and with large indigenous populations, have particularly high incidences of poverty. While the situation has improved substantially since 1996, poverty incidence is still very high in rural areas. The effects of the *Tequila Crisis* and a slow-moving agricultural sector were instrumental factors in eroding rural households' income sources. The Mexican government has been successful in increasing direct cash transfers to the rural poor, but efforts should also be strengthened to enhance access of the rural poor to non-farm activities as well as more productive agricultural activities and farming methods.

This chapter presents some options for reform to deepen efforts to eradicate rural poverty. The discussion is organized around four areas: (1)deepening the territorial approach to rural development; (2) revitalizing the rural economy in favor of the rural poor; (3) improving the design and effectiveness of rural development policies and programs; and (4) supporting the rural youth as a critical sector for a dynamic rural economy.

These specific policy options, discussed below, should be seen in the context of more general policy implications derived from this report. In particular, we would like to highlight the following issues:

- Maintaining macroeconomic stability as an essential element for a poverty reduction strategy
- Keeping the level of direct transfers to the rural poor in view of their current importance for their livelihood, but using incremental resources at the margin to promote income and employment growth.
- Focussing attention on regions and areas where poverty is more concentrated.
- Concentrating investments to build up critical masses to trigger endogenous growth process.
- Continuing focusing attention on improving rural education, with emphasis on quality, expanding secondary facilities and enrolment, and strengthening technical education and vocational training for rural people related to farm and non-farm activities.

Mexico's success at regaining and maintaining macroeconomic stability after the *Tequila Crisis* has been important for allowing a sustained fall in poverty since 1996. As we have shown, poverty increased dramatically in 1994-1996, under the effects of the macroeconomic crisis. Mexico's ability to maintain macroeconomic stability over the past decade is probably one of the most important explanations for why poverty has fallen. Prudent macroeconomic policies will need to remain at the core of any rural poverty reduction strategy.

Public transfers are now instrumental to the livelihood of the poor but need to be complemented by enhanced income and employment programs. Public transfers to the poor, especially through *Oportunidades* and *Procampo*, have increased substantially since the mid 1990s. It is likely that the number of poor and the depth of poverty would be starker had these efforts not been made. Clearly, these transfers are essential to the poor, and could not be removed at this stage without much suffering. We believe, however, that this safety net needs to be complemented by more efficient and effective ways of promoting income and employment growth, and that at the present time

incremental resources for rural areas would be better used to promote income and employment generation than to expand direct cash transfers.

Location matters. There is a need to focus attention on marginalized regions and areas, where poverty is more concentrated, combining incremental resources with an assessment of the capacity of specific programs to promote local development, and using targeting mechanisms adequate to each type of program. Related to this, investments could be clustered to build up critical masses of productive and support infrastructure to trigger endogenous growth process, rather than disseminated in large areas and many different activities or in a myriad of small unconnected projects.

Education remains the most important correlate of poverty. Education is an important tenet of the Mexican government's social welfare strategy. Continued emphasis needs to be given to access, but also to quality, expanding secondary facilities and enrolment, and strengthening technical education and vocational training for rural people related to farm and non-farm activities.

SPECIFIC OPTIONS TO FIGHT RURAL POVERTY

Deepening the Territorial Approach to Rural Development

The territorial approach to rural development is a means to achieve local economic development through territorially based economic coordination. The main tenets of this approach, which is presented in Annex 3.I, are the emphasis on (1) mutisectoral development, (2) the links between rural and urban areas, (3) the use of participatory territorial planning as instrument for economic coordination and to organize the demand for development interventions, (4) the structuring of interventions around a long-term strategic plan for the territory, (5) the economic potential of territorial assets, and (6) the mobilizing capacity of a shared territorial identity (see Annex 3.H). The territorial approach changes the focus from sectoral to territorial competitiveness, and offers an excellent framework for poverty reduction interventions in rural areas centered on equitable local economic development.

A territorial approach is probably best focused at the level of territories like micro-regions and districts, which are larger than municipalities. The approach can be applied at different spatial levels, including for instance the *microcuenca* and the *municipio*, but larger territories of the size of present SAGARPA districts and SEDESOL micro-regions are the most promising for strong development impact. These larger territories can be articulated with broader rural-urban regions sharing integrated labor pool watersheds. In this connection, a spatial policy would be useful to facilitate the geographical concentration of investments and services for productive development, favor the growth of rural towns and intermediate cities, and promote the establishment of links between these urban centers and their rural hinterlands.

For the territorial approach to work in practice it would be useful to have a policy and planning agency of mixed public-private-civil society composition in each territory, empowered to carry out participatory planning and articulate local development demands. The *Ley de Desarrollo Rural Sustentable* provide the instrument to create these agencies in the form of *Consejos de Desarrollo Rural Sustentable.* District level *consejos* could be particularly important to carry out economic coordination in their territories.

Economic diversification and the commercial exploitation of territorial assets are key aspects of the territorial approach. There are three basic modalities: (1) increased value added of goods or services already produced in the territory, (2) improved use of territorial advantages through the introduction of new commercial products, and (3) the establishment of synergies between different sectors of activity in the territory. The European Union Leader Program, based on a territorial approach similar to that summarized above, offers many examples of these modalities (Box 8.1).

While there are several programs and mechanisms in place with a territorial focus, the diverse initiatives could be brought together under a unified policy framework. The *Ley de Desarrollo Rural Sustentable* favors a territorial approach to rural development, and there are rural development programs in operation designed with a territorial approach, such as *Microrregiones*, the *Desarrollo Rural* sub-program of *Alianza* or *Microcuencas*. SAGARPA has been active in establishing rural development councils at the municipal level. More actions at the federal and regional level, consistent with the Law, could be carried out to advance along this path. A *política de estado* to promote rural development with a territorial approach would be required, supported by the Oficina de la Presidencia de la República and the Secretaría de Hacienda. Dissemination of the advantages of a territorial approach among state governments would also be essential because territorial policy is —or should be— their responsibility.

Four policy actions are possible at the federal level. First would be to empower the *Consejo Mexicano para el Desarrollo Rural Sustentable* (CMDRS) to act as national agency for the promotion of the territorial approach to rural development. The *Consejo* could establish a plan for the progressive introduction over time of the territorial approach and monitor its progress. Second possible action refers to the harmonization of the operational rules of rural development programs of federal agencies, and the national coordination of their activities, which could be done within the framework offered by the CMDRS and with the support of the Secretaría de Hacienda. Third action would be the progressive introduction of a system to coordinate the budgeting of rural development programs by federal agencies. Finally, a national territorial development fund could be created to finance territorial investment programs submitted by territorial agencies operating under competitive bidding principles.

Box 8.1. The European LEADER Program

The LEADER program of the European Union first launched in 1991 is an attempt at fostering a territorial approach to rural development in Europe. Based on the identification of problems and potentials of specific rural areas, strategic plans are formulated and priority investments co-financed. There are three basic principles: innovation, partnerships, and multisectoral integration. The central characteristics of LEADER can be summarized as follows:

- Each LEADER program intervenes in a territory relatively homogenous, defined by the local actors, of between 10 and 100 thousand residents.
- A vertical partnership among three different levels of government (European, national and regional) establishes the general orientations, some general rules for the selection of subprojects, the financial contribution of each partner, an the M&E procedures.
- A horizontal partnership, known as Local Action Group (LAG), is established as a civil association integrating local public and private actors: municipalities, producer associations, chambers of commerce, savings and loans associations, unions, cooperatives, traders and entrepreneurs, NGOs and other CSOs. With the assistance of a very small technical group, the LAG prepares a strategic plan for the development of the territory, formulates an operational program for the 5 or 6 years of operation of LEADER financing, and receives, examines, approves and supervises the execution of the subprojects submitted for co-financing. Within the general LEADER norms established by the vertical partnership, each LAG has plenty room to decide investment priorities.
- Integrated, innovative and multisectoral investments are generally favored. They are mostly oriented at exploiting the comparative advantages and assets of the territory, the strengthening of local clusters of medium and small enterprises, and the exploitation of synergies among different local economic sectors, as means of increasing the competitiveness of the territory. Since farm production is supported by other instruments of the European CAP, LEADER support concentrates on off-farm investments (including agro-processing). LEADER financing typically supports marketing innovations, environmental improvements, adding value to local products, small local industrial and services firms, and agro-tourism.
- Sub-projects are co-financed with European and national funds and beneficiary contributions. The latter varies according to the norms established by the vertical partnerships and the specific LAG but is typically of the order of 50 to 60 percent.
- LAGs receive some small technical assistance, particularly at the beginning, are supported in their accounting and other ways by participating municipalities, are organized in networks to share experiences through the national and European "Leader Observatories", often cooperate with each other in various ways, and usually intervene in discussions and policy decisions related to local economic issues.

Source: FAO-World Bank, 2003.

At the regional level, five possible actions could be considered. First, establishing shared *regionalizaciones* in each of the states, agreed upon by federal agencies and state governments, who could take the leadership in this. Second, advancing in the creation of territorial economic coordination agencies. The *Consejos Distritales de Desarrollo Rural Sustentable* regulated by the *Ley de Desarrollo Rural Sustentable* could be the legal form for these agencies. To ensure local ownership, their formation would best be approached as a bottom up process involving the active participation of all relevant federal and state agencies and territorial actors. Third, as territorial councils are being formed, the *Centros de Apoyo al Desarrollo Rural Sustentable* mentioned in the law (art. 29) could be created to act as technical secretariats of these councils. Fourth, setting up a system of *ventanillas únicas* in the territories to provide information and to process demands related to the various rural programs. Finally, formulating strategic plans for the territories using participatory planning methods to identify the development axes around which territorial investments could cluster. This task could be promoted by the territorial agencies.

Revitalizing the Rural Economy in Favor of the Poor

Rural development needs to build on a comprehensive approach including both farm and non-farm activities. It is suggested that the focus move from the farm to the family as the unit of analysis for rural development and the receiver of rural policy. This implies abandoning the concept of "viable farm" as a guide for policy interventions in agricultural development, and promoting agricultural competitiveness through multiple interventions embracing small and large farms, full- and part-time farmers.

Agricultural intensification offers a way forward to increasing output and incomes. The exhaustion of the land frontier and the comparatively low levels of land and labor productivity in agriculture suggest that intensification is needed. We advocate a policy of "diffuse intensification", embracing all types of farms, irrigated and rain-fed, small and large. Policies are needed to create the conditions enabling farmers to carry out crop diversification and increasing crop yield. In particular, poorly endowed farmers with little physical and human capital will need help to move from low to high value crops. Extensive and well functioning research and extension systems, as well as rural finance systems, are essential for this. These systems are also essential to raise crop yields, the other component of intensification.

The small farm economy is the logical center of a poverty-friendly agricultural growth strategy. Focusing on small farmers is a recognition of the fact that markets tend to fail more for them, that instruments like research and extension and rural finance need to be specially calibrated for this farming sector, and that there is a merit want quality in the needs of small farmers. A positive discrimination spirit from policy designers and program operators would favor overcoming the class and technical biases

in favor of large farmers that usually characterize agricultural programs in Mexico as elsewhere. Encouraging participation of small farmers in rural value chains and their governance organizations and in *asociaciones integradoras* could also be part of these policies.

In order to improve the poverty friendliness of rural programs, it would be useful to intensify the dialogue between program managers and government officials, on the one hand, and leaders from farmers' and other rural organizations, on the other. Intermediate rural leaders have an especially important role to play in highlighting rural needs and priorities in the geographic or sub-sectoral areas of their competence, and giving feedback on rural programs. Rural organizations have also an important role to play in the implementation of rural development programs.

Education –access and quality– as well as access to better infrastructure are important means of increasing access to non-farm activities and better wage opportunities for the rural poor. Policy should pay attention to variables strongly correlated with better rural wages and enhanced participation in rural non-farm activities. Education —in particular at secondary level— is one of them. But education coverage and incentives to attend school are not enough; quality is also important, as well as combining education with other productive assets. Road connections, communications and energy are other correlates of better rural wages and enhanced RNF employment.

Economic investments to promote the RNF sector are integral to rural development-cum poverty alleviation programs. Investment decisions in the RNF sector could be decentralized through a system of local participatory planning based on the territorial approach. This would be the best way to address the inherent heterogeneity of the RNF sector and its different opportunities, while exploiting investment synergies and making investment programs easier to implement and more relevant to the specific context.

Technology

Poorer farmers need enhanced access to agricultural research and extension services to increase land and labor productivity. Rural technology enhancement has many stakeholders. To determine exactly what to do, it would be useful to organize an intensive debate among interested parties on how the agricultural knowledge system should evolve in the medium- and long-run to ensure competitiveness with equity. This could lead to the formulation of a national strategy to enhance rural technology. Of particular importance is how to accommodate poor farmers needs in the research and extension agendas and methods, and how to mainstream environmental concerns into research and extension.

There is need to discuss the technical assistance and extension models most appropriate for different type of farmers and regions. Together with the use of more

traditional methods such as demonstration plots, that of more modern ones already tried in localized pilot experiences could be mainstreamed, including methods such as farmer to farmer extension and farmer field schools for pest control, soil management, conservation agriculture, and agro-forestry systems. These models are probably best established at the state level through discussion of local scientific institutions, farmers' organizations, federal and state authorities, and NGOs working in the area. SAGARPA and state authorities could jointly promote these fora.

The agricultural knowledge system could benefit from a modernization of the curricula of agricultural learning centers, particularly those of the technical agricultural schools, like the CBTAs. The new curricula could pay more attention to new crops, processing industries, and commercial and managerial aspects. The promotion of vocational training and technical-level degrees in non-agricultural areas would also be important for local development. It could be achieved through a larger deployment in rural areas of CETIS and CBTIS type centers.

Environmental Assets

The commercial exploitation of environmental assets by local communities could bring dynamism to the rural economy. Cultural and landscape assets and biodiversity offer good opportunities for rural tourism and eco-tourism enterprises. Environmental services like carbon sequestration, water regulation and watershed management, and biodiversity stewardship offer also good economic opportunities, which have started being exploited in Mexico often with NGO support. Areas rich in environmental assets are often income poor, like the Southern Mexican states, and hence support for the sustainable commercial exploitation of these assets is usually poverty friendly.

Forestry resources are a case in point. Although community forestry is rapidly and successfully developing in Mexico, *ejido* and community forests are still insufficiently exploited. Intensification of community forestry programs is an option. Their scope could be broadened to include the sustainable exploitation of timber and non-timber resources, watershed protection and management, reforestation, agro-forestry systems, commercial forestry plantations, and timber and wood processing industries.

Rural Finance

An accessible and viable rural finance system is essential to help the rural poor build assets over the long term and cope with economic shocks in the short term. Rural financial systems are a multipurpose instrument that serves for risk management as much as for capital accumulation, technology adoption and personal welfare. Three policy actions could be considered. First, expanding BANSEFI and *Financiera Rural* operations with the resources currently used for *ad hoc* credit programs so as to mainstream and unify rural finance policy. Second, using the *Financiera Rural* to assist in

the development of the rural micro-finance system. Third, supporting with judicious incentives the introduction of innovations in rural micro-finance operations, such as flexibility in disbursement and repayment to adjust to the agricultural cycle, flexible collateral requirements, use of smart and debit cards and information technology, use of existing rural infrastructures for loan delivery, and introducing different financial products.

There is a large collection of formal and informal institutions and programs providing financial services in many rural areas of the country. Stronger coordination among these institutions would facilitate making information available to users on existing financial products from different sources, thus making the market more transparent. It would also help reaching agreements among suppliers to improve the distribution of financial services in the territory, and to combine financial services to better serve clients. This could best be done at the state level, where fora of the relevant institutions could be stimulated to discuss local needs of financial services and provide a framework for economic coordination. BANSEFI and the *Financiera Rural* could take an active role in the promotion of these state fora, but strong leadership from state governments would also be useful.

Vulnerability

Policy can help building better insurance and coping mechanisms against natural shocks. Natural shocks are a major source of vulnerability in rural areas. Policy interventions in technology, changes in crops and crop varieties, and sanitary measures could help reducing the incidence and income impact of these shocks. Formal agricultural insurance systems are of little help for the bottom sector of the rural population, but could be useful for farmers in transition, especially if they want to diversify into high value crops. Insurance support to this sector would best be carried out in the context of projects promoting crop diversification or technological change. The introduction of parametric insurance systems would increase the insurance options for the rural poor, especially if it goes together with the development of rural finance.

***Fonden* and PET are useful mechanisms for reducing the vulnerability of the rural poor, especially *vis-à-vis* covariate shocks**. Modifying existing cash transfer programs in rural areas to enhance their insurance function is not considered a good option, however. These programs already fulfill certain social protection functions in addition to their own objectives and it would be dangerous to ask them to perform too many functions.

Rural financial systems are probably the single most important means to assist the rural poor to manage risks, particularly idiosyncratic ones. Financial systems can facilitate savings, personal loans, agricultural insurance, and productive loans that permit income diversification and migration. Reducing vulnerability is hence another reason for recommending the enhancement of rural financial systems accessible to the poor.

The Subsistence Economy

Strong support to the subsistence economy is another major policy option in view of its importance as a safety net for poor producers. Supporting the subsistence economy is not only a "social" policy; it also favours productive development and environmental improvement. Support to the subsistence economy can take the form of soil management programs in fragile areas, promotion/enhancement of small orchards, small animals and some tree crops, promotion of environmentally friendly, yield increasing technical packages for traditional crops, and more intensive use of communal resources subject to better environmental management. Support to the subsistence economy is probably better carried out at the local level in the framework of municipal or micro-regional plans like those promoted by the *Microcuencas* program.

Improving the Design and Effectiveness of Rural Development Policies and Programs

Federal expending on rural development is high and a true mark of the importance traditionally given by Mexican governments to rural areas. The challenge is to increase the efficiency of the use of these substantial fiscal resources. Program implementation is an important area where efficiency and effectiveness could be enhanced. Quality of implementation is better examined at "the point of service delivery", where program operators and beneficiaries/clients intersect. As indicated in chapter 6, good implementation critically depends on bottom-level operators —the "street-level bureaucrats". They may or may not generate the synergies on which program success normally depends, and they are the ones to ultimately determine program delivery.

A new public management culture is developing based on creating consensus and adaptation between those who define the objectives and those who implement the programs, and on seeking the active commitment of the latter to program's objectives. A movement in this direction was endorsed in Mexico by the National Development Plan 2001-06, but the new paradigm still needs to be fully translated into practice. The "New Public Management" approach that is gaining momentum in many countries is characterized by transparency in budgetary processes, management by results, professional status of public servants, accountability to the client/citizen, decentralization, and program and policy evaluation.

There are different degrees of difficulty in program implementation. Cash transfer programs are the easiest ones to implement once the technicalities of beneficiary registration, check issuing and the like are sorted out. Social infrastructure programs require local participation for efficient resource allocation, which may complicate them, but they can achieve their immediate goals with limited or no participation because outcomes are essentially technical. Productive programs are the most difficult to implement, because they basically deal with private goods and because public-private synergies are crucial to their success. They also require considerable expenditure in recurrent costs.

The challenges faced by Mexico to improve the implementation system of rural development programs can be grouped in five categories: political and administrative circumstances of a macro type; operational and budgetary norms; organizational cultures; client orientation and beneficiary empowerment; and the incentive system for program operators. These challenges are summarized below.

Macro-Type Political and Administrative Circumstances

Here, challenges include the electoral system of local authorities, characterized by a short mandate and no reelection, little functional to the policy continuity required by rural development, which is a long-term endeavor. The annual budgetary system existing in Mexico does not favor program continuity and the adoption of a long-term perspective in rural development. Finally, the organization of the state apparatus along sectoral lines is little sympathetic to a multi-sectoral matter like rural development. Sub-national levels could play an important role in overcoming "sectoralism". Administrative innovations in this sense from state governments would be most welcome. At the federal level, the Secretaría de Hacienda, which has a multi-sectoral view and is responsible for the quality of public investment, is well placed to take an active role in promoting the coordination of federal rural programs within a territorial approach.

Operational and Budgetary Norms

Simplifying operational and budgetary norms and adapting them better to rural areas is suggested. One problem is the time factor, since timeliness of support is often more important than amount of support. Not only are there no pluri-annual budgets, but operational and budgetary norms sometimes allow a few months only to spend the allocated budget, thus introducing distortions. Changes from year to year in norms related to issues like eligibility conditions, subsidy amounts, target areas or type of benefits are also a damaging factor when they occur because they introduce uncertainty among program beneficiaries and operators.

Another challenge relates to the few recurrent funds often made available for program operation. There is frequently a conservative attitude toward recurrent costs, which is understandable in view of the abuses of the past but is potentially damaging to programs. This is particularly the case with productive programs where the formula for success could be summarized as "recurrent costs + rural finance".

Organizational Cultures

The institutional segmentation culture adds to the problems created to rural development programs by the sectoral organization of the state. To overcome this culture enhanced efforts from SAGARPA to involve more other organizations in the application of the *Ley de Desarrollo Rural Sustentable* would be useful. Efforts from the Secretaría de Hacienda and the Oficina de la Presidencia de la República to promote more integration of rural development programs in the framework of the law, and to

encourage the application of a territorial approach to rural development would also be useful.

Strengthening evaluation mechanisms is also suggested by introducing M&E systems simultaneously with program design, better dissemination of program evaluation results, putting together action agendas following the recommendations made by evaluation teams and monitoring progress on these agendas, and systematically adopting participatory M&E methods.

An excessive focus on short-term achievement is a hindrance to the continuity and long-term focus of rural development programs. Two policy options could be considered in this connection: the design of a long-term strategy for rural areas as *política de estado* cutting across party lines and administration terms, and the recognition of the importance of "intermediate policy results" and their value to political constituencies.

Client Orientation and Beneficiary Empowerment

Improving client orientation and beneficiary empowerment is another area where the implementation of rural development programs faces important challenges. There are several options. The first is to enhance the dissemination of programs and program norms to prevent biases in the selection process. The dissemination among beneficiaries of evaluation results and of the action agendas emerging from them is also suggested. Direct accountability from program operators to client/beneficiaries is a major way to empower beneficiaries which could be expanded, although it may not always be easy to introduce. Finally, measures could be introduced to detect and prevent opportunistic and rent-seeking behavior on the part of program operators. Good program dissemination and participatory evaluations are ways to achieve this.

Incentives to Program Operators

Economic and moral incentives for program operators are key to program success. The economic situation of bottom level program operators is often inconsistent with the relevance of their function, because of low salaries, no job security, and payment delays in some cases. Revising the economic situation of these operators and linking it to performance and client satisfaction would encourage good performance. Maximum performance from bottom level operators would also be encouraged by revaluing their function, consulting with them on program matters, giving them systematic training, disseminating best practices, carrying out systematic evaluations of their work, and promoting networking systems, a client orientation ethic, and a sound *esprit de corps*.

Other Specific Proposals

To advance in the transformations suggested above two policy actions could be considered. The first is the creation of a technical committee to examine the

implementation issues of rural development programs and make recommendations. The committee could be integrated by a mix of independent specialists, civil servants and legislators, and could have significant participation from the Secretaría de Hacienda. The second action is to empower the *Consejo Mexicano para el Desarrollo Rural Sustentable* to take an active role in the evaluation of rural development programs and the monitoring of the action agendas resulting from program evaluations. The *Consejo* would also be the natural institution to promote the preparation of a long-term rural development strategy to propose to the country as *política de estado*. The creation of a managing council and of a small technical secretariat of the *Consejo* would be important for it to be able to carry out these functions.

Two innovations could help raise program efficiency. One is the introduction of a system of what we call ***oidores***, consisting of well trained individuals or teams who would informally follow rural development programs at the "point of service delivery" through *ad hoc* visits, and directly inform top managers of the situation of the programs and the views on them from the bottom. The other innovation consists of a system of **process certification**. This could be carried out by independent consulting firms or NGOs, who would certify that the processes related to program operation and beneficiary participation are sound, in the sense of proceeding according to program objectives and guidelines and to accepted practice. The logic is the same as with environmental certification or auditing, only that applied to implementation processes. The system is expected to facilitate the delegation of program implementation functions to rural organizations, since it would give government agencies an independent means of knowing if the implementation processes are sound.

Supporting the Rural Youth as a Critical Sector for a Dynamic Rural Economy

Young male and female workers constitute an important strategic capital for the development of rural areas. They could be a fundamental actor in the modernization of rural areas in view of their higher level of education and more familiarity with the realities of the market and globalization than those of the previous generation. Their potential and energies are frustrated, however, by their conspicuous lack of access to assets. Land is held by the older generation, and market and inheritance mechanisms fail to transfer it at a sufficient pace from ageing landholders to young farmers. Lack of credit to buy land and to exploit it prevents also many young rural workers from acquiring land or renting it in and exploiting it with modern methods. Similarly, young rural workers may have the knowledge and entrepreneurship to start independent RNF operations but do not normally have the necessary capital. Thus, rural youth, on which a strong educational effort has been made, is severely constrained by failures in the financial and assets markets. Inter-generational renewal in farm operations would open an opportunity for farming intensification, since young farmers could carry out the type of changes in technology, crop mix and farm management required by intensification, if they have access to finance and technology.

Government can intervene in various ways in this situation to facilitate the access to assets of the rural youth. One form is to set up a land fund oriented to young workers to make accessible to them the financial means to acquire land or to rent it in on a medium or long-term basis. As a complement to this, there is need for an investment fund to allow young farmers to have access to the investments and technology necessary to get started as successful farmers. As mentioned before, the Secretaría de la Reforma Agraria is initiating a welcome program along these lines in the social sector to facilitate entrepreneurial development of young farmers.

To facilitate the inter-generational transfer of land other measures may also be needed. One possibility is allowing the division of *ejido* holdings, which would permit old *ejidatarios* to keep part of their land for themselves and transfer the other part to one or more of their offspring. Another form is a program for granting some sort of social security benefits to old farmers who decide to transfer their lands. A better understanding is also needed of the reasons preventing at present the natural operation of land renting markets for medium- and long-term leases. Once this is better understood, measures could be introduced to facilitate this type of leases.

Young rural workers also need access to rural non-farm occupations to increase income opportunities. Since good farm land is scarce in Mexico and farm holdings are small, even the most optimistic assumption of land transfers to young farmers would fail to satisfy potential land demand in many places. There is need, therefore, to facilitate the access of young rural workers to RNF occupations through the support to technical and vocational training, and to the establishment of RNF enterprises. As mentioned before, the rural economy offers many latent opportunities outside agriculture that could be taken up by young workers. A program for the access to assets of the rural youth could hence include both farm and non farm opportunities.

The best option for carrying out a program of this type in the social sector would be to rely on the communities themselves to discuss which old *ejidatarios* or *comuneros* are willing to pass on their lands to young local landless farmers and under what of the possible program modalities, and for the young farmers to put together a plan for the exploitation of these lands, with the technical assistance that may be required. Local governance institutions would need to play a key role in this. Community level plans for land transfers would be the result of these decisions. Program operators could facilitate and technically assist in the preparation of these plans, which could be largely implemented and monitored by the community themselves. The plans could include not just farm operations but also RNF activities, and should have a middle- and long-term perspective to take into account not only the needs of the current local youth in search of employment but also those of the local adolescents that would be entering the labor market in the coming years.

A program of this type would benefit from an organizational component to promote the formation of youth organizations and the networking among them. An

important dimension could be the empowering of rural youth in the decision making processes of the rural space, promoting their self-confidence, facilitating their leadership in their communities and other rural organizations, and helping them build a generational project that would make the most of their potential as agents of social and economic change in rural areas.

Annexes

ANNEX 2.A. THE CORRELATES OF POVERTY

This annex investigates the marginal impact of individual characteristics such as labor market association and human capital on the likelihood that a household fall below the poverty line. The analysis is carried out using Probit regression techniques, and is based on three ENIGH surveys, for years 1992, 1996, and 2002. This allows evaluating the evolution of poverty over time and that of the main variables determining it. Separate regressions are run for each of these years, using data from localities of less than 15,000 inhabitants. The analysis reveals: (i) conditional correlation between poverty and the characteristics of household heads; (ii) information about the volatility of the impact of the attributes on the likelihood that a household experience poverty during the beginning and mid-1990s and the beginning of the 2000s; and (iii) information about groups that are particularly vulnerable, and changes in these groups over the decade. We also performed a similar exercise comparing the *Sur* region with the whole of Mexico.

The status of the household —poor or non-poor— is regressed on relevant individual and household characteristics. The dependent binary variable takes the value of one when income is below the food poverty line and zero otherwise. We use six sets of explanatory variables: (1) attributes of household head: gender, education, and age; (2) labor market connections: whether the household head works, the type of relation with the labor market, and sector of employment; (3) family variables: age of the household head and dependants; (4) spouse characteristics: education and labor market connection; (5) region; and (6) type of rural area.

Probit coefficients are not easy to interpret, since they do not indicate the standard marginal effects of ordinary linear regression coefficients. We chose, therefore, to present marginal effects, which have a straightforward interpretation.[99] The Probit regressions should be interpreted as descriptive, i.e. indicative of association between explanatory and dependant variables but not of causation. Results are shown in Tables 2.A.1 and 2.A.2. In the following paragraphs, only the statistically significant coefficients in the regressions are discussed. We summarize below the results for some of the main poverty correlates.

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[99] The marginal effects for a household head *i* in the Probit model are given by:

$$m_i = \frac{d\Pr(y_i = 1)}{dx_i} = \phi(x_i\beta)\beta$$

This represents the marginal changes in the probability of a household head *i* being poor due to changes in the regressors. Marginal effects are evaluated at the mean of the data. Since similar conditions apply for marginal effects as for Probit coefficients, the same tests can be applied.

Rural living

Households in semi-urban areas were more likely to escape poverty than those in disperse rural areas. In 2002, households in disperse rural areas were around 12 percentage points more likely to be poor than those in semi-urban areas. Rural dwellers in disperse areas in the *Sur* were more likely to experience poverty than those in Mexico as a whole in 1992 but not in 2002.

Labor Status and Sector of Work

Formal sector workers in rural areas, i.e. those contributing to the social security system, are much less likely to be poor than their informal sector counterparts. The likelihood of formal sector workers escaping poverty increased during 1992-96 and remained fairly constant since. In 2002, households whose heads were formal sector workers were 24 percentage points less likely to fall into poverty than those whose heads worked in the informal sector.

Table 2.A.1 Probability of Being Poor in Rural Mexico in 1992, 1996, and 2002[1,2]

	1992				1996				2002			
	DF/dx		SE	P>|z|	dF/dx		SE	P>|z|	dF/dx		SE	P>|z|
Household Characteristics [3]												
Dependent below 5 years old+	0.215	***	0.017	0	0.234	***	0.016	0	0.225	***	0.016	0
Dependent 6 – 11 years old+	0.174	***	0.017	0	0.25	***	0.015	0	0.218	***	0.015	0
Dependent 12 - 14 years old+	0.114	***	0.019	0	0.119	***	0.017	0	0.135	***	0.017	0
Dependent 15 - 18 years old+	0.026		0.019	0.177	0.053	***	0.018	0.003	0.057	***	0.017	0.001
Dependent 18 - 25 years old+	-0.069	***	0.019	0	-0.046	**	0.018	0.012	-0.059	***	0.017	0.001
Dependent 65 and over+	0.047	**	0.02	0.018	0.051	***	0.019	0.007	0.003		0.017	0.839
Head												
Age +	-0.008	***	0.003	0.009	-0.016	***	0.003	0	-0.021	***	0.003	0
Age Square +	0	**	0	0.031	0	***	0	0	0	***	0	0
Female Head+	-0.03		0.028	0.295	-0.089	***	0.024	0	-0.037	*	0.021	0.087
Education												
Head												
Primary Complete+	-0.102	***	0.02	0	-0.082	***	0.02	0	-0.097	***	0.016	0
Lower Secondary Complete+	-0.167	***	0.027	0	-0.232	***	0.027	0	-0.18	***	0.022	0
Upper Secondary Complete+	-0.21	***	0.042	0	-0.343	***	0.033	0	-0.239	***	0.029	0
Spouse												
Primary Complete+	-0.075	***	0.021	0.001	-0.069	***	0.021	0.001	-0.095	***	0.018	0
Lower Secondary Complete+	-0.116	***	0.034	0.002	-0.182	***	0.031	0	-0.171	***	0.024	0
Upper Secondary Complete+	-0.213	***	0.051	0.003	-0.364	***	0.046	0	-0.273	***	0.032	0
Sector of Activity and Labor Status												
Head												
Unemployed+	0.083		0.095	0.365	0.205	***	0.063	0.004	0.074		0.092	0.414
Not in the labor force+	0.06		0.038	0.103	0.05		0.032	0.128	0.105	***	0.03	0
Agriculture												
Self employed+	0.006		0.025	0.808	0.031		0.025	0.213	0.219	***	0.024	0
Salaried worker+	0.166	***	0.026	0	0.155	***	0.023	0	0.216	***	0.023	0
Employer+	-0.156	***	0.026	0	-0.185	***	0.033	0	-0.054		0.041	0.199
Off-farm Sector												
Self employed+	-0.04		0.03	0.195	-0.044		0.029	0.126	0.046	*	0.027	0.083
Salaried worker+												
Employer+	-0.255	***	0.034	0	-0.356	***	0.039	0	-0.141	**	0.051	0.015
Second Employment +	0.01		0.017	0.55	-0.031	*	0.017	0.07	-0.061	***	0.016	0
Social Security +	-0.206	***	0.02	0	-0.251	***	0.024	0	-0.235	***	0.019	0
Spouse												
Employed in agriculture +	-0.017		0.031	0.595	-0.019		0.027	0.487	0.065	***	0.026	0.01
Employed in off-farm activity+	-0.067	***	0.023	0.005	-0.123	***	0.021	0	-0.133	***	0.017	0
Region												
Norte +	-0.166	***	0.022	0	-0.155	***	0.026	0	-0.051	**	0.024	0.041
Golfo Region+	0.061	**	0.026	0.017	0.117	***	0.023	0	0.222	***	0.024	0
Pacifico+	-0.145	***	0.022	0	-0.152	***	0.025	0	-0.01		0.025	0.696
Sur+	0.134	***	0.029	0	0.161	***	0.024	0	0.19	***	0.023	0
Centro+	0.037		0.024	0.113	0.096	***	0.025	0	0.155	***	0.025	0
Capital+	-0.113	***	0.038	0.008	0.014		0.05	0.778	-0.086	***	0.029	0.005
Locality < 2,500 inhabitants+	0.085	***	0.02	0	0.132	***	0.017	0	0.12	***	0.015	0
Number of observations =	4752				6165							6481
Log Likelihood=	-2442.4				-3176.2							-3145.7
LR chi2(24)=	1360.4				2180.1							2448.7
Prob>chi2=	0				0							0
Pseudo R2=	0.218				0.256							0.28

Source: Authors estimations based on ENIGH 1992, 1996, and 2002. [1] Rural area defined as localities with less than 15,000 inhabitants. [2] SEDESOL's capacity poverty line, (+) dF/dxis for discrete change of dummy variable from 0 to 1,*** sign. at 1%, ** sign. at 5%, * sign. at 10%.

Households with heads inactive in 2002 were more likely to experience poverty than those with active heads. This was not the case in the early and mid-1990s, as the difference in the likelihood of falling into poverty for the two groups was no statistically significant. Surprisingly, the probability of being poor of households with unemployed heads[100] is similar to that of households with employed heads. This holds in both 1992 and 2002, but not in 1996, after the crises, when unemployed heads were more likely to experience poverty than employed ones.

Employers are the group with lowest probability of being poor followed by self-employed and salaried workers. In 2002, households headed by employers in non-agricultural activities were 14 percentage points less likely to be poor than those headed by salaried workers, down from 26 percent in 1992 and 36 percent in 1996. In 1992, households with self-employed heads were 4 percentage points less likely to experience poverty than those headed by salaried workers in the off-farm sector. By 2002, this had changed and household with self-employed heads had the same probability of being poor than those headed by non-agriculture salaried workers. In 1992 households whose head was self-employed in agriculture were not worse off than those headed by wage workers in the non-farm sector, but were 4 percentage points more likely to be poor than those headed by self-employed in the non-farm sector. During 1992-2002, households of heads self-employed in agriculture experienced a 22 percentage point increase in the likelihood of experiencing poverty.

Households headed by salaried workers in agriculture saw their probability of being poor increase by 5 percentage points between 1992 and 2002 compared to households in the non-farm sector. Households where spouses were engaged in the off-farm sector had lower probability of being poor than households where spouses were engaged in agriculture or not working. This became stronger throughout the 1992-2002 period.

In 1992 and 1996, households whose heads took a second job were neither more nor less likely to escape poverty than households whose heads did not have an extra job, but in 2002 households with a second job were 6 percentage points more likely to escape poverty. The effect of a second job became hence poverty reducing after 1996, and a way for some rural families to escape or reduce household poverty. We discuss this in more detail in chapter 3.

Education and Skills

Complete levels of education of the household head and spouse are very important to escape poverty. All education variables in the three models are statistically significant and negatively correlated with the probability of being poor, starting with completed primary education. Controlling for other variables, educational attainment is

[100] Notice that unemployed is different from inactive. The latter indicating persons who are not in the labor force like for example retired persons, students, and other people not seeking employment.

the strongest correlate of poverty among the variables included in the right hand side of the regression. The negative effect of education on poverty (i.e. the positive effect for poverty reduction) increases with the level of completed education of the household head and the spouse.

The association between the likelihood of escaping poverty and having completed primary education in comparison with no or incomplete primary education has been rather constant, at around 10 percent over the last decade. The association of secondary education is larger. Between 1992 and 2002, households headed by persons with completed lower secondary education had a probability of being poor between 17 and 24 percent lower than their peers with no completed education. It is interesting that the probability of falling into poverty of secondary school graduates decreased between 1992 and 1996 and increased between 1996 and 2002, reaching in 2002 a level not much different from that of 1992. This is probably related to labor market adjustments after the *Tequila* crises (see Chapter 3). High returns from education in rural Mexico were observed by Taylor and Yúnez-Naude (2000) using different data: a sample of rural households in the states of *Michoacán*, *Jalisco, Coahuila* and *Puebla*. They show increases of 10 percent in household income per every year of household head schooling and 5.5 percent per every year of average schooling of other household members.

Human capital has many components. An important one, apart from formal education, is experience. In the labor market literature, experience is often proxied by the age of the worker. We include age and age squared as regression variables, the latter to capture possible non-linearities in the data. In all three regressions, age is positively associated with the probability of escaping poverty, becoming increasingly more poverty reducing during the decade. One more year of age decreases the likelihood of being poor by 2 percentage points in 2002, up from less than 1 percentage points in 1992. There does not seem to be a turning point in age when the probability of being poor starts to fall, since the age-square variable is not significantly different from zero.

Table 2.A.2 Probability of Being Poor in the Rural Areas of the Sur region and in those of Mexico as a whole, 1992 and 2002[1,2,3]

	1992									2002						
					Variables multiplied by Sur Region dummy									*Variables multiplied by Sur Region dummy*		
	DF/dx		**SE**	**P>|z|**	**dF/dx**		**SE**	**P>|z|**	**dF/dx**		**SE**	**P>|z|**	**dF/dx**		**SE**	**P>|z|**
Household Characteristics [4]																
Dependent below 5 years old+	0.21	***	0.018	0	0.069		0.056	0.205	0.216	***	0.017	0	0.025		0.039	0.521
Dependent 6 - 11 years old+	0.181	***	0.018	0	0.028		0.056	0.604	0.2198	***	0.02	0	-0.033		0.038	0.392
Dependent 12 – 14 years old+	0.118	***	0.02	0	-0.006		0.055	0.911	0.1341	***	0.02	0	0.023		0.042	0.582
Dependent 15 – 18 years old+	0.021		0.02	0.29	0.085		0.063	0.162	0.0542	***	0.02	0.004	-0.011		0.041	0.785
Dependent 18 – 25 years old+	-0.075	***	0.02	0	0.127	*	0.069	0.058	-0.0729	***	0.02	0	0.093	**	0.046	0.037
Dependent 65 and over+	0.055	***	0.021	0.01	0.013		0.064	0.835	-0.0081		0.02	0.671	0.045		0.04	0.265
Household Head																
Age +	-0.01	***	0.003	0.002	-0.007		0.005	0.146	-0.022	***	0.003	0	0.002		0.003	0.471
Age Square +	0	**	0	0.016	0		0	0.15	0	***	0	0	0		0	0.441
Female Head+	-0.035		0.029	0.24	0.049		0.094	0.596	-0.025		0.024	0.295	0.047		0.055	0.384
Education																
Head																
Primary Complete+	-0.091	***	0.021	0	-0.134	**	0.057	0.041	-0.128	***	0.019	0	0.086	*	0.052	0.094
Lower Secondary Complete+	-0.167	***	0.029	0	0.047		0.141	0.735	-0.196	***	0.022	0	0.123		0.08	0.113
Upper Secondary Complete+	-0.205	***	0.044	0.001					-0.25	***	0.031	0	0.07		0.124	0.565
Spouse																
Primary Complete+	-0.086	***	0.022	0	-0.022		0.081	0.785	-0.122	***	0.02	0	0.049		0.06	0.403
Lower Secondary Complete+	-0.138	***	0.033	0	-0.117		0.148	0.482	-0.186	***	0.024	0	0.047		0.086	0.583
Upper Secondary Complete+	-0.229	***	0.051	0.003	-0.035		0.284	0.905	-0.268	***	0.035	0	-0.204		0.143	0.274
Sector of Activity and Labor Status																
Head																
Unemployed+	-0.01		0.087	0.908					-0.017		0.092	0.855				
Not in the labor force+	0.044		0.039	0.249	-0.158		0.09	0.16	0.078	**	0.032	0.014	0.044		0.083	0.589
Agriculture																
Self employed+	-0.026		0.026	0.318	0.091		0.091	0.3	0.19	***	0.026	0	0.1387	**	0.07	0.03
Salaried worker+	0.144	***	0.027	0	-0.053		0.085	0.546	0.224	***	0.025	0	0.0459		0.07	0.48
Employer+	-0.165	***	0.027	0	-0.004		0.103	0.965	-0.054		0.048	0.274	0.0619		0.11	0.55
Off-Farm Sector																
Self employed+	-0.065	**	0.031	0.046	0.105		0.113	0.335	0.07	**	0.029	0.014	-0.071		0.06	0.29
Salaried worker+																
Employer+	-0.277	***	0.031	0	0.078		0.29	0.782	-0.165	***	0.053	0.008	0.1408		0.19	0.45
Second Employment +	0.039	**	0.018	0.029	-0.076		0.045	0.115	-0.054	***	0.018	0.003	-0.013		0.04	0.75
Social Security +	-0.235	***	0.019	0	-0.027		0.111	0.81	-0.241	***	0.019	0	0.0097		0.1	0.92
Spouse																
Employed in agriculture +	-0.023		0.033	0.498	0.068		0.107	0.511	0.038		0.031	0.218	0.1236	**	0.06	0.03
Employed in off-farm activity+	-0.085	***	0.024	0.001	0.178	**	0.084	0.029	-0.135	***	0.02	0	0.0607		0.05	0.21
Region [4]																
Locality < 2,500 inhabitants+	0.039	*	0.022	0.089	0.22	***	0.075	0.003	0.111	***	0.017	0	-0.078	**	0.04	0.05
Number of observations =	4743								6478							
Log Likelihood=	-2483.4								-3223.9							
LR chi2(53)=	1269.1								2286.8							
Prob>chi2=	0								0							
Pseudo R2=	0.2035								0.262							

line, (+) dF/dxis for discrete change of dummy variable from 0 to 1,*** sign. at 1%, ** sign. at 5%, * sign. at 10% level

Source: Authors estimations based on ENIGH 1992 and 2002. Note: 1Rural area defined as locality with less than 15,000 inhabitants; [2] SEDESOL's capacity poverty

Gender

Gender made a statistically significant difference for poverty in 1996 and, with smaller significance, in 2002, when female-headed households were less likely to be poor

than male-headed ones. Instead, in 1992 the probability of female-headed households being poor was not statistically different to that of male-headed households. This finding is different from that for other countries, for example Brazil, where male headed households have been found to have a lower probability of being poor (see Elbers *et al*, 2001), or in Ecuador where there seems to be no association between poverty and gender of the Household head (see World Bank, 2004c).

Household Composition

The presence of children or youth in the household makes it more poverty prone, but the probability of being poor falls monotonically with increasing child age. Households with children under 5 are more likely to be poor than childless families, and their higher probability of being poor has been rather constant over the past decade. This indicates that households with young children are vulnerable relative to those without children. One direct policy intervention would be to facilitate access to childcare. The poor often find the shortage of affordable childcare a large obstacle to their daily chores, and for mothers in particular an obstacle to find employment outside their homes. Households with children between 6 and 11 years have also higher probability of being poor than those without children, albeit the likelihood is lower than that for families with smaller children. For these households, the probability of being poor compared to those without children increased from 17 percent in 1992 to 25 percent in 1996, and fell to 22 percent in 2002. Households with young members between 15 and 18 experienced the same pattern in the likelihood of falling into poverty as households with children in the 6-11 year bracket, but the impact was significantly smaller.

The picture changes dramatically when the age of young household members increases to 19-25 years. Households with members aged 19 to 25 were significantly less likely to fall into poverty than households with no children. Having members in the household aged 19 to 25 can hence be considered a protective factor against poverty. The fact that young members enter the labor market and bring home an income contributes positively to the household's poverty situation. In the *Sur* region, however, households with young members do not experience the same lower probability of being poor in 2002, although the situation was different in 1992. This may be related to higher migration in 2002 with the drainage that this may entail of the more skilled and able.

The presence of older members (above 65 years of age) in the household makes it more poverty prone. In 2002, households with members of old age experienced a higher likelihood of poverty than those without them but the magnitude was lower than in 1992: 0.3 percent in 2002 compared to 5 percent in 1992.

Regions

Households in the *Norte*, *Pacifico*, *Capital*, and *Centro* were in general less likely to be poor than those in the *Centro-Norte* throughout the decade. On the contrary,

households in the *Golfo*, *Centro*, and *Sur* were more likely to be poor than those in the *Centro Norte.* In 2002, households living in the *Sur* and *Golfo* had roughly 20 percent more probability of being poor than households in the *Centro-Norte*. If we look at trends, the *Centro-Norte* improved its position *vis-à-vis* all other regions during the decade, since comparing 2002 with 1992 rural households in all regions had increased their probability of being poor relative to the *Centro-Norte*.

ANNEX 3A - Table 3.A.1. Rural Labor Force Characteristic by Household Dominant Source of Income in 1992

	Household Type[2]						
	Independent farming families	**Non-farm entrepreneurial families**	**Agricultural wage labor families**	**Non-farm wage labor families**	**Transfer dependent families**	**Diversified occupations families**	**Total**
Total Population	7,486,627	1,165,979	3,510,766	4,285,611	1,808,813	4,756,415	23,004,211
% of the total pop	32.5	5.1	15.3	18.6	7.9	20.6	100
Dependency ratio (%)	32.2	37.9	30	29.4	46.7	33.3	33.3
Mean family size	5.1	4.7	5.3	5	3.7	4.8	4.9
Individuals age 12 and over	4,840,289	749,240	2,206,363	2,738,874	1,176,516	3,118,553	14,829,835
Labor Force	2,524,375	378,880	1,153,762	1,414,281	440,279	1,726,559	7,638,136
Labor Force participation rate (%)	52.2	50.6	52.3	51.6	37.4	55.4	51.5
Employed individuals	2,499,682	360,726	1,127,923	1,342,466	417,300	1,670,952	7,419,049
% of the employed	33.7	4.9	15.2	18.1	5.6	22.5	100
Below the Food Poverty Line (%)	49.4	22.6	50.4	32.7	44.4	49.6	44.7
Below the Assets Poverty Line (%)	70.4	57.7	84.7	66.3	73.7	75.6	72.5
Labor force Characteristics							
Male (%)	82.5	72.4	84.9	78	66.3	71.6	78.2
Female (%)	17.5	27.6	15.1	22	33.7	28.4	21.8
Labor Status(%)							
Salaried Worker	11.7	13.7	89.6	82.8	29.8	46.9	45.4
Self-employed	45.6	58.8	6.4	9.6	43.7	33.5	30.9
Employer	12.4	7.2	0.5	1.9	11.9	4.9	6.7
Family worker/No -payment	30.4	20.3	3.6	5.6	14.6	14.7	16.9
Education Status (%)							
No education	28	18.1	21.7	15.9	27.4	25.2	23.7
Primary incomplete	38.3	31.2	48.3	30.5	31.1	40.2	38.1
Primary complete	25.5	33.7	23.6	33.5	25.9	23.9	26.7
Secondary complete	7	12.6	6.1	14.2	14	9	9.3
Higher education	1.2	4.5	0.3	5.9	1.6	1.7	2.2
Age Cohort (%)							
<15	5.8	1.3	4.8	2.1	3.3	6.1	4.7
15 to 25	29.5	33.8	37.7	36.3	26.9	27.3	31.6
26 to 40	29.3	31.7	35.4	35.9	25.6	30.7	31.7
41 to 60	24.5	27.8	18.9	22.7	28.9	26.2	24.1
>61	10.9	5.3	3.2	3	15.4	9.7	8

ANNEX 3A - Table 3.A.2. Rural Labor Force Characteristic by Household Dominant Source of Income in 1996

	Household Type[2]						
	Independent farming families	**Non-farm entrepreneurial families**	**Agricultural wage labor families**	**Non-farm wage labor families**	**Transfer dependent families**	**Diversified occupations families**	**Total**
Total Population	4,871,358	1,455,542	3,589,069	5,240,082	3,299,338	6,854,238	25,309,627
% of the total pop	19.25	5.75	14.18	20.7	13.04	27.1	100
Dependency ratio (%)	37.1	35.5	36.1	35.7	49.8	36.4	38.5
Mean family size	5.7	4.4	5.5	5.2	4	5.5	5.1
Individuals age 12 and over	3,174,679	988,851	2,303,657	3,432,518	2,075,416	4.588,715	16,563,836
Labor Force	1,995,618	599,509	1,307,653	2,060,679	978,172	2,948,224	9,889,855
Labor Force participation rate (%)	62.9	60.6	56.8	60	47.1	64.2	59.7
Employed individuals	1,976,992	591,623	1,281,215	1,975,215	947,653	2,874,460	9,647,158
% of the employed	20.5	6.1	13.3	20.5	9.8	29.8	100
Below the Food Poverty Line (%)	65.8	36	65	38.7	52	62.3	55.6
Below the Assets Poverty Line (%)	86	62	93	75.8	82	88.1	83.6
Labor force Characteristics							
Male (%)	71.9	67.2	81.4	71.4	58.1	64.7	69.3
Female (%)	28.1	32.8	18.6	28.6	41.9	35.3	30.7
Labor Status (%)							
Salaried Worker	8.9	11.9	83	81	29.5	40.3	45.1
Self-employed	41.8	53.3	9.2	11.8	40.9	35.9	30.2
Employer	9.6	13.6	0.2	0.9	9.2	3.8	5
Family worker/No -payment	39.8	21.3	7.6	6.3	20.4	20	19.7
Education Status (%)							
No education	25.1	12.3	20.5	10.2	20.8	21	19
Primary incomplete	38.9	34.9	40.4	27.8	41.2	36	36
Primary complete	26.3	27.6	31.3	28.7	25.5	28	28
Secondary complete	8.3	19	6.9	24.8	10.3	14	14
Higher education	1.4	6.2	0.9	8.6	2.2	3.1	3.1
Age Cohort (%)							
<15	8.8	4.1	5.6	3.1	8	5.2	5.8
15 to 25	29.5	25.5	35.9	34.1	26.6	31.6	31.4
26 to 40	27.7	32.3	30.8	39.4	25.6	27	30.4
41 to 60	25	27.4	21.3	18.6	22.7	26.2	23.5
>61	9	10.7	6.5	4.8	17.1	10	9

ANNEX 3A Table 3.A.3. Rural Labor Force Characteristic by Household Dominant Source of Income in 2002

	Household Type[2]						
	Independent farming families	**Non-farm entrepreneurial families**	**Agricultural wage labor families**	**Non-farm wage labor families**	**Transfer dependent families**	**Diversified occupations families**	**Total**
Total Population	2,164,003	1,818,435	4,092,171	6,441,023	5,139,094	5,139,094	25,052,549
% of the total pop	8.64	7.26	16.33	25.71	20.51	21.6	100
Dependency ratio (%)	33.23	36.13	34.65	29.79	48.88	32.6	36.54
Mean family size	4.3	4.49	4.53	4.66	3.6	4.5	4.31
Individuals age 12 and over	1,617,957	1,236,674	2,854,929	4,582,467	3,663,794	3,983,943	17,939,764
Labor Force	1,000,811	753,194	1,566,733	2,685,628	1,628,238	2,527,241	10,161,845
Labor Force participation rate (%)	61.9	60.9	54.9	58.6	44.4	63.4	56.6
Employed individuals	997,008	743,086	1,557,815	2,572,599	1,600,000	2,501,172	9,971,680
% of the employed	10	7.5	15.6	25.8	16	25.1	100
Below the Food Poverty Line (%)	39.2	28.2	48.7	18.5	49.4	47.1	38.5
Below the Assets Poverty Line (%)	68.4	53.2	85.5	57.6	79.2	75.7	71.1
Labor force Characteristics							
Male (%)	69.6	64.1	80.4	69.1	62.1	65	68.4
Female (%)	30.4	35.9	19.6	30.9	37.9	35	31.6
Labor Status (%)							
Salaried Worker	6.9	7.1	79.6	81.1	24.3	40.9	48.7
Self-employed	59.5	57.4	13.1	14.3	52.1	40.3	34.4
Employer	8.9	7.7	1	0.5	5.9	2.9	3.4
Family worker/No -payment	24.7	27.8	6.3	4.2	17.7	15.9	13.4
Education Status (%)							
No education	26.3	14.4	21.5	11.1	29.6	24	20.7
Primary incomplete	36.2	25.9	38.7	22.6	33.9	31	30.6
Primary complete	23.1	32.8	27.9	28.7	24.9	27.2	27.3
Secondary complete	11.3	20.4	11.7	22	10.8	13.8	15.3
Higher education	3.1	6.6	0.3	15.6	0.8	3.9	6
Age Cohort (%)							
<15	2.7	5.4	2.7	1.9	6.2	3.8	3.5
15 to 25	20.2	19.1	29.3	30.8	17.9	25.9	25.4
26 to 40	28.1	36.7	30.4	36.9	21.4	26.7	30
41 to 60	31.7	25	26.6	25.1	29.9	31	28.2
>61	17.3	13.8	10.9	5.4	24.6	12.6	13

Notes to Tables 3.A.1., 3.A.2., and 3.A.3.

Rural area defined as localities with less than 2,500 residents
Dependency ration defined as children below 12 and adults over 65 as a proportion of family size
Households classified according to the source of current income (measured per capita) in the following way:

- **Independent Farming:** Households with more than 50% of their income from independent farming and self-consumption
- **Non-farm Entrepreneurial:** Households with more than 50% of their income from independent non-farm activities
- **Agricultural Wage Labor:** Households with more than 50% of their income from agricultural wage labor
- **Transfer Dependent:** Households with more than 50% of their income from public and private transfers, including gifts
- **Non-Farm Wage Labor:** Households with more than 50% of their income from non-agricultural wage labor
- **Diversified Occupations:** Households with less than 50% of their income from any of the above

ANNEX 3B - Table 3.B.1. General Indicators of the Rural Labor Market, by Gender in Mexico[1]

Variable	1995		1996		1998		1999		2000		2001		2002		2003	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
GENERAL LABOR FORCE STRUCTURE																
Employed																
Mean Age	34.8	33.6	34.8	33.5	35.5	33.8	35.6	34.5	36.4	34.3	37.3	35	37.6	36	37.9	36.3
Years of Schooling	4.4	4.4	4.6	4.7	4.8	5	4.8	4.9	5	5.2	4.9	5.1	5	5.2	5.1	5.4
Hours worked per week	40.8	29.3	43.4	31.5	41.7	30.7	43.7	31.8	41.7	31.4	40.7	30.9	41	32.2	40	31.5
Labor Status																
Employer	3.7	1.1	4.9	1.6	2.7	0.9	2.7	0.9	2.7	0.6	3.5	1	3.2	1.1	3.1	1
Self-employed	36.3	29	36.7	26.4	37.2	29	38	29.7	37.2	30.2	38.1	34.2	37.3	34.8	37.8	35.5
Informal Salaried	18.7	13.9	18.7	15.4	20.7	15.9	22.4	14.8	23	16.5	24.7	16.1	26.2	17.7	27.5	17.8
Formal Salaried	9.2	10	8.6	9.1	9.3	9.1	8.8	9.9	9.4	10.8	9.8	13.2	9.2	10.5	8.1	12.5
Contract	5	2.8	3.8	3.7	4.7	4.2	3.4	4.5	5.2	6.4	3.8	5	3.5	4.5	3.8	3.9
Family Worker	20.8	39.5	21.3	39.5	20.4	35.3	19.5	35.2	16.4	30.2	15.6	26.2	16.8	26.3	16	25
Other	6.4	3.8	6	4.3	5.1	5.7	5.1	5	6.1	5.3	4.5	4.4	3.8	5.1	3.8	4.3
Sector of Activity																
Agriculture	71.6	37.7	71.7	40.9	68.8	34.3	71.5	36.1	66.7	29.1	68.8	26	68.5	27.4	66.9	25
Industry	12.3	10.1	13.9	15.9	15.7	20.4	13.4	20.5	17.7	25.1	16.2	27.2	15.4	23.7	16.8	23.6
Services	16	52.1	14.4	43.2	15.5	45.3	15.1	43.4	15.6	45.7	15	46.9	16.1	48.9	16.3	51.4
Labor Force Education Status																
No education / Primary Incomplete	57.1	56.5	54.7	54.3	52.7	51	52.8	51.1	51.5	48.8	51.2	48	49.4	46.4	47.7	44.8
Primary Complete	28.5	25.1	28.7	27	29.9	28.9	29	27.9	29.3	28.1	28.7	28.7	29.2	28.5	29.5	27.7
Lower Sec. Complete	10.8	9.7	12.1	10.9	12.9	12.3	14.1	12.6	14.2	14.4	14.8	14.9	16	16.1	17.6	17.8
Upper Sec. Complete	1.2	1.8	1.7	1.4	2.1	2	2	2.3	2.4	2.7	2.4	2.6	2.7	3.1	2.6	3.1
Higher Education	0.9	1.6	1.2	2	1.1	1.8	1	1.9	1.5	2	1.5	2.3	1.5	2.5	1.7	3.3
Technical	1.5	5.4	1.7	4.4	1.3	3.9	1	4.2	1	3.8	1.4	3.6	1.2	3.5	1	3.4

Source: ENE 1995-2003, 2nd quarter.

[1] Rural areas defined as localities with less than 2,500 inhabitants.

Annex 3.C. - Table 3.C.1. Rural[1] Labor Markets Indicators in Mexico, by Region.

Not in the labor force									
Region	**1995**	**1996**	**1997[2]**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Total	7,279,960	7,168,950	8,175,566	7,134,766	7,373,689	7,918,307	8,288,969	8,320,254	8,599,179
Norte	822,433	655,958	722,777	605,943	637,113	674,210	695,430	718,416	715,469
Capital	477,821	375,912	587,016	452,521	527,124	516,253	565,549	623,060	705,628
Golfo	1,531,541	1,276,139	1,308,778	1,285,842	1,291,970	1,380,364	1,630,660	1,602,782	1,614,280
Pacifico	517,435	657,019	808,074	678,244	738,489	749,667	683,514	727,102	702,618
Sur	1,581,378	1,849,748	2,027,270	1,788,119	1,775,037	2,033,804	2,169,255	2,248,395	2,403,730
Centro-norte	1,178,860	1,411,504	1,808,104	1,414,121	1,457,901	1,462,524	1,498,163	1,393,099	1,458,492
Centro	1,170,492	942,670	913,547	909,976	946,055	1,101,485	1,046,398	1,007,400	998,962
In the Labor Force									
Region	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Total	9,808,413	9,316,996	10,915,253	9,463,444	9,490,050	9,302,190	9,128,347	9,430,459	9,265,957
Norte	898,803	856,325	1,268,799	881,232	856,799	816,414	790,204	788,055	779,539
Capital	604,507	858,955	1,100,605	736,685	674,049	737,411	721,378	665,976	605,635
Golfo	1,768,582	1,538,406	1,470,448	1,677,011	1,708,643	1,730,994	1,507,139	1,556,638	1,540,116
Pacifico	589,533	934,075	1,169,803	955,607	889,055	869,426	937,779	983,581	977,527
Sur	2,944,769	2,535,458	2,879,795	2,619,908	2,718,212	2,596,868	2,545,112	2,605,679	2,549,012
Centro-norte	1,397,501	1,435,311	1,639,633	1,415,729	1,470,445	1,459,124	1,443,330	1,581,671	1,538,886
Centro	1,604,718	1,158,466	1,386,170	1,177,272	1,172,847	1,091,953	1,183,405	1,248,859	1,275,242
Employed									
Region	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Total	9,605,455	9,210,159	10,792,852	9,389,503	9,454,164	9,243,682	9,060,090	9,354,843	9,202,363
Norte	879,776	842,808	1,244,061	868,143	848,743	809,473	776,213	774,597	766,160
Capital	587,435	835,218	1,073,021	721,862	673,813	728,755	718,698	653,356	603,310
Golfo	1,725,884	1,523,797	1,450,252	1,666,032	1,702,035	1,723,682	1,495,798	1,547,849	1,537,097
Pacifico	574,003	920,261	1,153,411	949,795	883,310	863,937	931,328	974,269	973,019
Sur	2,914,843	2,526,662	2,876,724	2,615,837	2,715,399	2,585,943	2,538,637	2,595,379	2,539,804
Centro-norte	1,347,671	1,417,006	1,630,967	1,405,679	1,461,728	1,448,949	1,433,406	1,569,048	1,516,329
Centro	1,575,843	1,144,407	1,364,416	1,162,155	1,169,136	1,082,943	1,166,010	1,240,345	1,266,644
Unemployed									
Region	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Total	202,958	106,837	122,401	73,941	35,886	58,508	68,257	75,616	63,594
Norte	19,027	13,517	24,738	13,089	8,056	6,941	13,991	13,458	13,379
Capital	17,072	23,737	27,584	14,823	236	8,656	2,680	12,620	2,325
Golfo	42,698	14,609	20,196	10,979	6,608	7,312	11,341	8,789	3,019
Pacifico	15,530	13,814	16,392	5,812	5,745	5,489	6,451	9,312	4,508
Sur	29,926	8,796	3,071	4,071	2,813	10,925	6,475	10,300	9,208
Centro-norte	49,830	18,305	8,666	10,050	8,717	10,175	9,924	12,623	22,557
Centro	28,875	14,059	21,754	15,117	3,711	9,010	17,395	8,514	8,598

Source ENE 2nd quarter, various years.

[1] Rural area defined as localities with less than 2,500 inhabitants

[2] The 1997 survey has some sampling problems for the rural areas, according con INEGI's staff

ANNEX 3.D. - Table 3.D.1. Share of the Workforce by Primary Occupation[a]

	1995				2003			
	Labor Composition		Mean Hourly Wage[c]		Labor Composition		Mean Hourly Wage	
	Urban	Rural[b]	Urban	Rural	Urban	Rural	Urban	Rural
Agriculture	9.63	62.82	12.04	8.3	5.4	55.61	13.46	7.44
Cultivation	7.71	53.75	11.4	7.79	4.25	43.38	12.92	6.76
Animal rearing	1.35	5.13	14.47	9.18	0.69	6.02	14.3	9.3
Forest product	0.09	1.02	11.98	13.35	0.04	1.27	12.12	9.44
Fishing	0.47	2.92	13.17	11.37	0.41	4.95	16.74	11.1
Mining/extraction	0.34	0.68	18.63	12.67	0.39	0.13	36.55	16.59
Manufacturing	24.75	11.05	17.14	11.78	26.26	18.51	19.07	12.35
Food processing	3.26	1.23	14.11	13.11	3.75	3.22	16.57	10.85
Beverages	0.69	0.18	15.12	13.93	0.68	0.18	19.69	10.51
Tobacco products	0.05	0.02	21.11	14.19	0.01	0	26.86	
Textiles	0.74	0.87	15.75	10.13	0.98	0.94	15.88	7.14
Clothing	2.05	1.44	13.91	9.53	2.24	2.44	14.55	9.2
Leather	0.19	0	17.08	9.08	0.14	0.11	22.37	8.64
Footwear	0.61	0.04	15.05	8.75	0.52	0.01	19.58	7.51
Wooden goods	0.48	0.45	18.16	10.44	0.44	1.08	17.95	9.22
Furniture	0.91	0.62	14.72	11.84	0.95	0.82	18.45	12.78
Paper	0.39	0.08	16.01	10.91	0.35	0.11	18.27	12.83
Printing	0.91	0.06	17.81	18	0.72	0.02	21.31	13.36
Chemical	0.86	0.21	26.03	15.06	0.48	0.03	31.87	19.8
Plastic/rubber	0.81	0.16	20.73	12.03	0.77	0.13	18.48	12.93
Ceramic/cement	1.08	0.55	17.97	8.7	0.83	1.13	18.03	12.28
Pharmaceuticals	0.22	0	27.21		0.2	0.02	32.99	24.36
Cosmetics	0.26	0	15.75		0.23	0.09	17.8	11.56
Metals	0.38	0.04	23.06	17.4	0.26	0.03	24.1	16.96
Machinery	1.98	0.21	17.75	11.32	2.07	0.55	19.92	15.47
Electronic goods	1.08	0.12	16.66	9.49	1.17	0.08	19.94	13.34
Vehicles	1.39	0.1	17.39	15.09	1.51	0.49	20.31	14.29
Precision instruments/others	0.43	0.03	19.31	13.04	0.56	0.09	18.11	16.44
Construction	5.68	4.59	17.28	12.46	6.75	6.81	19.61	14.53
Utilities	0.31	0.05	26.8	19.34	0.66	0.12	26.75	18.31
Commerce	21.15	11.66	16.6	10.78	21.54	9.97	17.16	10.53
Wholesaling	3.05	0.72	21.49	12.72	3.33	0.7	21.25	13.01
Formal sales	14.33	8.99	15.36	10.09	18.21	9.27	16.33	10.3
Street sales	3.77	1.95	16.66	12.67	0	0	0	0
Services	44.14	13.79	21.74	13.94	46.41	15.77	23.02	14.13
Hotel/Restaurant	5.74	1.6	15.37	11.26	6.31	2.32	16.99	12.18
Transport	4.78	1.84	18.21	13.82	4.88	1.56	19.99	14.28
Communications	0.46	0.13	25.83	14.48	0.58	0.06	27.58	9.01
Financial services	1.25	0.04	35.14	24.38	0.9	0.03	31.19	21.16
Professional services	2.92	0.29	24.52	9.98	4.05	0.44	25.19	13.48
Education	6.15	1.78	34.73	26.4	5.89	2.13	37.7	26.28
Arts/entertainment	1.25	0.26	22.58	16.21	1.42	0.35	25.06	16.27
Medical services	3.06	0.47	25.28	16.55	3.41	0.64	30.13	18.07
Servicing/repair	8.26	2.57	17.08	12.38	7.33	2.21	18.24	13.53
Personal services	4.81	2.98	12.63	10.19	5.71	3.96	14.18	9.65
Renting services	0.23	0.05	26.09	10.81	0.25	0.02	26.33	13.94
Government	5.12	1.72	24.18	12.81	5.66	2.04	27.28	15.98
NE	0.11	0.08	12.62	8.87	0.03	0	14.68	
Non-agricultural Total	90.37	37.18			94.6	44.39		
Employed	24,267,941	9,605,455			31,430,834	9,202,363		

Source: ENE 1995 and- 2003.

[a] People age 12 and over. [b] Localities with less than 2,500 inhabitants. [c] 2002 pesos.

ANNEX 3.E. - Table 3.E.1. Mean Hourly Wage (2002 Pesos) for Rural Laborers by Gender in Mexico. Selected years 1995-2003[1]

	1995		1996		1998		1999		2000		2001		2002		2003	
Variables	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Labor Status																
Employer	13.2	14.9	11.3	10.1	14.8	10.9	14.5	13.6	15.8	15.3	15.1	9.6	15	13.9	16.7	13.1
Self-employ	8.5	9.5	6.8	8.2	6.7	7.4	5.6	7.2	6.7	8.2	5.9	7.9	6.4	7.7	6.9	8.5
Informal Salaried	9.1	8.9	7.5	6.4	7.6	6.2	7.2	6.2	8.3	7	9.2	7.7	9.7	8.5	10.9	8.8
Formal Salaried	14.2	17	12.3	13.5	12.9	14	12.1	12.8	14.1	14.3	14.3	13.9	14.7	15.1	15.7	16.1
Contract	12.2	9.6	11.2	8.8	10	7.8	9.8	8.1	10.1	6.7	11.7	9	12.1	7.7	12.7	9.1
Other	11.1	9.4	8.7	8.9	8.9	10.6	9.2	8.7	10.6	11.3	11.8	10.7	11.9	12.1	13.2	14.5
Sector of Activity																
Agriculture	8.3	7.9	6.7	6.8	6.8	7.3	6	7.2	6.8	7.1	6.6	7.6	6.7	6.9	7.4	7.4
Industry	12.4	9.5	10.3	7.6	10.3	7	10	7.3	11.5	8.3	12.6	8.6	13.2	7.9	14	8.9
Services	13.9	11.4	12.3	9.4	11.5	9.3	10.7	8.5	12.7	9.8	13.6	9.8	14	10.5	14.5	11.4
Labor Force Education Status																
No education / Primary Incomplete	9	9.2	7.1	7.4	7.1	6.8	6.3	6.7	7.4	7.4	7.3	7.8	7.5	7.2	8.2	8.2
Primary Complete	10.7	9.2	9.1	7.5	9	7.8	8	7.7	9.4	8.7	9.5	8.9	10.3	9.2	10.8	9.6
Lower Secondary Complete	12	10.2	9.9	9.2	9.5	9.2	9.8	8.8	10.7	9.7	11	9.9	11.3	10.5	11.9	10.9
Upper Secondary Complete	14.6	16.5	13.2	16.8	12.9	16.7	12.1	10.4	13.7	12.6	14	12.7	12.7	14.1	15.4	16.8
Higher Education	27.3	34.5	22.5	28.7	23.8	26	20.4	21.8	25.2	27.5	25.3	27.1	24.6	27.8	25	28.2
Technical Education	19.3	18	15.1	14.4	17	14.2	13.7	13.8	16	15.1	14.3	15.8	14.6	14	16.4	16.2

Source: ENE 1995-2003, 2nd quarter. [1] Rural areas defined as localities with less than 2,500 inhabitants

ANNEX 3.F. WAGE CORRELATES USING QUANTILE REGRESSION

A. Methodology

Economic model

The underlying economic model used in the analysis will simply follow Mincer's (1974) human capital earnings function extended to control for a number of other variables that relate to location. In particular, we apply a semi-logarithmic framework that has the form:

$$\ln y_i = \phi(x_i, z_i) + u_i \qquad (1)$$

where $\ln y_i$ is the log of earnings or wages for an individual i, x_i is a measure of a number of personal characteristics, including human capital variables, ethnicity, etc.; and z_i represents location specific variables—for instance, metropolitan living. The last component, u_i, is a random disturbance term that captures unobserved characteristics The functional form is left unspecified in equation (1).

Quantile regression

Labor market studies usually make use of conditional mean regression estimators, such as Ordinary Least Squares. This technique is subject to criticism because of the often heroic assumptions underlying the approach. One is the assumption of homoskedasticity in the distribution of the error terms. If the sample is not completely homogenous, this approach, by forcing the parameters to be the same across the entire distribution of individuals, may be too restrictive and may hide important information.

The method applied in this paper is quantile regression. The idea is that one can choose any quantile and thus obtain many different parameter estimates on the same variable. In this manner the entire conditional distribution can be explored. By testing whether coefficients for a given variable across different quantiles are significantly different, one implicitly also tests for conditional heteroskedasticity across the wage distribution. This is particular interesting for developing countries where wage disparities are large and returns to, for example, human capital may vary across the distribution.

The method has many other virtues apart from being robust to heteroskedasticity. When the error term is non-normal, for instance, quantile regression estimators may be more efficient than least square estimators. Furthermore, since quantile regression minimizes a weighted sum of absolute deviations, the estimated coefficient vector is not sensitive to outlier observations on the dependent variable.[101]

The main advantage of quantile regressions is the semi-parametric nature of the approach, which relaxes the restrictions on the parameters to be fixed across the entire distribution. Intuitively, quantile regression estimates convey information on wage differentials arising from non-observable characteristics among individuals otherwise observationally equivalent. In other words, by using quantile regressions, we can determine if individuals that rank in different positions in the conditional distribution (i.e., individuals that have higher or lower wages than predicted by observable characteristics) receive different premiums to education, tenure, or to other relevant observable variables.

Formally the method, first developed by Koenker and Basset (1978), can be formulated as[102]

$$y_i = x_i'\beta_\theta + u_{\theta i} = \text{Quant}_\theta(y_i \mid x_i) = x_i'\beta_\theta \qquad (2)$$

where $\text{Quant}_\theta(y_i \mid x_i)$ denotes the θth conditional quantile of y given x, and *i* denotes an index over all individuals, *i* = 1,…,n.

In general, the θth sample quantile ($0 < \theta < 1$) of y solves

$$\min_\beta = \frac{1}{n}\left\{ \sum_{i:y_i \geq x_i'\beta} \theta \mid y_i - x_i'\beta \mid + \sum_{i:y_i < x_i'\beta} (1-\theta) \mid y_i - x_i'\beta \mid \right\} \qquad (3)$$

Buchinsky (1998) examines various estimators for the asymptotic covariance matrix and concludes that the *design matrix bootstrap* performs the best. In this paper, the standard errors are obtained by bootstrapping, using 200 repetitions. This is in line with the literature.

B. Main results

We compare workers located at different points in the wage distribution to analyze this issue. The wage determination model is based on the ENE survey from 2003 (2nd quarter) using quantile regression (see above for details on the quantile method). Wages are compared across workers grouped by gender, education, experience, labor

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[101] That is, if $y_i - x_i'\hat{\beta}_\theta > 0$, then y_i can be increased toward + ∞, or if $y_i - x_i'\hat{\beta}_\theta < 0$, y_i can be decreased toward -∞, without altering the solution $\hat{\beta}_\theta$. In other words, it is not the magnitude of the dependent variable that matters but on which side of the estimated hyperplane the observation is. This is most easily seen by considering the first-order-condition, which can be shown to be given as (see Buchinsky 1998) $\frac{1}{n}\sum_{i=1}^{n}(\theta - \frac{1}{2} + \frac{1}{2}\text{sgn}(y_i - x_i'\hat{\beta}_\theta))x_i = 0$.

This can be seen both as a strength and weakness of the method. To the extent that a given outlier represents a feature of "the true" distribution of the population, one would prefer the estimator to be sensitive to such an outlier – at least to a certain degree.

[102] See Buchinsky (1998).

status, and location[103]. Results for rural areas with more than 15,000 inhabitants are presented in Table 3.F.1. We analyze for each quantile how the above variables explain the wage at the quantile, and also whether the impact of individual characteristics on wages is homogeneous across the wage distribution. Findings indicate that wages are by no means determined in the same way for high and low paid workers. For example, female workers are paid much less than males working in the high end of the wage distribution relative to their peers in the low end of the distribution, and returns to lower levels of education are far smaller in the upper income quantiles than in the lower ones.

All coefficients of the explanatory variables included have the expected signs and are statistically significantly different from zero for all quantiles. In the following pages we discuss the results obtained for each of the explanatory variables: (1) education, (2) experience, (3) labor market association, (4) occupation and employment sector, (5) gender, and (6) disperse rural area and regional location.

[103] Wages are modeled using log monthly wages as the dependent variable. The general wage model contains explanatory variables in levels and allows for non-linearities in the data. For example, the log wage equation is found to be non-linear in education and experience, indicating that returns to education and experience are not constant but decreasing over the life cycle. The model contains dummy variables that take the value of one if, for example, a worker holds a job in the formal sector, and zero otherwise. A positive dummy variable in this example reveals that there is a wage premium in formal employment related to informal employment. We use standard quantiles, namely the 10th, 25th, 50th, 75th, and 90th quantiles.

Table 3.F.1. Wage Determination in Rural Mexico (Quantile Regression), 2003

	Quantile									
Log monthly labor income	**0.1**		**0.25**		**0.5**		**0.75**		**0.9**	
	Coeff	**SE**	**Coeff**	**SE**	**Coeff**	**SE**	**Coeff**	**SE**	**Coeff**	**SE**
Worker Characteristics										
Age	0.054	0.004	0.049	0.002	0.043	0.002	0.038	0.001	0.038	0.002
Age Square	-0.001	0	-0.001	0	-0.001	0	0	0	0	0
Married woman w/o children	-0.271	0.049	-0.289	0.065	-0.261	0.025	-0.288	0.038	-0.248	0.04
Married woman with children	-0.443	0.026	-0.371	0.019	-0.321	0.013	-0.329	0.013	-0.336	0.016
Single woman w/o children	-0.317	0.03	-0.303	0.016	-0.33	0.009	-0.351	0.011	-0.33	0.013
Single woman with children	-0.255	0.031	-0.252	0.022	-0.28	0.016	-0.327	0.014	-0.35	0.017
Labor Status										
Employer	0.218	0.061	0.388	0.027	0.507	0.024	0.593	0.031	0.71	0.035
Self-employed	-1.516	0.052	-1.163	0.028	-0.623	0.014	-0.278	0.016	-0.118	0.026
Informal Salaried	-0.116	0.036	-0.12	0.017	-0.133	0.012	-0.173	0.013	-0.255	0.027
Formal Salaried	0.418	0.027	0.235	0.017	0.139	0.015	0.079	0.017	*0.012*	*0.032*
Contract	-0.901	0.066	-0.439	0.039	-0.16	0.022	-0.071	0.023	*-0.024*	*0.036*
Education										
Primary Complete+	0.258	0.016	0.245	0.016	0.202	0.011	0.175	0.011	0.173	0.013
Lower Secondary Complete+	0.42	0.023	0.367	0.016	0.296	0.013	0.269	0.011	0.264	0.015
Upper Secondary Complete+	0.523	0.03	0.495	0.018	0.456	0.02	0.456	0.02	0.51	0.024
University Complete	0.956	0.036	0.98	0.021	0.986	0.022	0.988	0.019	1.03	0.03
Technical Education	0.633	0.03	0.579	0.022	0.537	0.022	0.536	0.024	0.624	0.033
Region [3]										
Norte +	0.376	0.035	0.376	0.019	0.376	0.019	0.253	0.012	0.274	0.026
Capital+	0.363	0.046	0.325	0.022	0.325	0.022	0.187	0.014	0.152	0.025
Golfo +	-0.105	0.034	-0.086	0.023	-0.086	0.023	-0.088	0.015	-0.081	0.013
Pacifico+	0.372	0.038	0.343	0.022	0.343	0.022	0.198	0.014	0.186	0.012
Sur+	0.101	0.028	*-0.022*	*0.023*	-0.022	0.023	-0.038	0.013	-0.039	0.015
Centro-Norte+	0.215	0.037	0.202	0.025	0.202	0.025	0.104	0.012	0.093	0.014
Locality < 2,500 inhabitants+	-0.156	0.016	-0.192	0.011	-0.192	0.011	-0.141	0.009	-0.123	0.012
Constant	5.616	0.088	6.218	0.063	6.218	0.063	7.213	0.034	7.491	0.052

[1] Rural area defined as localities with less than 15,000 inhabitants.

Source: Calculations based on ENE 2003, 2nd quarter. Note: figures in italics are statistically significant at 10 percent only.

Education

Human capital has long proven to be important in enhancing economic growth.[104] A more educated workforce is likely to increase productivity by virtue of being more flexible and innovative, and to facilitate the adoption and use of new technologies. Knowledge about wage differentials or gaps due to education serves at least three different purposes. First, wage differentials reveal the magnitude of the incentives that workers have to acquire education, and hence the incentives for educational demand by individuals. Second, information of the impact of education on wages makes it possible to assess whether it is worth investing in this area with preference to others. Third, wage differentials disclose how the labor market translates educational inequalities into wage inequalities –a useful information to reduce inequality. Furthermore, the relation between education and wage levels links education to labor productivity and thus points to the magnitude of the contribution of education

[104] See, for example, Barro (1991) and Mankiw, Romer, and Weil (1992).

to economic growth. It is of interest, therefore, to estimate the association between different levels of education and experience and money wages[105].

Results in Table 3.F.1 confirm the findings of many other studies, namely that education plays an important role in the wage determination process. Better-educated individuals earn higher wages than their less-educated peers.

Wages vary according to education levels.[106] In this analysis, we compare workers who have not completed any level of education (the reference group) with workers who have completed primary school, lower secondary school, higher secondary school, tertiary education, and some form of technical education.[107] In 2003, the association with the wage level of primary, lower secondary, upper secondary, tertiary, and technical education relative to no or incomplete primary education was positive at all quantiles, controlling for other individual characteristics. Having completed primary education contributes to better wages, and the premium increases rapidly with the level of education attainment. Compared to the wages of non-educated workers and those with incomplete primary, median wages of workers with complete primary, lower secondary, upper secondary and tertiary education were respectively 22, 34, 58, and 168 percent higher[108]. Workers with complete technical education received a 71 percent higher return compared to peers with no complete education. Better-educated individuals in rural Mexico earn therefore dramatically higher wages than their less-educated counterparts.

Returns across the wage distribution are fairly constant for workers with complete upper secondary and tertiary education, i.e. workers in the low end of the income distribution are not being paid comparatively less than their peers in the high end. This would seem to indicate that: (1) there is no wide heterogeneity in the quality of education in rural areas across the wage distribution, and (2) the capacity of workers to convert their educational capital into higher earnings through labor market networks is

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[105]An issue to be flagged is the possible endogeneity of education in the regression. There is vast evidence of a positive correlation between earnings and education but it is difficult to decide whether the higher earnings observed for better educated employees are caused by their higher level of education, or whether employees with more earning capacity have chosen to acquire more education. Also to be flagged is that wage levels are not only related directly to education as stated in the wage equation but also indirectly through the relation between education and labor status –a choice variable. Education may affect the choice of labor status (e.g. being an employer) and in turn affect the level of wage derived by an employer. The importance of education is hence likely to be underestimated in our wage equation.

[106] Unmeasured ability and measurement error problems have been dealt with in the literature applying data on twins, see for example Card (1998) and Arias, Hollack, and Sosa (1999).

[107] According to the so-called "sheepskin effect" there are wage premiums for completing the final year of elementary school, high school, or university. It has been argued that credentials such as a school diploma or university degree are more important than years of schooling *per se*. This is one of the reasons for not having a continuous education variable in the regression.

[108] The percentage return is calculated as (exp (coefficient estimate) – 1) * 100. All figures presented in the following paragraphs are percentage premiums thus calculated from the marginal coefficients in Table 3.5.

similar for poorer and richer workers. Hence, poor people with education seem to benefit from good labor market connections to the same degree as richer people.

Workers with complete primary and lower secondary education face decreasing returns across the wage distribution, i.e. those at the low end are paid proportionally more than those at the high end, indicating that workers with the same level of education are not compensated equally. The poor (10th quantile) receive a wage premium when completing primary education of 29 percent, while the rich (90th quantile) receive only 19 percent. In the case of lower secondary schooling, workers in the low end (10th quantile) obtain a premium of 52 percent, while workers in the top end (90th quantile), obtain only 30 percent. One possible explanation is that social networks that facilitate labor market connections operate better among the poorer than the richer segments of the rural labor force. Another is that these levels of schooling are more relevant for employers hiring workers at the low than at the high end of the wage distribution.

Experience

There are several reasons for including experience in the analysis. One is that experience, together with education, provides flexibility in adapting to changes in technology or other economic changes. Experience and years of schooling are widely used in analyses of wage determination (see Mincer 1974, and Levy and Murnane 1992). The proxy used here is general experience gauged by the age of the worker. We use two variables, age and age squared, to take into account possible non-linearities.

We investigate two questions: (1) is experience important to explain wages? and (2) are returns to experience homogeneous across the population? According to the results presented in Table 3.5 the answer is yes to the first question and no to the second one. The experience (age) coefficient is significantly different from zero and positive for all five quantiles, controlling for other individual characteristics. The impact of experience on wages is positive and increases until workers reach 49 years of age. Thereafter, the returns fall in all quantiles. One explanation may be that older workers adapt less easily than younger ones to new technologies or they are simply less productive because of their age. Returns to experience tend to fall as we move up the wage distribution, but the variation is not large.

Labor market association

Workers in the informal sector obtain a significantly lower pay after controlling for other variables. The negative impact of informality increases across the wage distribution; a worker in the 10th quantile has an 11 percent wage discount because of informality, whereas a worker in the 75th quantile has a discount of 16 percent. The informal sector generally provides lower quality jobs than the formal one. Since higher quality jobs may require more skills, the informal sector variable may be capturing skill

differences not signaled by other variables included in the regression. The wage gap may also be due to lower productivity in the informal sector relative to the formal one not captured by education and experience.

Labor status

The labor status of workers is included as another determinant of wages, taking "other workers" as the reference group. Coefficients for all occupational groups included are statistically significant at the 99 or 95 percent level (except contract workers and formal salaried workers at the 90th quantile). Looking at the median of the distribution, employers obtain the highest return: 66 percent. For the 90th quantile, the premium gap is even larger: 103 percent. The self-employed, informal salaried and contract workers are systematically worse off than "other workers", particularly the self-employed. It is interesting that in the case of self-employed and contract workers the negative gap decreases sharply as we move up the wage distribution. Thus, richer self-employed and contract workers are not as penalized with respect to "other workers" as poorer ones. The opposite is the case with informal salaried workers.

Gender

Discrimination takes place when otherwise identical persons are treated differently by virtue of personal characteristics such as ethnicity or gender. Estimating economic discrimination is difficult. Worker productivity is seldom observed directly, so other variables must be used to proxy for the relevant productivity characteristics. The crucial problem is to assess (1) whether relevant omitted characteristics differ according to ethnicity or gender, and (2) whether included characteristics directly capture productivity differences or are instead proxies for ethnicity or gender. The following section reports findings on gender differences. In chapter 7 we report results from Ramírez and García (2004) and de Janvry and Sadoulet (2001) related to ethnic discrimination. The analysis includes four gender variables: married women with and without children, and single women with and without children. The reference group is male workers.

Regression results show large inequalities between men and women. Female wages are significantly different from male wages at all quantiles. Results also suggest that the gender gap is homogeneous across quantiles for women without children (married and single), but heterogeneous across quantiles for women with children (married and single). Married women with children experience the largest wage gap at the low end of the distribution; they obtain 36 percent lower wages than their male peers in the 10th quantile, with the gap narrowing along the distribution to reach 28 percent at the 90th quantile.

The gender gap may be explained to some degree by choice of jobs by women. Women are more likely to select more flexible jobs. They may choose, for example, part

time jobs or jobs with lower working hours than men[109]. A second factor may be gender differences in unmeasured skills. Education levels are taken into account in the regressions, but the skill level of some women may be lower than that of men for some jobs, and they may also be under-capitalized in terms of actual job experience. Direct discrimination may hence be less strong than it appears from the results in Table 3.5.

Disperse Areas and Regional Effects

Data in Table 3.5 refers to rural areas defined as settlements of less that 15,000 residents. We have included in the regression a dummy variable for settlements of less than 2,500 residents to see if dwellers of disperse rural areas experience significant differences in wages compared to those in semi-urban settlements. We have also included dummies for the various geographical regions, taking as reference the *Centro* region.

Regression results show that workers in disperse rural areas are paid significantly less than workers in semi-urban rural areas, after controlling for other factors. The semi-urban –disperse rural wage gap is significantly different from zero for all quantiles and varies across the wage distribution. It increases from the 10th to the 50th quantile and declines from the 50th to the 90th, controlling for other covariates. The semi-urban premium is 12 percent for the median worker. One possible explanation for this gap is that prices, for example that of urban land, are higher in semi-urban areas, and hence the higher wage is a compensation for this —a reflection of the fact that semi-urban workers have a labor supply curve above that of disperse rural workers. Another possible explanation is that work opportunities, i.e. labor demand, are higher in semi-urban areas, pushing up wages.

All regions with the exception of the *Golfo* and *Sur* enjoy a wage premium with respect to the *Centro,* and this is consistent across the whole distribution (except for the *Sur*). The *Norte, Capital* and *Pacífico* regions have the highest premiums. Workers in the *Sur* have an advantage over their peers in the *Centro* (but not over those in other regions) in the bottom part of the distribution, which they soon lose as we move up to higher quantiles.

[109] On average Mexican female workers work 24 percent fewer hours than their male peers. See annex Table 3.B.1

ANNEX 3.G. - TABLE 3.G.1. INCOME SHARES BY SOURCE AND CONSUMPTION QUINTILE IN RURAL MEXICO 1992, LOCALITIES OF LESS THAN 2,500 RESIDENTS

	Agriculture Income Sources						Non-agricultural Income Sources								
	Crop Farming (%)	Other Farming[a] (%)	Food Self-Cons-umption (%)	Wage Labor in Crops (%)	Wage Labor in Others[a] (%)	Total Agricul-ture Income (%)	Low-return[b] non-farm wage income (%)	High-return[b] non-farm wage income (%)	Non-farm Entrep. Income (%)	Remit-tances (%)	Other privat e transfe rs (%)	Direct Public Transfers (%)	Other Income Sources[c] (%)	In-kind Payment and Imputed Rent (%)	Total Non-Agricul -ture Income (%)
Total	17.9	11.9	8.7	10.2	2.1	**50.8**	15.5	4.9	8.1	2.7	4.1	0.2	1	12.6	**49.2**
Rural per capita consumption quintile															
Bottom	17.4	12.7	16.4	20.5	2.8	**69.8**	10.2	1.1	3.2	0.6	3	0.5	0.2	11.5	**30.2**
2nd	19.8	12.4	14.9	15.4	2.2	**64.8**	10.1	1.5	5.1	1.5	4.1	0.1	0.6	12.2	**35.2**
3rd	17.4	10.5	10.8	12.4	2.5	**53.5**	21.6	2.2	5.1	1.4	3.1	0.3	0.3	12.4	**46.5**
4th	19.8	11.3	6.9	10.6	2.1	**50.7**	15.6	4.1	9.5	1.9	5.9	0.2	0.4	11.7	**49.3**
5th	16.8	12.4	6.3	6.5	1.8	**43.8**	15.7	7.5	9.8	4.2	3.7	0.2	1.7	13.5	**56.2**
Poor/non poor (food poverty line)															
Non-poor	18.9	12.5	7.2	8.9	1.9	**49.4**	15.7	5.6	8.8	3	4.2	0.2	1.1	12	**50.6**
Poor	13.2	8.8	16.1	16.6	3	**57.7**	14.6	1.3	4.8	1.3	3.9	0.4	0.4	15.5	**42.3**
Poor/non poor (assets poverty line)															
Non-poor	21.5	14.2	6	6.6	1.6	**49.9**	13.7	6.7	9.2	3.2	4.1	0.2	1.3	11.8	**50.1**
Poor	12.5	8.4	12.8	15.7	2.9	**52.3**	18.3	2.1	6.5	2.1	4.1	0.3	0.4	13.9	**47.7**

Source: ENIGH 2002

[a] Includes livestock, forestry and fisheries

[b] Low and high return non-farm activities are identified on the basis of average monthly per capita earnings associated with primary employment in different sectors. Sectors where average monthly earnings are below the assets poverty line of $ 494.77 per month are identified as low return activities. Low return activities comprise: food and beverages, textiles, clothing and leather, wood products, printing, ceramics, machinery, other manufacturing, construction, hotels, communications, financial services, entertainment, personal services.

[c] Includes leasing and business societies

ANNEX 3.G. - TABLE 3.G.2. INCOME SHARES BY SOURCE AND CONSUMPTION QUINTILE IN RURAL MEXICO 1992, LOCALITIES OF LESS THAN 15,000 RESIDENTS

	Agriculture Income Sources						Non-agricultural Income Sources								
	Crop Farming (%)	Other Farming[a] (%)	Food Self-Cons-umption (%)	Wage Labor in Crops (%)	Wage Labor in Others[a] (%)	Total Agricul-ture Income (%)	Low-return[b] non-farm wage income (%)	High-return[b] non-farm wage income (%)	Non-farm Entrep. Income (%)	Remit-tances (%)	Other private transfers (%)	Direct Public Transfers (%)	Other Income Sources[c] (%)	In-kind Payment & imputed rent (%)	Total Non-Agricul-ture Income (%)
Total	12.8	16.4	6	6.9	1.8	**43.9**	15	10.9	9.5	2.3	4.2	0.1	1.4	12.7	**56.1**
Rural per capita consumption quintile															
Bottom	16.6	11.6	14.5	19.5	2.5	**64.7**	11.3	2.9	3.4	1.1	3.2	0.3	0.5	12.5	**35.3**
2nd	15	11.8	10.9	10.6	2.9	**51.3**	15.4	4.2	9.7	2.4	5.5	0.2	0.2	11.3	**48.7**
3rd	14	13.5	6.9	8.6	3.3	**46.3**	18.1	7	10.5	1.2	4.5	0.3	0.7	11.4	**53.7**
4th	13.6	9.8	4.2	7.2	2	**36.8**	21.1	13.4	7.1	2	4.8	0.3	0.5	14.2	**63.2**
5th	11.2	21.8	4.2	3.6	1	**41.8**	11.8	13.6	10.9	3	3.7	0	2.3	12.9	**58.2**
Poor/non poor (food poverty line)															
Non-poor	13	17.4	4.9	5.7	1.7	**42.6**	15.1	11.9	9.8	2.5	4.2	0.1	1.5	12.3	**57.4**
Poor	11.9	8.6	14.7	15.8	2.9	**53.8**	14.3	2.8	6.7	1.1	4.5	0.3	0.4	16.1	**46.2**
Poor/non poor (assets poverty line)															
Non-poor	13.8	20.7	4	4	1.1	**43.6**	13.2	13.1	9.9	2.5	4	0.1	1.7	11.9	**56.4**
Poor	10.8	6.9	10.3	13.1	3.5	**44.6**	18.8	6.2	8.6	2	4.6	0.3	0.5	14.5	**55.4**

Source: ENIGH 2002

[a] Includes livestock, forestry and fisheries

[b] Low and high return non-farm activities are identified on the basis of average monthly per capita earnings associated with primary employment in different sectors. Sectors where average monthly earnings are below the assets poverty line of $ 494.77 per month are identified as low return activities. Low return activities comprise: food and beverages, textiles, clothing and leather, wood products, printing, ceramics, machinery, other manufacturing, construction, hotels, communications, financial services, entertainment, personal services.

[c] Includes leasing and business societies

ANNEX 3.G. - TABLE 3.G.3. INCOME SHARES BY SOURCE AND REGION IN RURAL MEXICO 1992, LOCALITIES OF LESS THAN 2,500 RESIDENTS

	Agriculture Income Sources						Non-agricultural Income Sources								
	Crop Farming (%)	Other Farming[a] (%)	Food Self-Cons-umption (%)	Wage Labor in Crops (%)	Wage Labor in Others[a] (%)	Total Agricul-ture Income (%)	Low-return[b] non-farm wage income (%)	High-return[b] non-farm wage income (%)	Non-farm Entrep. Income (%)	Remit-tances (%)	Other private transfers (%)	Direct Public Transfers (%)	Other Income Sources[c] (%)	In-kind Payment & Imputed Rent (%)	Total Non-Agricul-ture Income (%)
Total	17.9	11.9	8.7	10.2	2.1	**50.8**	15.5	4.9	8.1	2.7	4.1	0.2	1.0	12.6	**49.2**
Regions[g]															
Norte	21.1	14.4	4.3	16.6	2.8	**59.2**	8.5	7.5	3.3	1.3	4.4	0.0	1.6	14.1	**40.8**
Capital	8.1	9.4	8.0	7.8	0.9	**34.1**	28.0	7.5	6.8	2.2	7.8	0.2	0.0	13.2	**65.9**
Golfo	20.0	9.5	7.8	6.4	4.4	**48.1**	20.2	6.3	6.7	0.0	3.9	0.4	0.7	13.7	**51.9**
Pacifico	11.0	8.7	7.1	11.6	1.8	**40.3**	15.9	7.1	10.7	1.9	4.0	0.0	3.1	16.9	**59.7**
Sur	21.2	18.1	15.4	10.3	1.6	**66.6**	6.5	1.5	9.1	4.5	2.4	0.4	0.5	8.6	**33.4**
Centro-Norte	22.2	10.9	7.2	6.6	1.0	**47.8**	19.4	3.2	6.9	6.0	5.0	0.1	0.4	11.2	**52.2**
Centro	9.9	6.5	6.9	15.1	0.6	**38.9**	21.4	4.2	15.2	1.7	4.3	0.2	0.3	13.9	**61.1**

Source: ENIGH 2002

[a] Includes livestock, forestry and fisheries

[b] Low and high return non-farm activities are identified on the basis of average monthly per capita earnings associated with primary employment in different sectors. Sectors where average monthly earnings
are below the assets poverty line of $ 494.77 per month are identified as low return activities. Low return activities comprise: food and beverages, textiles, clothing and leather, wood products, printing,
ceramics, machinery, other manufacturing, construction, hotels, communications, financial services, entertainment, personal services.

[c] Includes leasing and business societies

[g] The regions correspond to the following states: Norte: Baja California, Coahuila, Chihuahua, Nuevo León, Sonora, Tamaulipas; Capital: Distrito Federal, México; Golfo: Campeche, Quintana Roo, Tabasco, Veracruz, Yucatán; Pacífico: BC Sur, Colima, Jalisco, Nayarit, Sinaloa; Sur: Chiapas, Guerrero, Michoacan, Oaxaca; Centro-Norte: Aguascalientes, Durango, Guanajuato, Querétaro, San Luis Potosí, Zacatecas; Centro: Hidalgo, Morelos, Puebla, Tlaxcala

ANNEX 3.G. - TABLE 3.G.4. INCOME SHARES BY SOURCE AND REGION IN RURAL MEXICO 1992, LOCALITIES OF LESS THAN 15,000 RESIDENTS

	Agriculture Income Sources						Non-agricultural Income Sources								
	Crop Farming (%)	Other Farming[a] (%)	Food Self-Cons-umption (%)	Wage Labor in Crops (%)	Wage Labor in Others[a] (%)	Total Agricul-ture Income (%)	Low-return[b] non-farm wage income (%)	High-return[b] non-farm wage income (%)	Non-farm Entrep. Income (%)	Remit-tances (%)	Other private transfers (%)	Direct Public Transfers (%)	Other Income Sources[c] (%)	In-kind Payment & Imputed Rent (%)	Total Non-Agricul-ture Income (%)
Total	12.8	16.4	6.0	6.9	1.8	**43.9**	15.0	10.9	9.5	2.3	4.2	0.1	1.4	12.7	**56.1**
Region[g]															
Norte	17.4	8.2	3.0	11.5	2.5	**42.6**	11.7	11.1	9.5	2.2	5.8	0.0	1.9	15.2	**57.4**
Capital	3.7	6.7	3.7	4.9	0.7	**19.8**	30.8	22.3	4.4	0.9	5.3	0.2	0.0	16.2	**80.2**
Golfo	13.9	11.1	5.9	4.2	3.3	**38.3**	14.7	15.8	11.4	0.0	6.2	0.4	0.6	12.6	**61.7**
Pacifico	11.1	10.8	4.4	7.3	1.3	**34.8**	18.0	11.7	10.5	1.2	3.7	0.0	5.5	14.5	**65.2**
Sur	11.8	36.2	9.1	5.7	2.0	**64.7**	7.4	5.1	8.6	3.1	1.8	0.2	0.2	9.0	**35.3**
Centro-Norte	18.9	9.1	6.4	5.9	1.0	**41.4**	17.8	8.7	8.6	6.1	5.0	0.1	0.8	11.5	**58.6**
Centro	10.8	9.6	6.0	10.2	1.2	**37.8**	18.2	9.3	12.7	2.8	3.6	0.1	0.5	14.9	**62.2**

Source: ENIGH 2002

[a] Includes livestock, forestry and fisheries

[b] Low and high return non-farm activities are identified on the basis of average monthly per capita earnings associated with primary employment in different sectors. Sectors where average monthly earnings
are below the assets poverty line of $ 494.77 per month are identified as low return activities. Low return activities comprise: food and beverages, textiles, clothing and leather, wood products, printing,
ceramics, machinery, other manufacturing, construction, hotels, communications, financial services, entertainment, personal services.

[c] Includes leasing and business societies

[g] The regions correspond to the following states: Norte: Baja California, Coahuila, Chihuahua, Nuevo León, Sonora, Tamaulipas; Capital: Distrito Federal, México; Golfo: Campeche, Quintana Roo, Tabasco, Veracruz, Yucatán; Pacífico: BC Sur, Colima, Jalisco, Nayarit, Sinaloa; Sur: Chiapas, Guerrero, Michoacan, Oaxaca; Centro-Norte: Aguascalientes, Durango, Guanajuato, Querétaro, San Luis Potosí, Zacatecas; Centro: Hidalgo, Morelos, Puebla, Tlaxcala

ANNEX 3.G. - TABLE 3.G.5. INCOME SHARES BY SOURCE AND CONSUMPTION QUINTILE IN RURAL MEXICO 2002, LOCALITIES OF LESS THAN 2,500 RESIDENTS

	Agriculture Income Sources						Non-agricultural Income Sources										
	Crop Farming (%)	Other Farming[a] (%)	Food Self-Cons-umption (%)	Wage Labor in Crops (%)	Wage Labor in Others[a] (%)	Total Agricul-ture Income (%)	Low-return[b] non-farm wage income (%)	High-return[b] non-farm wage income (%)	Non-farm Entrep. Income (%)	Remit-tances (%)	Other private transfers (%)	PRO-GRESA (%)	PRO-CAMPO (%)	Direct Public Transfers (%)	Other Income Sources[c] (%)	In-kind Payment & Imputed Rent (%)	Total Non-Agricul ture Income (%)
TOTAL	5.1	4.4	3.1	8	3.3	**23.8**	12.3	23.8	5.7	5.9	4.4	3.2	2.8	0.2	5.4	12.4	**76.2**
Rural per capita consumption quintile																	
Bottom	9.2	3.2	6.1	20.7	7.4	**46.6**	11.5	2.8	4.3	1.7	5.1	12	4.7	0.3	0.3	10.6	**53.4**
2nd	7	3.1	4.7	18.1	4.1	**37.1**	14.4	8.3	6	4.5	5	8.5	3.6	0.7	1.9	10	**62.9**
3rd	7.3	3.1	3.6	15	5.5	**34.6**	16.8	11.1	7.6	4.7	4.7	5.7	2.9	0.4	1.4	10.1	**65.4**
4th	4.8	5.2	2.8	9.7	5.6	**28**	19	14.1	6.7	8	4.7	3.1	2.5	0.2	4.3	9.2	**72**
5th	3.8	4.8	2.4	2.4	1.4	**14.8**	8.6	35.4	5	6.2	4	0.6	2.5	0.1	8	14.7	**85.2**
Poor/non poor (food poverty line)																	
Non-poor	4.6	4.6	2.6	6.6	3	**21.4**	12.2	27	5.5	6.2	4.2	1.7	2.6	0.2	6	12.8	**78.6**
Poor	7.9	3	5.9	16.5	5.4	**38.7**	12.8	4.4	6.8	3.8	5.5	11.9	3.8	0.4	1.7	10.2	**61.3**
Poor/non poor (assets poverty line)																	
Non-poor	4.3	5.2	2.3	3.8	2.4	**17.9**	10.1	32.1	5.2	6	4	0.7	2.5	0.1	7.7	13.7	**82.1**
Poor	6.4	3	4.5	15	4.9	**33.8**	16	9.9	6.6	5.8	5.2	7.4	3.3	0.4	1.6	10.1	**66.2**

Source: ENIGH 2002

[a] Includes livestock, forestry and fisheries

[b] Low and high return non-farm activities are identified on the basis of average monthly per capita earnings associated with primary employment in different sectors. Sectors where average monthly earnings are below the assets poverty line of $ 494.77 per month are identified as low return activities. Low return activities comprise: food and beverages, textiles, clothing and leather, wood products, printing, ceramics, machinery, other manufacturing, construction, hotels, communications, financial services, entertainment, personal services.

[c] Includes leasing and business societies

ANNEX 3.G. - TABLE 3.G.6. INCOME SHARES BY SOURCE AND CONSUMPTION QUINTILE IN RURAL MEXICO 2002, LOCALITIES OF LESS THAN 15,000 RESIDENTS

	Agriculture Income Sources						Non-agricultural Income Sources										
	Crop Farming (%)	Other Farming[a] (%)	Food Self-Cons-umption (%)	Wage Labor in Crops (%)	Wage Labor in Others[a] (%)	Total Agricul-ture Income (%)	Low-return[b] non-farm wage income (%)	High-return[b] non-farm wage income (%)	Non-farm Entrep. Income (%)	Remit-tances (%)	Other private transfers (%)	PRO-GRESA (%)	PRO-CAMPO (%)	Other Public Transfers (%)	Other Income Sources[c] (%)	In-kind Payment & Imputed Rent (%)	Total Non-Agricul-ture Income (%)
TOTAL	3.6	2.9	2.5	5.8	2.4	**17.1**	12.5	27.5	8.6	4.4	6.1	2.2	1.8	1.1	7.2	11.6	**82.9**
Rural per capita consumption quintile																	
Bottom	9.3	2.9	5.5	20.2	6.1	**44**	10.9	5.7	5.6	2.1	5.6	11	3.9	0.3	0.4	10.6	**56**
2nd	6.6	2.4	3.5	15.3	4.5	**32.3**	18.9	11.5	6.5	4.5	5.3	6.4	2.6	0.6	1.7	9.7	**67.7**
3rd	3.9	2.5	2.5	10.2	3.1	**22.3**	19	15.4	15.5	4.5	4.5	3.6	2	0.3	2.9	9.9	**77.7**
4th	4	3.9	2.3	5.4	3.9	**19.4**	18.4	22.5	10.4	5.8	5.2	2	1.4	0.3	4.1	10.5	**80.6**
5th	2.2	2.7	2	1.4	0.9	**9.1**	7.6	37.8	6.8	4.2	7	0.2	1.4	1.7	11.2	12.9	**90.9**
Poor/non poor (food poverty line)																	
Non-poor	3.1	2.9	2.1	4.6	2.1	**14.9**	12.3	30	8.6	4.6	6.1	1.2	1.6	1.2	7.8	11.7	**85.1**
Poor	7.6	2.6	5.4	15.7	4.7	**36.1**	13.5	5.8	8.2	3.4	5.7	10.9	3.3	0.4	2.1	10.6	**63.9**
Poor/non poor (assets poverty line)																	
Non-poor	2.8	3.1	2	2.4	1.7	**11.9**	9.8	33.8	8.9	4.3	6.4	0.4	1.4	1.4	9.4	12.1	**88.1**
Poor	5.3	2.4	3.6	13	4	**28.2**	18.1	13.9	7.9	4.6	5.4	6.1	2.5	0.4	2.4	10.5	**71.8**

Source: ENIGH 2002

[a] Includes livestock, forestry and fisheries

[b] Low and high return non-farm activities are identified on the basis of average monthly per capita earnings associated with primary employment in different sectors. Sectors where average monthly earnings are below the assets poverty line of $ 494.77 per month are identified as low return activities. Low return activities comprise: food and beverages, textiles, clothing and leather, wood products, printing, ceramics, machinery, other manufacturing, construction, hotels, communications, financial services, entertainment, personal services.

[c] Includes leasing and business societies

ANNEX 3.G. - TABLE 3.G.7. INCOME SHARES BY SOURCE AND REGION IN RURAL MEXICO 2002, LOCALITIES OF LESS THAN 2,500 RESIDENTS

	Agriculture Income Sources						Non-agricultural Income Sources											
	Crop Farming (%)	Other Farming[a] (%)	Food Self-Cons-umption (%)	Wage Labor in Crops (%)	Wage Labor in Others[a] (%)	Total Agricul-ture Income (%)	Low-return[b] non-farm wage income (%)	High-return[b] non-farm wage income (%)	Non-farm Entrep. Income (%)	Remit-tances (%)	Other private transfers (%)	PRO-GRESA (%)	PRO-CAMPO (%)	Other Public Transfers (%)	Other Income Sources[c] (%)	In-kind Payment & Imputed Rent (%)	Total Non-Agricul-ture Income (%)
TOTAL	5.1	4.4	3.1	8	3.3	**23.8**	12.3	23.8	5.7	5.9	4.4	3.2	2.8	0.2	5.4	12.4	**76.2**
Región																	
Norte	2	3.5	1.8	5.1	7.1	**19.5**	15.1	20.1	5.8	3.8	4.7	1.3	8.3	0.2	10.5	10.6	**80.5**
Capital	1.5	1.4	2.2	5.1	0.8	**11**	35.9	22.4	5	1.5	4.1	3.1	1.8	0.1	4.8	10.3	**89**
Golfo	3.1	1.6	1.8	10.9	4.8	**22.2**	12.5	21.1	6.6	1.2	5.3	5.4	1.2	0.1	4.1	20.4	**77.8**
Pacífico	3.4	2.7	1.3	3.7	1.3	**12.4**	3.1	51	2.2	1.6	3.1	0.8	0.9	0.3	7	17.6	**87.6**
Sur	9.2	9.1	6.5	11	5.4	**41.2**	8	8.1	8.5	10.6	5	5.2	3	0.2	1.8	8.5	**58.8**
Centro-Norte	7.4	4.7	2.5	8.5	2.2	**25.4**	13.4	18	6.9	13.4	4.1	2.6	3.8	0.3	4.7	7.5	**74.6**
Centro	4.7	4.4	4.8	12.4	1	**27.3**	22.4	11.9	5	3.8	5.4	5	1.2	0.4	7.4	10.3	**72.7**

Source: ENIGH 2002

[a] Includes livestock, forestry and fisheries

[b] Low and high return non-farm activities are identified on the basis of average monthly per capita earnings associated with primary employment in different sectors. Sectors where average monthly earnings are below the assets poverty line of $ 494.77 per month are identified as low return activities. Low return activities comprise: food and beverages, textiles, clothing and leather, wood products, printing, ceramics, machinery, other manufacturing, construction, hotels, communications, financial services, entertainment, personal services.

[c] Includes leasing and business societies

[g] The regions correspond to the following states: Norte: Baja California, Coahuila, Chihuahua, Nuevo León, Sonora, Tamaulipas; Capital: Distrito Federal, México; Golfo: Campeche, Quintana Roo, Tabasco,
Veracruz, Yucatán; Pacífico: BC Sur, Colima, Jalisco, Nayarit, Sinaloa; Sur: Chiapas, Guerrero, Michoacán, Oaxaca; Centro-Norte: Aguascalientes, Durango, Guanajuato, Querétaro, San Luis Potosí, Zacatecas;
Centro: Hidalgo, Morelos, Puebla, Tlaxcala

ANNEX 3.G. - Table 3.G.8. Income Shares by Source and Region in Rural Mexico 2002, Localities of Less than 15,000 Residents

	Agriculture Income Sources						Non-agricultural Income Sources										
	Crop Farming (%)	Other Farming[a] (%)	Food Self-Cons-umption (%)	Wage Labor in Crops (%)	Wage Labor in Others[a] (%)	Total Agricul-ture Income (%)	Low-return[b] non-farm wage income (%)	High-return[b] non-farm wage income (%)	Non-farm Entrep. Income (%)	Remit-tances (%)	Other private transfers (%)	PRO-GRESA (%)	PRO-CAMPO (%)	Other Public Transfers (%)	Other Income Sources[c] (%)	In-kind Payment & Imputed Rent (%)	Total Non-Agricul-ture Income (%)
TOTAL	3.6	2.9	2.5	5.8	2.4	**17.1**	12.5	27.5	8.6	4.4	6.1	2.2	1.8	1.1	7.2	11.6	**82.9**
Region																	
Norte	1.4	2.2	2	4.1	5.4	**15.2**	13.8	26.3	8.5	3.7	5.8	1.1	5.4	1.2	8.6	10.5	**84.8**
Capital	0.8	0.6	1.3	2.2	0.8	**5.7**	22.2	36.3	8.5	0.9	4.1	1.2	0.7	0.1	9	11.3	**94.3**
Golfo	3.5	1.3	1.5	7.6	4.1	**18**	15.8	28.1	6.4	1	5.7	3.5	0.7	0.1	4.1	16.6	**82**
Pacífico	2.6	2.1	1.4	2.9	1.1	**10.1**	6.9	46.5	2.5	2	3.9	0.7	0.7	0.3	10.7	15.6	**89.9**
Sur	5.9	5.7	4.5	7.1	3	**26.1**	6.1	13.3	16.8	6.7	9.5	3.4	1.8	3.7	3.7	8.9	**73.9**
Centro-Norte	5.7	3.9	2.5	6.8	2.2	**21.1**	12.1	20.4	7.9	11.7	5.4	2.1	3.1	0.3	7.7	8.2	**78.9**
Centro	3	2.3	3.1	9.1	0.5	**18.1**	19	24.8	6.2	3.1	6.6	3.3	0.7	0.4	8.1	10	**81.9**

Source: ENIGH 2002

[a] Includes livestock, forestry and fisheries

[b] Low and high return non-farm activities are identified on the basis of average monthly per capita earnings associated with primary employment in different sectors. Sectors where average monthly earnings are below the assets poverty line of $ 494.77 per month are identified as low return activities. Low return activities comprise: food and beverages, textiles, clothing and leather, wood products, printing, ceramics, machinery, other manufacturing, construction, hotels, communications, financial services, entertainment, personal services.

[c] Includes leasing and business societies

[g] The regions correspond to the following states: Norte: Baja California, Coahuila, Chihuahua, Nuevo León, Sonora, Tamaulipas; Capital: Distrito Federal, México; Golfo: Campeche, Quintana Roo, Tabasco, Veracruz, Yucatán; Pacífico: BC Sur, Colima, Jalisco, Nayarit, Sinaloa; Sur: Chiapas, Guerrero, Michoacán, Oaxaca; Centro-Norte: Aguascalientes, Durango, Guanajuato, Querétaro, San Luis Potosí, Zacatecas; Centro: Hidalgo, Morelos, Puebla, Tlaxcala

ANNEX 3.H. CORRELATES OF RURAL NON-FARM EMPLOYMENT

Several studies have tried to explain the participation of households in RNF activities using different data bases. We present an exercise carried out on the basis of the ENE 2003, 2nd quarter survey, using a Probit model to determine the probability of individual involvement in non-farm activities as primary occupation, conditional on a range of personal, household and geographical characteristics. The specification of the model draws on findings from previous sections, which suggest that the choice of primary occupation is affected by geographical location, education, gender, age, and labor status. We use a wide definition of rural in the regression, and include a dummy to check the impact of a more restrictive definition. Results are shown in Table 3.H.1.

Rather than reporting parameter estimates, which are difficult to interpret, Table 3.H.1 presents the marginal effects associated with each explanatory variable, which measure the effect of a percentage change in the explanatory variable on the probability of involvement in non-farm activities, taking all other variables at their means.[110]

The table presents three Probit regressions linking the probability of having primary employment in non-agricultural wage-labor occupations to a range of explanatory variables. The dependent variable takes the value of 1 if the person is primarily employed in non-agricultural wage labor and zero otherwise. Included in the analyses are household size, age, age squared, gender, labor status, schooling variables, residence in settlements with less than 2,500 people, and regional dummies. The first model comprises all non-farm activities in rural Mexico. The second and third models have the same specification of regressors but split workers in the non-agricultural labor force into two groups: those with low-return jobs and those with high-return jobs. As in the previous section, we examine in turn regression results for the different variables, comparing them with results from other studies.

Gender

Considering all non-farm employment together, women have considerable higher probability than men to participate in RNF activities, controlling for all other variables[111]. This result holds for married and single women, with and without children, with marginal effects that are not very different among these groups of women. This is consistent with the results obtained by Araujo (2003: 1st essay) for Mexican rural poor communities using the 1997 ENCASEH data base, but differs from results for other countries, for example for Northeast Brazil, where women are less likely to be represented in the RNF sector (see Ferreira and Lanjouw 2001). In the *ejido* sector, married and old women were found to be less likely to participate in RNF activities, with proximity to urban centers increasing the probability of women participation in these activities, particularly that of younger women (de Janvry and Sadoulet, 2001).

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[110] For dummy variables, the marginal effect is the change in the dependent variable associated with a move from a value of zero to a value of one of the dummy, holding all other variables constant at mean values.

[111] The reference variable for gender comparisons is single male.

The picture becomes more complex when we consider high and low return activities, because women are significantly more likely than men to participate in low return occupations but significantly less likely to participate in high return ones, and this does not change with marital status or having or not children.

Table 3.H.1. Probability of Being Employed in the Non-agricultural Sector, Rural Mexico 2002[1]

Dependent Variable	Non-Agricultural Employment				Low-Productivity[2] Non-Agricultural Employment				High-Productivity Non-Agricultural Employment			
Worker Characteristics	dF/dx		SE	P>|z|	DF/dx		SE	P>|z|	dF/dx		SE	P>|z|
Age	0.002	**	0.001	0.03	-0.008	***	0.001	0	0.012	***	0.001	0
Age Square	0	***	0	0	0	***	0	0	0	***	0	0
Married woman w/o children+	0.275	***	0.006	0	0.498	***	0.019	0	-0.141	***	0.014	0
Married woman with children+	0.314	***	0.004	0	0.511	***	0.006	0	-0.154	***	0.005	0
Single woman w/o children+	0.281	***	0.004	0	0.487	***	0.008	0	-0.161	***	0.005	0
Single woman with children+	0.287	***	0.004	0	0.534	***	0.008	0	-0.161	***	0.005	0
Labor Status												
Employer+	0.056	***	0.016	0.001	0.405	***	0.018	0	-0.151	***	0.007	0
Self-employed+	-0.146	***	0.013	0	0.405	***	0.014	0	-0.326	***	0.006	0
Informal Salaried+	-0.056	***	0.012	0	0.319	***	0.014	0	-0.198	***	0.006	0
Formal Salaried+	0.181	***	0.01	0	0.263	***	0.015	0	-0.071	***	0.008	0
Contract+	0.093	***	0.013	0	0.328	***	0.017	0	-0.1	***	0.009	0
Family Worker+	-0.464	***	0.013	0	0.216	***	0.016	0	-0.322	***	0.003	0
Other												
Education												
No education												
Primary Complete+	0.114	***	0.006	0	0.06	***	0.007	0	0.082	***	0.006	0
Lower Secondary Complete+	0.196	***	0.006	0	0.09	***	0.008	0	0.144	***	0.008	0
Upper Secondary Complete+	0.228	***	0.007	0	0.071	***	0.012	0	0.223	***	0.013	0
University Complete+	0.278	***	0.005	0	-0.214	***	0.007	0	0.537	***	0.012	0
Technical Education+	0.238	***	0.008	0	-0.093	***	0.011	0	0.367	***	0.014	0
Region												
Norte +	0.019	**	0.009	0.042	0.031	***	0.009	0.001	0.002		0.008	0.769
Capital+	0.175	***	0.009	0	0.061	***	0.012	0	0.091	***	0.012	0
Golfo +	0.015	*	0.008	0.056	0.027	***	0.008	0	-0.021	***	0.007	0.003
Pacifico+	-0.027	***	0.009	0.002	0.019	**	0.008	0.025	-0.023	***	0.007	0.002
Sur+	-0.019	**	0.009	0.03	-0.026	***	0.008	0.001	-0.009		0.008	0.265
Centro-Norte+	0.033	***	0.008	0	0.014	*	0.008	0.074	0.022	***	0.008	0.002
Locality < 2,500 inhabitants+	-0.237	***	0.005	0	-0.152	***	0.005	0	-0.088	***	0.005	0
obs. P	0.629				0.332				0.297			
Pred. P (at x-bar)	0.707				0.302				0.229			
Number of observations =	46501				46501				46501			
Log Likelihood=	-20843.1				-23166.4				-20634.5			
LR chi2(24)=	19671.5				12766.4				15278.6			
Prob>chi2=	0				0				0			
Pseudo R2=	0.321				0.216				0.27			

Source: ENE 2003, 2nd quarter

[1] Rural area defined as localities with less than 15,000 inhabitants

[2] The worker is employed in a low-productivity non-agricultural job if her monthly labor income is below the average non-agricultural labor income.

[3] The worker is employed in a low-productivity agricultural job if her monthly labor income is below the average agricultural labor income.

Age

The probability of employment in non-agricultural jobs rises with age, after controlling for other characteristics, although the marginal effect is small. The association is somewhat larger for high return occupations and is negative for low return ones. No evidence was found of the association declining at a certain age. This finding contrasts with that for the Brazilian Northeast obtained by Ferreira and Lanjouw (2001), also with the results obtained for the *ejido* sector by Winters, Davis and Corral (2002) and de Janvry and Sadoulet (2001), and with the results for the rural poor communities covered in the ENCASEH survey, examined by Araujo (2003: 1st essay). All these studies found that young individuals, particularly young men, tend to participate more than older ones in RNF activities. It is not clear why this difference in results, but it may be due to the wider coverage of the ENE survey, and the wide definition of rural used in our regressions.

Education

The effect of education is strong, and the results are consistent with findings from other studies, like those of Yúnez-Naude and Taylor (2000), Ferreira and Lanjouw (2001), Winters, Davis, and Corral (2002), de Janvry and Sadoulet (2001), Araujo (2003: 1st essay), and Taylor, Yúnez-Naude and Cerón (2004). Table 3.H.1 shows that the probability of involvement in the non-farm sector is positively and significantly related to education levels. Relative to the non educated, workers with education are generally more likely to find employment in the non-agricultural sector. As education levels rise, so does the probability of being employed in the non-agricultural sector both in low return and high return occupations. The exception is university and technical education, which, not surprisingly, diminish the probability of engagement in low return RNF activities. It should be acknowledged that the exogeneity of education in these models can be questioned, so more research is needed to understand employment possibilities in RNF sectors.

We did not combine in our regressions gender and education variables, but it has been done in other studies with interesting results. Thus, Winters, Davis and Corral (2002) find from income regression equations for the ejido sector that increasing levels of education translate into higher income for rural women at higher levels of education only, probably because at lower levels of education low paid work in domestic help is the only or the most frequent opportunity available to women.

Location

Location influences the probability of participation in the RNF sector. Workers living in localities smaller than 2,500 inhabitants are less likely to be employed in RNF occupations than those living in localities under 15,000 residents. The regression model for low-productive non-agricultural occupations reveals that workers in small localities are even less likely to be employed in this sector.

Other studies confirm the importance of location. Araujo (2003: 2nd essay) finds that proximity to urban centers increases the probability of participation in manufacturing activities, irrespectively

of education, ethnicity, wage levels or initial employment. Participation in services is less related to proximity to urban centers and more to the characteristics of the area.

Region

Relative to those living in the Centro, which is taken as reference, workers in the *Norte, Capital, Golfo*, and *Centro-Norte* regions are more likely to be employed in RNF activities. Instead, workers in the *Pacífico* and *Sur* are less likely to participate in the RNF economy than their peers in the *Centro*. De Janvry and Sadoulet (2001) found also important differences between regions, with dwellers in *ejidos* located in the *Sur* having fewer opportunities to work in RNF activities.

Other Variables

Other variables not included in our regressions because of lack of data in the ENE survey may also be important determinants of labor market participation, and have been included in other studies. One of them is **access to land**. Finan, Sadoulet and de Janvry (2002) find that young educated men from land scarce households in Mexico are more likely to participate in off-farm non-agricultural employment. Araujo (2003: 1st essay) also found that access to irrigated land has a negative impact on RNF employment.

Araujo (2003: 1st essay) measures the role of **social networks** on labor market behavior in rural Mexico. She finds that neighbors' participation in off-farm non-agricultural employment has a significant impact on the individual choice of occupation, even after controlling for the availability of opportunities. The role of employment choices by neighbors is more important for groups that are less likely to participate in non-agricultural rural employment such as women, indigenous people, the elder, and land-owners. This finding suggests an important role for networks and referrals in the job-search process of rural households, specially since it appears that social networks have an equalizing effect, compensating more to those who are less endowed and therefore less likely to participate in off-farm non-agricultural employment.

Ethnicity is another important variable. Yúnez-Naude and Taylor (2001) found from a sample of 391 household in eight rural locations in four states of Mexico that indigenous workers are less likely than non-indigenous ones to participate in RNF activities, and more likely to participate in staple and cash crop production, wage employment and national migration. A similar conclusion was reached by de Janvry and Sadoulet (2001) for young indigenous workers in the *ejido* sector at low levels of education, although the difference was not significant at high levels of education. Araujo (2003: 1st essay) also found that indigenous workers tend to participate less in RNF activities.

Infrastructure and connectedness have also been found to be important to promote RNF participation by Winters, Davis and Corral (2002) and Araujo (2003: 2nd and 3rd essays). Araujo finds that interventions in roads and secondary education are effective in reducing poverty through non-farm rural employment in rural municipalities.

ANNEX 3.I. THE TERRITORIAL APPROACH TO RURAL DEVELOPMENT[112]

The notion of Rural Territorial Development (RTD) is parallel to that of local economic development, with the difference that the latter concept is traditionally used more for urban areas and urban-industrial activities while the former is more rural, although RTD advocates insist in the links between rural an urban activities and the role in rural development of intermediate and rural towns. RTD should be seen as an approach and a method to promote rural development with relevant policy implications rather than as a theory about development.

The main tenets of the RTD approach can be summarized as follows: (1) a view of rural development that consists of a combination of productive transformation and institutional change; (2) a widened concept of the rural space to include small rural towns and the links with intermediate cities; (3) a multisectoral approach to economic development covering different economic sectors and including farm and non-far activities; (4) a recognition of the differences among rural territories and the need to tailor productive investments and other interventions to their diverse characteristics and needs; (5) a concept of the territory that presupposes some territorial identity and the possibility of building a collective project of local actors for the development of the territory; (6) participatory planning as a means of economic coordination and prioritization of investments in the territory; (7) conscious involvement of different local actors (public, private and civil society) in the economic coordination process, and alliances between these actors; (8) emphasis on territorial competitiveness and on maximum economic use of territorial assets; (9) search of economic synergies and clustering of activities around development axes to achieve critical economic masses; (10) construction of an institutional architecture to facilitate economic coordination processes; and (11) a medium- and long-term development horizon [113]. The intellectual background from economic theory and the social and political sciences of the RTD concept is summarized in box below.

The central purpose of RTD is to facilitate endogenous growth processes, centered on the capacity of local agents to promote territorial development on the basis of exiting resources. Elements favorable to this are the presence of valuable —and marketable— territorial assets (natural resources, landscapes, culture and traditions, accumulated local knowledge and know-how in certain areas, etc.), strong institutional development and social capital, and the potential to generate growth process around territorial economic linkages. Return migrations have also been identified as a factor favoring local growth processes.

A crucial question is that of the extent to which public policies can generate this type of growth dynamics. Each territory that has gone through a successful endogenous growth process has done it in a different way, based on factors that in some sense are always unique. The process may have been triggered by the presence of strong leadership from a local agent, or the finding of a good market niche for a local product, or the transformation of what may have been an economic obstacle, like a mountainous environment, into an economic opportunity, e.g. for tourist development, or the introduction of new economic activities by returning migrants, or in many other ways. Policy action

[112] This annex is based on material in World Bank (2004c).

[113] These tenets are very similar although no identical to the TRD criteria proposed by Schejtman and Berdegué (2003).

cannot replace these triggers, and in this sense it cannot "pick winners", but it can help create favorable conditions so that development arises whenever the triggering factors appear, and can stimulate local actors to search for those triggers. This will normally be done via the supply of public goods like infrastructure, education, training, research, extension, etc., and also by creating a favorable institutional framework, acting to overcome market failures (e.g. in the financial market), and providing targeted assistance when required.

Intellectual Background of the Territorial Approach to Rural Development

From the perspective of economic theory three influences can be traced in the RTD notion. The first is the classical theory of location and territorial specialization of von Thunen, Weber, Christaller, Isard and others, and the recent revival of economic geography partly under the authority of Paul Krugman. The second influence is that of the theorists of territorial competitiveness, with their view of competition as a systemic phenomenon going beyond single markets, their insistence on economies external to the firm but internal to the territory, and their theory of "knowledge environments". Relevant here is the literature on industrial districts initiated by Alfred Marshall, which has flourished around the Italian experience (e.g. Bagnasco, Trigilia, Putnam), the contribution of Michael Porter on territorial competitiveness and clustering, and the discussions on "knowledge environments" following the Silicon Valley experience.

The third strand is the theory of economic coordination originated in the work of the classical development economists. Rosenstein Rodan´s famous paper on the industrialization of Eastern and Southern-Eastern European countries is the piece most frequently quoted, but the exposition of Tibor Scitovsky in his " Two Concepts of External Economies" is theoretically more compact. The theory has revived with the flourishing of information economics and game theory, with notable contributions from Karla Hoff, Joseph Stiglitz and others. The crucial idea is that economic agents do not just take information from the price system but also interact outside that system. For investment decisions, in particular, the use of non-price information on the investment plans of different actors will normally lead to superior equilibria than if only price information were used. Economic coordination refers to the exchange of information and resulting agreements by different economic agents to carry out complementary actions that are mutually beneficial. Participatory planning, for instance, is an instrument for doing this.

From the perspective of the social and political sciences, we can identify another three strands of influence. The first are the discussions on decentralization, the developmental role of local governments, and the alliances and synergies between different levels of government. The second influence is that of the theorists of the role of public and private actors in the development process, with the emphasis on the role of collective action and the "third actor" (for instance by Elinor Orstrom), and on the potential for public-private synergies in the development process (for instance by Judith Tendler and Peter Evans). The third strand of influence is that of the theorists of participation and empowerment like Robert Chambers and John Friedmann, and of the theory and experience of community-driven development.

The concept of territory is not an easy one. Various issues are relevant, like its size, the criteria for its delimitation, and its ideological dimension, i.e. the way in which it is present in the imagination of its actors.

Most of the tenets of RTD presented above apply to territories of different sizes, from small micro-basins or municipal areas to entire sub-regions, basins or provinces. The approach can hence be used at different levels in the rural space. Economic coordination and the clustering of activities to achieve critical economic masses would normally require, however, a certain size, which cannot be too small. This is why RTD requires strong meso-level economic coordination institutions that would normally go beyond a single municipality or micro-basin. The district level singled out in the *Ley de Desarrollo Rural Susutentable* may be such level.

The demarcation of territories is a complex issue. There are in principle three ways in which this can be done: (1) in a top-down technocratic way, using *ex-ante* technical criteria of homogeneity, complementarity, water basins, market basins, and the like; (2) in an administrative way, using existing administrative boundaries (*municipios, distritos, provincias*); and (3) in a bottom-up way, letting local actors define their own territories, as in the European Leader experience.

The relevance of the ideological dimension of territories is larger than generally acknowledged. Local populations and institutional actors usually identify themselves with a territory. That identification is important for people's identity and is hence an element of human development in the Sen's sense of development as freedom to be who you can be. But territorial identity is also an economic asset, inasmuch as it is a source of social capital, a condition that facilitates economic coordination, and itself a marketable asset if territorial products can be favorably differentiated in the market. RTD is about using identity for the construction of a development project of the territory that can catch the imagination of local actors and produce outcomes in which they can recognize themselves. This is at the core of the "development with identity" concept, which can be particularly relevant for indigenous areas (see World Bank, 2004d).

Key to RTD are territorial planning and the investment decision process. As indicated before, territorial planning is an instrument of economic coordination, and should be carried out with a strategic perspective and in a way that involves all relevant local actors in the decision making process. It is a means to identify local potentials and constraints, and to locally "pick winners" in the sense of identifying the strategic axes considered promissory by local actors around which they propose to cluster investments. It is also a way of organizing the local demand for development assistance. Participatory territorial planning is a system of compromises among the interests of local actors arrived at in confrontation between spontaneously perceived opportunities and needs, and technical, market and cost criteria. Cost sharing in the investments by the beneficiaries, an ex-ante budgetary restriction, and effective decision-making capacity of the participatory planning body, are essential elements to give economic meaning to the entire exercise and arrive at trade-offs between alternative investment options. This type of planning is hence the opposite of the simple collection and listing of local spontaneous investment requests that is common in many community-driven development programs.

The final element of RTD to be mentioned is that of the new institutional architecture. We can include here the creation and/or strengthening of meso-level economic coordination entities, the strengthening of local civil society organizations, and the strengthening of public-private synergies.

Among the economic coordination entities we should include territorial institutions, and sector coordination entities like activity-based producer organizations and value chain organizations. Within civil society organizations we have to include membership and service organizations, and in the strengthening of public-private synergies we should include central government programs and local government actors.

ANNEX 4.A. - Table 4.A.1. Public Federal Expenditure in Rural Development: Productive and Land Programs, 1995-2004 in Mexico, Current Million MxP

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All Productive Expenditures and Land Programs	17,572.00	23,848.80	25,572.60	21,749.60	26,287.40	28,813.00	29,733.00	33,230.50	53,820.20	72,622.60
PROCAMPO	5,864.00	6,800.00	7,533.00	8,491.70	9,372.20	10,378.80	11,004.60	11,850.50	14,191.30	14,409.60
OTROS PROGRAMAS DE APOYO DIRECTO	0	0	0	0	0	0	0	0	1,500.00	2,680.60
APOYOS A LA COMERCIALIZACIÓN	738	642	2,163.00	1,991.00	1,698.80	3,049.90	5,314.20	4,340.10	5,405.60	3,275.10
OTROS APOYOS A LA COMERCIALIZACIÓN	0	0	0	0	0	0	0	0	0	3,320.10
ALIANZA PARA EL CAMPO	0	1,156.50	1,875.00	2,010.00	2,497.30	2,655.90	4,046.40	6,438.40	3,237.80	5,831.50
OTROS APOYOS DE ALIANZA	0	0	0	0	0	0	0	0	0	3,578.80
OTROS PROGRAMAS PRODUCTIVOS	0	0	0	0	3,748.60	0	0	0	1,930.00	2,414.10
PROCEDE	892	902.7	768.8	806.4	1,153.00	1,186.40	674.3	701.2	562.2	373.4
SAGARPA, ASERCA , CEA, INIFAP NIVEL NORMATIVO	1,593.40	2,635.80	2,984.90	2,403.00	3,036.80	7,055.80	3,836.50	4,147.20	9,056.00	4,373.30
BANRURAL Y AGROASEMEX	1,360.40	1,685.50	1,361.60	1,665.00	1,793.30	513.8	441.4	2,484.80	907.4	1,349.00
INTERMEDIARIOS FINANCIEROS AGROPECUARIOS	0	0	0	0	0	0	0	376.6	10,310.30	2,007.20
SECTOR AGRARIO	1,359.00	2,916.00	1,764.30	1,497.80	1,270.60	1,557.10	1,673.90	2,069.60	2,694.40	2,704.90
PROBECAT	523.7	856.6	n.d	n.d	1,231.20	497.6	1,316.80	0	0	0
INVESTIGACIÓN	0	0	0	0	0	0	0	0	0	3,089.00
PROGRAMAS DE DESARROLLO REGIONAL SUSTENTABLE	0	0	0	0	304.1	27.7	68	459.4	16.1	50
GASTO OPERATIVO PAR ACTIVIDADES DE DES. SUST.	0	0	0	0	0	0	0	0	0	16,970.00
PRO. INT. Y REC, PROD. EN ZONAS SEQUÍA REC. (PIASRE)	0	0	0	0	0	0	0	0	612.1	683
CONASUPO	5,241.50	6,112.50	6,723.40	2,656.00	0	0	0	0	0	0
CONAZA	n.d.	141.2	120.9	101.6	48.8	93.1	154.6	161.2	94	125
DESARROLLO FORESTAL	n.d.	n.d.	277.7	127.1	128.3	124.9	155.8	181.4	237.2	400
PROGRAMAS DE DESARROLLO RURAL	0	0	0	0	0	1,666.70	1,032.70	n.d.	3,012.50	2,240.00
PROGRAMA MICROFINANCIAMIENTO MUJERES RURALES	0	0	0	0	0	0	0	0	0	100
DESARROLLO DE LOS PUEBLOS INDIGENAS	0	0	0	0	0	0	0	0	16.9	
ACUACULTURA RURAL	0	0	0	0	4.4	5.3	13.8	20.1	20	200
ACTIVIDADES PESQUERAS	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	2,373.00
PROGRAMAS TURISTICOS	0	0	0	0	0	0	0	0	16.4	75

Source: Prepared for the study by Oscar Diaz Santos with information from the *Secretaría de Hacienda y Crédito Público*

ANNEX 4.A. - Table 4.A.2. Public Federal Expenditure in Rural Development: Social and Labor Aspects, 1995-2004, Mexico, Current Million MxP

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All Social and Labor Programs	29,042.80	34,890.50	34,914.30	37,492.40	36,524.20	42,564.60	59,341.50	65,131.40	47,863.50	46,272.80
PROGRAMA DE EMPLEO TEMPORAL (PET)	0	1,663.70	1,750.50	n.d	3,401.10	3,669.30	3,752.80	2,867.40	1,800.30	2,780.00
APOYO AL EMPLEO	0	0	0	0	0		0	0	1,073.40	0
INI	652	789.4	883	949.5	n.d	738.6	1,453.00	1,393.90	569.6	800.1
APOYOS PROD. EN ZONAS MARGI. (RAMOS 20 Y 26)	0	0	0	1,876.20	2,268.30	1,730.20	1,860.80	n.d.	2,135.00	n.d.
MUJERES CAMPESINAS	0	0	34.2	69.1	87.1	0	0	n.d.	27.1	50
JORNALEROS AGRÍCOLAS	0	52	62.5	63.2	n.d	n.d	n.d	n.d	140	150
FONDO INFRAESTRUC. SOCIAL MUNICIPAL (FISM)	0	773.6	n.d	258.7	n.d	2,353.50	n.d	n.d	n.d	0
PROGRAMA OPORTUNIDADES	0	0	0	0	0	0	0	0	840	900
PROGRAMA AGUA POTABLE Y SAN. ZONAS MARG.	545.7	874.7	475.8	1,030.10	713.1	739.1	861.2	768.8	72	144
RAMO 26: PROGRAMAS REGIONALES	9,058.20	8,974.70	11,077.70	11,077.90	4,047.60	82.3	24.9	n.d	863.1	3,191.50
DESARROLLO LOCAL	0	0	0	0	0	0	0	0	405	0
MICRORREGIONES	0	0	0	0	0	0	0	0	0	510
RAMO 33: APORTE FEDERAL/	12,946.30	11,884.90	12,093.80	11,831.60	14,215.80	14,972.60	19,063.50	21,783.90	6,212.50	n.d.
FOOD PROGRAMS	3,497.00	5,600.40	3,912.50	4,238.50	n.d.	2,410.70	4,917.60	5,346.50	2,887.60	4,092.10
CAPACIDADES	0	0	0	0	0	0	0	0	10,892.00	9,593.40
ACCIONES COMPENSATORIAS	2,343.60	2,969.30	3,206.40	3,119.60	3,360.40	4,016.90	12,557.90	17,003.80	0	0
PROGRESA-OPORTUNIDADES	0	265.7	n.d.	1,276.00	6,671.70	9,635.00	12,393.80	13,393.40	16,551.80	16,585.70
EDUCACION AGROPECUARIO RAMO 11		1,042.10	1,417.90	1,702.00	1,759.10	2,216.40	2,456.00	2,573.70	3,394.10	3,741.00
CAPACITACIÓN										3,735.00

Source: Prepared for the study by Oscar Diaz Santos with information from the *Secretaría de Hacienda y Crédito Público* . 2004 is Programmed Expenditure

ANNEX 4.A. - Table 4.A.3. Public Federal Expenditure in Rural Development: Basic and Productive Infrastructure, 1995-2004, Mexico, Current Million MxP

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All Infrastructure	3,104.00	4,508.40	4,516.80	4,686.90	4,840.60	5,051.00	4,042.50	4,067.80	10,104.10	7,804.90
INFRAESTRUCTURA HIDROAGRICOLA	2,166.30	3,225.10	3,153.40	2,468.70	2,576.80	2,518.50	2,266.00	2,106.00	3,668.50	3,520.00
INFRAESTRUCTURA PRODUCTIVA	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	4,733.30	nd.
TELEFONIA Y CAMINOS RURALES	392	372.1	856.7	1,188.10	1,550.70	1,337.90	915.3	1,193.00	1,092.30	1,767.90
ADQUISICIÓN DE DERECHOS DE USO DE AGUA	545.7	874.7	475.8	1,030.10	713.1	739.1	861.2	768.8	72	144
RESTAURACIÓN DE SUELOS Y AGUA									460	
INFRAESTRUCT. HIDROAGRIC. ZONAS MARGI.	n.d	36.5	30.9	n.d	n.d	455.5	0	n.d	78	2,373.00

Source: Prepared for the study by Oscar Diaz Santos with information from the *Secretaría de Hacienda y Crédito Público* . 2004 is Programmed Expenditure

ANNEX 4.A. - Table 4.A.4. Public Federal Expenditure in Rural Development: Environmental Programs, 1995-2004, Mexico, Current Million MxP

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All Environmental Programs	1,347.00	2,053.50	883.9	222.3	1,137.60	517	358.3	3,817.40	4,904.80	3,604.40
FORESTAL	1,250.20	1,371.70			645.6	110	145.8	1,492.40	942.3	2,252.00
SEMARNAT NIVEL CENTRAL		424	603.5	34.7	142.1	171.5	0	2,325.00	3,415.60	654
IMTA	96.8	133.8	173.6	158.5	180.4	35.1	11.3		199	211.3
PROGRAMA NACIONAL DE REFORESTACIÓN		124	106.8	29.1	169.5	200.4	201.2		347.9	487.1

Source: Prepared for the study by Oscar Diaz Santos with information from the *Secretaría de Hacienda y Crédito Público* . 2004 is Programmed Expenditure

ANNEX 4.A. - Table 4.A.5. Public Federal Expenditure in Rural Development: All Programs, 1995-2004, Mexico, Current Million MxP

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All Federal Public Investment	**51,065.80**	**65,301.20**	**65,887.60**	**64,151.20**	**68,789.80**	**76,947.60**	**93,475.30**	**106,247.10**	**116,692.60**	**130,304.70**
Productive Aspects	17,572.00	23,848.80	25,572.60	21,749.60	26,287.40	28,815.00	29,733.00	33,230.50	53,820.20	72,622.60
Social and Labor Aspects	29,042.80	34,890.50	34,914.30	37,492.40	36,524.20	42,564.60	59,341.50	65,131.40	47,863.50	46,272.80
Infrastructure	3,104.00	4,508.40	4,516.80	4,686.90	4,840.60	5,051.00	4,042.50	4,067.80	10,104.10	7,804.90
Environment	1,347.00	2,053.50	883.9	222.3	1,137.60	517	358.3	3,817.40	4,904.80	3,604.40

Source: Prepared for the study by Oscar Diaz Santos with information from the *Secretaría de Hacienda y Crédito Público* . 2004 is Programmed Expenditure

ANNEX 4.A. - Table 4.A.6 Public Federal Expenditure in Rural Development: All Programs, 1995-2004, Mexico, Million MxP at Constant 1993 Prices

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All Federal Public Investment	**35,363.38**	**33,652.35**	**28,148.70**	**23,641.20**	**21,744.22**	**22,454.92**	**25,370.33**	**27,358.22**	**28,899.17**	**31,186.62**
Productive Aspects	20,112.32	17,980.48	14,916.19	13,816.82	11,545.18	12,305.77	16,106.00	16,830.74	11,886.44	11,074.75
Social and Labor Aspects	2,149.54	2,323.36	1,929.68	1,727.23	1,530.10	1,458.20	1,097.18	1,051.17	2,497.46	1,867.99
Infrastructure	932.81	1,058.25	377.62	81.92	359.59	149.26	97.25	986.46	1,212.34	862.66
Environment	12,168.72	12,290.25	10,925.20	8,015.23	8,309.36	8,541.70	8,069.90	8,489.85	13,302.92	17,381.21

Source: Prepared for the study by Oscar Diaz Santos with information from the *Secretaría de Hacienda y Crédito Público* . 2004 is Programmed Expenditure.

ANNEX 4.B. SMALL FARM EFFICIENCY ANALYSIS

Using ENHRUM data, we have carried out an exercise to determine the economic efficiency of small farmers. We do this in various steps. The first step consists in fitting a production function to 666 crop farms using a stochastic frontier analysis method. The econometric basis of the method is explained in Appendix 1 of this Annex. The core of the method is to separate in two the residuals of the production function regression equation. The first residual is the ordinary stochastic one with zero mean and constant variance, which accounts for non included variables and measurement errors. The second is an efficiency residual which results from differences in efficiency among farmers. The method allows to tests if farmers are efficient, which farmers deviate from the efficiency frontier, and to what extent. The second step consists of regressing the efficiency residual against a set of explanatory variables to see if they help explaining inefficiency.

A Cobb-Douglas production function was chosen[114]. The dependent variable is the gross value of crop output of farms (**q)**, and the explanatory variables are: variable capital (**kvar**), which includes seed, fertilizer and chemicals, fixed capital (**kfix**), which includes the value of machinery and draft animal services, labor (**labor**), which includes all labor used during the entire production process, and land (**sland**), which enters in the equation in a standardized form.

Land standardization is necessary because measuring land in crude hectares implies that very different qualities of land (irrigated and not irrigated, with and without good access, steep and flat, etc.) all count equally. It is appropriate to give different weights to different types of land. The standardization process carried out is explained in the Appendix 2 to this Annex. It basically consisted in estimating the implicit or hedonic prices of relevant land characteristics included in the survey by regressing these characteristics on the value of land declared by the farmer[115]. Using the coefficients of the regression equation we estimate the value per hectare of land for each farm[116]. Comparing this value with the average value per hectare of all farms declared by farmers, we obtain a weight for the land of the particular farm.

We used a logarithmic specification of the Cobb-Douglas function as follows:

$$ln\mathbf{q}_i = b_0 + b_1\, ln\mathbf{kvar}_i + b_2\, ln\mathbf{kfix}_i + b_3\, ln\mathbf{labor}_i + b_4\, ln\mathbf{sland} + e_i$$

We first run the regression for all 666 farmers in the sample. All explanatory variables turned out to be significant at 95 percent level. The values of the coefficients,

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[114] A translog specification was also tried but did not perform as well.

[115] Regression results are presented in Appendix 2. Irrigation, accessibility, and regional location are the characteristics that influence most land values. Location in the *Centro* region increased much the probability of higher land value, and the opposite was the case for location in the *Sur-Sureste*.

[116] In the regression equation we included this estimated value, not the number of standardized hectares.

which indicate the elasticity of crop output to each of the factors in the production function, are shown in Table 4.B.1[117].

The first thing to be noticed is that variable capital is the main element explaining output, with a big difference to the others factors, followed by land. A one percent increase in variable capital increases output by 0.43 percent. Labor has little weight, signaling the probable presence of surplus labor in many farms. The sum of elasticities is 0.913, i.e. less than one, which would indicate the presence of diseconomies of scale. The confidence intervals of the coefficients are sufficiently large, however, not to reject the null hypotheses that the sum of the coefficients is one. Hence, there is no statistical evidence of diseconomies of scale, but there is little likelihood of economies of scale for the entire sample[118].

Table 4.B.1 Value of Elasticities in the Production Function Regression Equation for all ENHRUM Sample of Crop Farms

Parameter	Variable	Coefficient	S.E.	P>z
b_1	Variable capital	0.43	0.035	0
b_2	Fixed Capital	0.159	0.035	0
b_3	labor	0.093	0.381	0.02
b_4	sland	0.232	0.03	0
b_0	constant	3.259	0.367	0

Source: calculated from ENHRUM.

The values of the elasticities of the productive factors are influenced by imperfections in factor markets. This seem to be particularly the case with variable capital whose high elasticity seems to be the result of the underutilization of fertilizer and chemicals due to the lack of access of small farmers to seasonal credit (see chapter 5 on this). Lack of credit to buy inputs prevents farmers from using them optimally, i.e. up to the point when the marginal contribution to production equals the cost to the farmer.

The test for inefficiency rejects the null hypothesis that there is no inefficiency. When we group the inefficiency residuals by categories of farms we can see which types of farms are less efficient. We show this in Table 4.B.2, where the average inefficiency of each category of farms is measured as the distance to the efficiency frontier. Thus, an average residual of 0.94 means that that category of farmers would need to increase output, with existing inputs, by 94 percent to reach the efficiency frontier.

[117] Complete results with relevant tests are given in annex Table 4.B.7.

[118] Notice that economies of scale in this context do not refer to increased farm size, which is the common meaning in usual parlance, but to the simultaneous increase of ALL factors in the production equation, which is the technical meaning.

Table 4.B.2. Distribution of the Inefficiency Error Term by Category of Farms

Variables	No. of farms	Average Inefficiency	S.D.
Sur-Sureste Region	211	0.94	0.3809
Centro Region	233	1.03	0.398
Centro-Occidente Region	122	0.78	0.2391
Noroeste Region	36	0.69	0.4104
Noreste Regions	64	0.73	0.4012
Maize and Beans farmers	456	0.98	0.3845
Coffee Farmers	43	0.65	0.2273
Vegetable Farmers	33	0.69	0.2467
Perennial Crops Farmers	79	0.75	0.3419
Oilseeds and Other Grain Far.	55	0.86	0.4288
Farmers with natural shocks	295	1.05	0.4481
Farmers without natural shocks	371	0.8	0.2862
All Farmers	**666**	**0.91**	**0.387**

Source: calculated from ENHRUM.

An important result is that maize and beans farmers, farmers in the *Sur-Sureste* and *Centro* regions, and farmers that experienced natural shocks are the least efficient. Producers of coffee, other perennial crops and vegetables, and producers in the *Noreste* and *Noroeste* are the most efficient. At the national level an effort would be required to increase production by 91 percent with existing factors to reach efficiency, i.e. production would almost need to double. One surprising result is the large number of farmers that suffered from natural disasters[119]. We discuss this more in chapter 7 but we must notice here that this is a frequently overlooked element with important repercussions on efficiency.

Next we partitioned the sample and repeated separately the stochastic production function exercise for maize and beans farmers, farmers that experienced shocks, and farmers that did not experience shocks. We also carried out regression exercises for these categories of farmers to try to explain the factors causing inefficiency[120].

[119] This was defined as farmers who reported having suffered from rains, hurricanes, droughts, frosts or pests and diseases, and whose output was less than 50 percent that of a good year.

[120] We only carried out a separate analysis for these categories of farmers because sample sizes were too small for the others.

Table 4.B.3 Production Function Elasticities for Different Crop Farmers in the ENHRUM Sample

Variables	Elasticities			
	All Farms	Maize and Beans	With Shocks	Without Shocks
Kvar	0.43	0.443	0.399	0.391
Kfix	0.159	0.265	0.273	0.183
Labor	0.093	0.107	0.276	0.207
Sland	0.232	0.132	0.171	0.249
Sum Elasticities	914	0.947	1.119	1.03
Constant	3.259	3.669	2.658	2.226

Source: calculated from ENHRUM. All coefficients are significant at 95% level.

There are substantial changes in the elasticities of production factors for different types of producers, although variable capital remains always the highest. The comparison is shown in Table 4.B.3. For maize an beans producers the importance of fixed capital is higher than for the entire sample of farmers, while that of labor remains low. This indicates that more use of animal power and/or tractor services for these producers would have a large effect on output. Contrarily, reducing the amount of labor put in these crops would not have a large impact on output. Land elasticity in maize and beans production is surprising low, less than half of that for all farms and for farms without natural shocks. Increasing output in maize and beans production depends hence more on improved technology embodied in variable and fixed capital than on increasing the area. This is good news for small peasant farmers who are the main producers of maize and beans, for it means that they could boost output in their small farms if they had access to better technology. Under present conditions, however, shifting land from maize and beans to other crops would raise total output.

The sum of elasticities grows when we partition the sample, which suggests that for some categories of farmers economies of scales are more of a possibility than for farmers in general. In the case of farmers who experienced natural shocks, labor is much more relevant than for all farmers in general, and there is no clear explanation for this. Instead, for farmers who did not experience shocks, the importance of land is the highest. This group of farmers represents "normal", i.e. natural shocks free, farming conditions[121], and their elasticity coefficients are illustrative of this situation. Hence, under "normal" conditions land is more relevant than under "abnormal" ones. The presence of a large proportion of maize and beans farmers in the sample, nearly 70 percent, decreases the elasticity of land since, as we have seen, the elasticity of land is low for these farmers. In farms, therefore, producing other crops under "normal" conditions land must be much more important. An interesting result for the "farmers

[121] But we can see in Table 4.11 that this "normal" condition is not so normal: 295 out of 666 farmers, 44 percent, experienced natural shocks.

without shocks" sub-sample is that the inefficiency test failed to reject the hypothesis of no inefficiency. This does not necessarily mean that these producers are all efficient, but points to the strong link between "normality" in production conditions and farming efficiency.

Our econometric analysis to explain in more detail the causes of inefficiency gave modest results (Tables $.B.7 to 4.B.14). Many of the explanatory variables included, like gender, age, education, existence of services in the community (measured by a services index), land tenure, farm size, and government transfers, were not statistically significant, although the sign of the coefficients was generally the expected one. The reason seems to be that these variables influence more the choice of technology, i.e. the combination of inputs in the production function, than the efficiency of production given a combination of inputs, which is what we investigate by regressing the efficiency residuals on these variables. More econometric work remains hence to be done, trying to include these variables directly in the production function.

Table 4.B.4 Frequency of Dummy Variables

Variables Dummy	Frecuencia	Porcentaje
Sexo del jefe del hogar (mujer)	60	9
Jefe de familia habla alguna lengua indígena	225	33.8
Existencia de problemas con el cultivo	295	44.3
Existencia de organizaciones agrícolas	124	18.6
Tipo de tenencia de la tierra (privada)	235	35.3
Tipo de tenencia de la tierra (ejidal y comunal)	400	60.1
Tipo de tenencia de la tierra (mixta)	31	4.7
Si el hogar recibe transferencias de gobierno	482	72.4
Pequeño, menos de 5 ha cultivadas	411	61.7
Grande, con 5 ha o más cultivadas	255	38.3

Source: Enhrum, 2003.

Table 4.B.5 Crop Specialization

Cultivo	Frecuencia	Porcentaje	Porcentaje
Maíz y frijol	456	68.5	68.5
Oleaginosas y otros granos	55	8.3	76.7
Café	43	6.5	83.2
Hortalizas	33	5	88.1
Perennes	79	11.9	100

Source: Enhrum, 2003.

Table 4.B.6. Summary Statistics of Variables

Variable	Obs.	Media	Desviación	Min	Max
q ($)	666	29,639.60	141,276.80	45	2,550,000.00
kvar ($)	666	5,024.70	32,033.10	10	564,500.00
kfij (horas-tractor)	666	41.4	81.6	0.1	920
mo (jornales)	666	114.9	157.3	1	1,559.00
sup (ha naturales)	666	4.9	7.7	0	78.50
supest ($, valor estandarizado)	666	209,030.80	813,229.80	185	12,800,000.00
restfinan ($, términos netos)	666	597.7	3,523.70	-1,875.00	69,265.30
restfinanor (proporción del vbp agrícola, q)	666	3.3	33.8	-5.9	642.00
edad (años)	666	51.5	15	18	94.00
educ (años de escolaridad)	666	3.8	3.3	0	19.00
dispmo (proporción)	666	0.7	0.3	0	1.00
indserv (proporción de servicios en comunidad)	666	0.2	0.1	0	0.80

Source: Enhrum, 2003.

Table 4.B.7 Stochastic Production Function, All Farms

Stoc. Frontier normal/half-normal model				Number of obs		666
				Wald chi2(4)		686.67
Log likelihood	-1102.2665			Prob > chi2		0
lq	**Coef.**	**Std. Err.**	**z**	**P>z**	**[95% Conf. Interval]**	
lkvar	0.4304	0.03544	12.14	0.000	0.36094	0.49986
lkfij	0.15869	0.03534	4.49	0.000	0.08942	0.22796
lmo	0.09303	0.03809	2.44	0.015	0.01838	0.16769
lsupersta	0.23155	0.03024	7.66	0.000	0.17227	0.29082
_cons	3.259	0.36657	8.89	0.000	2.54054	3.97745
/lnsig2v	0.13042	0.16018	0.81	0.416	-0.18353	0.44437
/lnsig2u	0.25885	0.3909	0.66	0.508	-0.5073	1.025
sigma_v	1.06738	0.08549			0.91232	1.2488
sigma_u	1.13818	0.22246			0.77596	1.66946
sigma2	2.43475	0.3565			1.73602	3.13348
lambda	1.06633	0.30044			0.47747	1.65518

Likelihood-ratio test of sigma_u=0: chibar2(01) = 3.13 Prob>=chibar2 = 0.039

Table 4.B.8 Efficiency Determinants, All Farms

Regression with robust standard errors				Number of obs	666
				F(23, 599)	15.47
				Prob > F	0
				R-squared	0.3577
				Root MSE	0.31515

inefic	Coef.	Robust Std. Err.	t	P>t	[95% Conf.	Interval]
olegra	0.0267	0.0554	0.48	0.630	-0.0821	0.1356
caf	-0.3722	0.0422	-8.82	0.000	-0.4551	-0.2893
hort	-0.2166	0.0462	-4.69	0.000	-0.3073	-0.1258
peren	-0.1506	0.0375	-4.02	0.000	-0.2242	-0.0771
proble	0.1833	0.0267	6.87	0.000	0.1309	0.2357
restfinanor	0.0032	0.0006	5.66	0.000	0.0021	0.0044
indserv	0.1693	0.117	1.45	0.148	-0.0604	0.3989
organi	0.0703	0.0377	1.87	0.062	-0.0037	0.1443
dispmo	-0.014	0.0453	-0.31	0.757	-0.103	0.0749
proguber	0.0108	0.0284	0.38	0.703	-0.0449	0.0665
mixta	-0.0144	0.0646	-0.22	0.824	-0.1413	0.1125
priv	-0.0096	0.0268	-0.36	0.720	-0.0622	0.043
gran	-0.029	0.0286	-1.01	0.311	-0.0852	0.0272
sexo	0.0645	0.047	1.37	0.170	-0.027	0.1568
lengua	0.0005	0.0298	0.02	0.987	-0.0581	0.0591
educ	-0.0009	0.0043	-0.22	0.828	-0.0094	0.0075
edad	0.0009	0.001	0.93	0.355	-0.001	0.0028
r1	-0.1082	0.0356	-3.04	0.002	-0.178	-0.0383
r3	-0.2663	0.0343	-7.76	0.000	-0.3337	-0.1989
r4	-0.3338	0.0688	-4.85	0.000	-0.469	-0.1987
r5	-0.3281	0.0571	-5.74	0.000	-0.4403	-0.2159
_cons	0.9156	0.0889	10.3	0.000	0.741	1.0902

Table 4.B.9 Stochastic Production Function, Maize and Bean Producers

Stoc. Frontier normal/half-normal model				Number of obs		435
				Wald chi2(4)		555.76
Log likelihood		-644.4		Prob > chi2		0.000
lq	**Coef.**	**Std. Err.**	**z**	**P>z**	**[95% Conf. Interval]**	
lkvar	0.4427	0.0396	11.18	0.000	0.3651	0.5204
lkfij	0.2647	0.0396	6.69	0.000	0.1871	0.3422
lmo	0.1074	0.0478	2.25	0.025	0.0137	0.2011
lsupersta	0.1321	0.0323	4.09	0.000	0.0688	0.1953
_cons	3.6686	0.3893	9.42	0.000	2.9056	4.4315
/lnsig2v	-0.6157	0.1957	-3.15	0.002	-0.9993	-0.232
/lnsig2u	0.5398	0.2047	2.64	0.008	0.1386	0.941
sigma_v	0.735	0.0719			0.6067	0.8905
sigma_u	1.3098	0.134			1.0718	1.6008
sigma2	2.2559	0.2793			1.7086	2.8033
lambda	1.782	0.1945			1.4008	2.1631

Table 4.B.10 Efficiency Determinants, Maize and Beans Producers

Regression with robust standard errors				Number of ob		435
				F (17,393)		10.3
				Prob > F		0.000
				R-squared		0.268
				Root MSE		0.526
inefmafri	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf. Interval]**	
indserv	0.157	0.200	0.790	0.432	-0.236	0.550
organi	0.122	0.071	1.730	0.085	-0.017	0.261
dispmo	-0.179	0.098	-1.830	0.068	-0.370	0.013
proguber	0.007	0.062	0.120	0.905	-0.114	0.129
mixta	-0.050	0.135	-0.370	0.711	-0.314	0.215
priv	-0.058	0.057	-1.030	0.305	-0.170	0.053
gran	-0.041	0.061	-0.670	0.500	-0.160	0.078
sexo	0.142	0.101	1.410	0.160	-0.056	0.340
lengua	-0.044	0.058	-0.760	0.449	-0.158	0.070
educ	-0.007	0.010	-0.720	0.474	-0.027	0.013
edad	0.000	0.002	0.070	0.947	-0.004	0.004
r1	-0.100	0.069	-1.450	0.147	-0.235	0.035
r3	-0.386	0.073	-5.270	0.000	-0.530	-0.242
r4	-0.658	0.103	-6.400	0.000	-0.860	-0.456
r5	-0.252	0.142	-1.770	0.077	-0.532	0.027
_cons	1.151	0.186	6.180	0.000	0.785	1.518

Table 4.B.11 Stochastic Production Function, Producers who Experienced Shocks

Stoc. Frontier normal/half-normal model				Number of obs		278
				Wald chi2(4)		322.750
Log likelihood	-446.91			Prob > chi2		0.000
lq	**Coef.**	**Std. Err.**	**z**	**P>z**	**[95% Conf. Interval]**	
lkvar	0.399	0.056	7.150	0.000	0.290	0.509
lkfij	0.273	0.055	5.000	0.000	0.166	0.380
lmo	0.276	0.068	4.060	0.000	0.143	0.409
lsupersta	0.172	0.044	3.870	0.000	0.085	0.259
_cons	2.658	0.544	4.890	0.000	1.592	3.723
/lnsig2v	-0.175	0.233	-0.750	0.453	-0.631	0.281
/lnsig2u	0.563	0.336	1.670	0.094	-0.096	1.221
sigma_v	0.916	0.107			0.729	1.151
sigma_u	1.325	0.223			0.953	1.842
sigma2	2.595	0.448			1.716	3.473
lambda	1.446	0.315			0.829	2.063

Table 4.B.12 Efficiency Determinants, Producers who Experienced Shocks

Stoc. Frontier normal/half-normal model				Number of ob		278
				F (16,264)		7.620
				Prob > F		0.000
				R-squared		0.292
				Root MSE		0.479
inefconp	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf. Interval]**	
olegra	0.188	0.152	1.230	0.219	-0.112	0.487
caf	-0.604	0.090	-6.740	0.000	-0.780	-0.428
hort	-0.167	0.108	-1.550	0.121	-0.379	0.045
peren	-0.039	0.115	-0.340	0.732	-0.265	0.187
restfinanor	0.004	0.001	5.920	0.000	0.003	0.005
indserv	0.208	0.293	0.710	0.478	-0.368	0.784
organi	0.045	0.092	0.490	0.624	-0.136	0.226
dispmo	-0.144	0.099	-1.450	0.147	-0.340	0.051
proguber	0.021	0.070	0.300	0.765	-0.116	0.158
mixta	0.046	0.120	0.380	0.702	-0.190	0.282
priv	-0.011	0.074	-0.150	0.882	-0.157	0.135
gran	0.018	0.066	0.280	0.783	-0.112	0.149
sexo	0.068	0.109	0.620	0.537	-0.148	0.283
lengua	0.045	0.071	0.630	0.530	-0.095	0.184
educ	0.000	0.011	0.010	0.992	-0.021	0.022
edad	0.002	0.003	0.900	0.371	-0.003	0.007
r1	-0.018	0.080	-0.230	0.819	-0.176	0.139
r3	-0.348	0.074	-4.680	0.000	-0.495	-0.202
r4	-0.444	0.116	-3.840	0.000	-0.672	-0.216
r5	-0.290	0.151	-1.930	0.055	-0.587	0.006

Table 4.B.13 Stochastic Production Function, Producers who did not Experience Shocks

Stoc. Frontier normal/half-normal model				Number of ob	346
				Wald chi2(4)	484.030
				Log likelihood	-526.305
				Prob > chi2	0.000
lq	**Coef.**	**Std. Err.**	**z**	**P>z**	**[95% Conf. Interval]**
lkvar	0.391	0.043	9.070	0.000	0.306	0.475
lkfij	0.183	0.043	4.250	0.000	0.099	0.268
lmo	0.207	0.057	3.600	0.000	0.094	0.319
lmo	0.207	0.057	3.600	0.000	0.094	0.319
lsupersta	0.249	0.035	7.020	0.000	0.179	0.318
_cons	2.226	0.915	2.430	0.015	0.434	4.019
/lnsig2v	0.204	0.077	2.660	0.008	0.054	0.355
/lnsig2u	-8.228	125.030	-0.070	0.948	-253.282	236.826
sigma_v	1.108	0.042			1.027	1.194
sigma_u	0.016	1.022			0.000	2.670E+51
sigma2	1.227	0.096			1.039	1.414
lambda	0.015	1.028			-2.000	2.029

Table 4.B.14 Efficiency Determinants, Producers who did not Experience Shocks

				Number of obs		346
				F(16, 325)		11.81
				Prob > F		0.00000
				R-squared		0.38370
				Root MSE		0.00007
inefsinprob	**Coef.**	**Robust Std. Err.**	**t**	**P>t**	**[95% Conf. Interval]**	
olegra	-0.00001	0.00002	-0.25000	0.80600	-0.00004	0.00003
caf	-0.00010	0.00001	-7.08000	0.00000	-0.00013	-0.00007
hort	-0.00007	0.00002	-3.83000	0.00000	-0.00010	-0.00003
peren	-0.00007	0.00001	-5.29000	0.00000	-0.00010	-0.00004
restfinanor	0.00000	0.00000	0.31000	0.75800	-0.00001	0.00001
indserv	-0.00002	0.00002	-0.79000	0.43200	-0.00007	0.00003
organi	0.00003	0.00001	2.27000	0.02400	0.00000	0.00005
dispmo	0.00002	0.00002	1.39000	0.16600	-0.00001	0.00006
proguber	0.00000	0.00001	0.42000	0.67300	-0.00002	0.00002
mixta	-0.00001	0.00003	-0.42000	0.67600	-0.00007	0.00005
priv	-0.00001	0.00001	-0.59000	0.55700	-0.00002	0.00001
gran	-0.00001	0.00001	-1.27000	0.20700	-0.00003	0.00001
sexo	0.00001	0.00001	0.97000	0.33300	-0.00001	0.00004
lengua	-0.00001	0.00001	-0.69000	0.49000	-0.00003	0.00001
educ	0.00000	0.00000	-0.26000	0.79800	0.00000	0.00000
edad	0.00000	0.00000	-0.05000	0.95600	0.00000	0.00000
r1	-0.00001	0.00001	-1.24000	0.21500	-0.00004	0.00001
r3	-0.00006	0.00001	-4.99000	0.00000	-0.00009	-0.00004
r4	-0.00014	0.00002	-7.27000	0.00000	-0.00017	-0.00010
r5	-0.00011	0.00002	-4.56000	0.00000	-0.00015	-0.00006
_cons	0.01308	0.00003	483.30000	0.00000	0.01303	0.01314

APPENDIX 1 : THE STOCHASTIC FRONTIER METHOD

El enfoque econométrico utilizado está basado en la construcción de la frontera de producción y la medida de ineficiencia respecto a ésta, es decir, aísla los efectos de la perturbación aleatoria estándar de los correspondientes a la ineficiencia. Posteriormente, a partir de las estimaciones de la ineficiencia para cada productor, se trata de encontrar sus determinantes.

La frontera de producción estocástica se determina por la estructura de la tecnología de producción y por un componente que contiene las desviaciones observadas de la función de producción, cuyas fuentes pueden ser de dos tipos: 1) efectos específicos del productor que pueden ser de cualquier signo y 2) la ineficiencia productiva. Esto es:

$$\ln Y_i = Bo + \circledcirc B_n \ln X_{ni} + v_i - u_i$$

$$\ln Y_i = Bo + \circledcirc B_n \ln X_{ni} + e_i$$

donde el vector de insumos X pertenece a R^+_n ; el vector de producto Y pertenece a R^+ ; B es el vector de parámetros de tecnología a estimar; i =1,…,I es el índice de los productores. En este modelo de error compuesto, v_i es el término de perturbación aleatoria simétrico, idéntico e independientemente distribuido (iid) como $N(0, \circledcirc_v^2)$ que captura los efectos de la perturbación estocástica, y u_i es el componente no negativo atribuible a la ineficiencia técnica , distribuido independientemente de v_i.

Dado que $u_i \geq 0$, $e_i = v_i - u_i$ es asimétrico. Bajo el supuesto de que v_i y u_i se distribuyen independientemente de X_i, la estimación por MCO proporciona estimadores consistentes de B_n, a excepción del intercepto Bo, debido a que $E(e_i) = - E(u_i) \leq 0$. Sin embargo, bajo los siguientes supuestos de la distribución de u_i y v_i el Método de Máxima Verosimilitud es más eficaz.

i) v_i se ~iid $N(0, \circledcirc_v^2)$
ii) u_i se ~ iid $N^+(0,\circledcirc_u^2)$ como una media normal no negativa
iii) v_i y u_i se distribuyen independientemente una de otra y de los regresores X_n.

Dado que $e_i = v_i - u_i$, la función de densidad conjunta de u_i y e_i es

$$f(u,e) = \frac{1}{2\Pi\sigma_u\sigma_v} \cdot \exp\{-\frac{u^2}{2\sigma_u^2} - \frac{v^2}{2\sigma_v^2}\}$$

y la función de densidad marginal de e_i resultante de integrar u_i sobre f(u,e) es

$$f(e)=\int_0^{\infty} f(u,e)du=\frac{1}{\sqrt{2\Pi\sigma}}\cdot[1-\Phi\frac{\varepsilon\lambda}{\sigma}\}.\exp\{-\frac{e^2}{2\sigma^2}\}=\frac{2}{\sigma}.\phi\left(\frac{e}{\sigma}\right).\Phi\left(-\frac{e\lambda}{\sigma}\right) \quad *$$

Donde ⊚ = $(⊚_v^2+⊚_u^2)^{1/2}$, . ⊚= $(⊚_u/⊚_v)$, y ⊚(.) y ⊚(.) es la distribución normal acumulativa y la función de densidad normal, respectivamente.

Utilizando *, la función de máxima verosimilitud para una muestra de I productores es:

$$\ln L = cte - I\ln\sigma + \sum_i \ln\Phi\left(-\frac{e_i\lambda}{\sigma}\right) - \frac{1}{2\sigma^2}\sum_i e_i^2$$

La maximización de esta función proporciona estimadores consistentes de máxima verosimilitud de todos los parámetros cuando I➔∞. El siguiente paso consiste en obtener las estimaciones de eficiencia técnica para cada productor u hogar bajo la siguiente idea. Dado que $e_i = v_i - u_i$, entonces:

si $e_i>0$, u_i no es suficientemente grande (dado que E(vi) =0), lo cual implica que el productor es relativamente eficiente,

en el caso contrario (cuando $e_i<0$), el productor es relativamente ineficiente.

Para extraer la información de u_i a partir de e_i; Jondrow, Novell, Materov y Schmidt (1982) especificaron una forma funcional de la ineficiencia a partir de la distribución condicional de u_i dado e_i. Así, si u_i se distribuye $N^+(0, ⊚_u^2)$ entonces

$$f(u\,|\,e)=\frac{f(u,e)}{f(e)}=\frac{1}{\sqrt{2\Pi\sigma^*}}.\exp\{-\frac{(u-\mu^*)^2}{2\sigma^{2*}}\}/\left[1-\Phi\left(-\frac{\mu^*}{\sigma^*}\right)\right]$$

Donde $⊚^* = -e⊚_u^2/⊚^2$ y $⊚^{2*}=⊚_u^2⊚_v^2/⊚^2$. Dado que f(u|e) se distribuye como $N^+(⊚,⊚^{2*})$, la media y la moda pueden servir como un estimador puntual para estimar la ineficiencia técnica u_i de cada productor:

$$E(u_i\,|\,e_i)=\mu^*_i+\sigma^*\left[\frac{\phi(-\mu_i^*/\sigma^*)}{1-\Phi(-\mu_i^*/\sigma^*)}\right]=\sigma^*\left[\frac{\phi(e_i\lambda/\sigma)}{1-\Phi(e_i\lambda/\sigma)}-\left(\frac{e_i\lambda}{\sigma}\right)\right]$$

$$M(u_i\,|\,e_i)=\begin{cases}-e_i\left(\dfrac{\sigma_u^2}{\sigma^2}\right) & \text{si } e_i\le 0\\ 0 & \textit{en otro caso}\end{cases}$$

A partir de las estimaciones de la ineficiencia técnica u_i, se obtiene un estimador puntual para la eficiencia técnica:

$ET = \exp\{- \hat{u}_i\}$ donde $\hat{u}_i$, es $M(u_i | e_i)$ o $E(u_i | e_i)$

Cabe mencionar que Battese y Coelli (1988) propusieron un estimador puntual alternativo para la eficiencia técnica:

$$ET = E(\exp\{-u_i\} \mid e_i) = \left[\frac{1 - \Phi(\sigma^* - \mu^*_i / \sigma^*)}{1 - \Phi(-\mu^*_i / \sigma^*)} \right] . \exp\left\{ -\mu^*_i + \frac{1}{2}\sigma^{2*} \right\}$$

Sin embargo, en estudios de corte trasversal, independientemente del tipo de estimador utilizado, las estimaciones de la eficiencia técnica son inconsistentes (no son de mínima varianza) debido a que la variación asociada con la distribución de $(u_i | e_i)$ es independiente de i.

APPENDIX 2: LAND STANDARDIZATION METHOD

El ejercicio de estandarización de la tierra tiene como objetivo evaluar las tierras de cultivo de las cinco regiones bajo un mismo patrón de valor. Esta homogeneización del valor de la tierra se realizó mediante el cálculo de sus valores hedónicos, con base en las diversas características que reporta la encuesta. Dado que el valor estandarizado no es directamente observable, a partir de la información sobre el valor declarado de las parcelas y sus características de humedad, inclinación, cercanía a la comunidad, acceso en auto, región y número de veces que se puede sembrar al año se construyeron las variables necesarias para estimar la especificación que se describe enseguida.

$$logvth_i^{122} = b_0 + b_1\, hum_i + b_2\, mi_i + b_3\, mmi_i + b_4\, acca_i + b_5\, t1_i + b_6\, t2_i + b_7\, t3yt4_i + b_8\, tpp_i + b_9\, r1_i + b_{10}\, r3_i + b_{11}\, r4_i + b_{12}\, r5_i + b_{13}\, uso2_i + \clubsuit_i$$

logvth$_i$ es logaritmo del valor en pesos de la tierra por hectárea;
hum$_i$ es una variable *dummy*, caracteriza la humedad de la tierra, asigna 1 en el caso de riego y 0 si es de temporal;
mi$_i$ es una variable *dummy*, denota la inclinación del suelo, asigna 1 si es inclinado y 0 en otro caso;
mmi$_i$ es una variable *dummy*, denota la inclinación del suelo, , asigna 1 si es muy inclinada y 0 en otro caso;
acca$_i$ es una variable *dummy*, asigna 1 si la parcela tiene acceso en auto y 0 en otro caso;
t1$_i$ es una variable *dummy* que asigna 1 si a la parcela se llega a pie de 0 a 10 minutos desde el centro de la comunidad y 0 en otro caso;
t2$_i$ es una variable *dummy* que asigna 1 si la parcela se encuentra entre 11 y 30 minutos a pie desde el centro de la comunidad y 0 en otro caso;
t3yt4$_i$ es una variable *dummy* que asigna valor de 1 si la parcela se encuentra de 31 a 120 minutos a pie desde el centro de la comunidad y 0 en otro caso;
t5$_i$ es una variable *dummy* que asigna valor de 1 si la parcela se encuentra a más de 120 minutos a pie desde el centro de la comunidad y 0 en otro caso
tpp$_i$ es una variable *dummy*, asigna 1 si el tipo de tenencia de la tierra es privado y 0 en otro caso;
r1$_i$, ***r2***$_i$, ***r3***$_i$, ***r4***$_i$, **r5**$_i$ son variables *dummy* que denotan a que región pertenece la parcela;
Uso2$_i$ es una variable *dummy* que asigna 1 si la parcela se puede sembrar al menos dos veces al año y 0 en otro caso.

Una vez que se calculan los valores hedónicos estimados de las tierras por hectárea se procede a sacar el ponderador para la estandarización de la siguiente manera.

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[122] En este modelo, el subíndice i se refiere a las diferentes parcelas que podría poseer cada hogar.

Primero, se calcula el valor declarado promedio de las tierras para toda la muestra; segundo, se estima el valor de las tierras para toda la muestra a partir de los coeficientes de la regresión; y tercero, se dividen los valores estimados (del paso 2) entre el valor promedio de la muestra (paso 1) para cada parcela i.

Finalmente este ponderador se multiplica por el valor declarado, con lo cual la nueva variable del valor estandarizado de la tierra tendrá una varianza menor, mejorando la estimación.

Cuadro B1. Regresión Lineal Simple para el Cálculo de Valores Hedónicos de la Tierra de los Hogares Productores

Source	SS	df	MS			
					No. of obs	958
					F(13, 944)	36.33
Model	658.46	13.00	50.65		Prob > F	0.00
Residual	1316.17	944.00	1.39		R-squared	0.33
Total	1974.63	957.00	2.06		Adj R-squared	0.32
logvth	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf. Interval]**	
hum	0.883	0.109	8.080	0.000	0.669	1.097
mi	-0.243	0.086	-2.840	0.005	-0.411	-0.075
mmi	-0.547	0.201	-2.720	0.007	-0.941	-0.153
acca	0.266	0.115	2.310	0.021	0.040	0.492
t1	0.914	0.271	3.370	0.001	0.383	1.446
t2	0.663	0.262	2.530	0.012	0.149	1.177
t3yt4	0.463	0.262	1.770	0.078	-0.051	0.977
tpp	0.205	0.085	2.420	0.016	0.039	0.372
r1	-1.097	0.108	-10.190	0.000	-1.309	-0.886
r3	-0.848	0.115	-7.340	0.000	-1.074	-0.621
r4	-1.142	0.158	-7.240	0.000	-1.451	-0.832
r5	-1.945	0.133	-14.630	0.000	-2.206	-1.684
uso2	0.203	0.094	2.150	0.032	0.018	0.388
_cons	9.230	0.287	32.170	0.000	8.667	9.793

List of Variables

Etapa I	
lq	logaritmo del valor bruto de la producción agrícola de los hogares
lkvar	logaritmo del gasto en pesos en semilla, fertilizante y plaguicida
lkfij	logaritmo de la utilización de maquinaria en la actividad en términos de horas-tractor
lmo	logaritmo del número de jornales empleados durante las tres etapas del proceso productivo
lsupest	logaritmo del valor en pesos del gasto en semilla, fertilizante y plaguicida
Etapa II	
sexo	dummy que captura los hogares donde el jefe es mujer
lengua	variable dummy que capta los hogares donde el jefe habla una lengua o dialecto además del castellano
edad	la edad del jefe del hogar
educ	el nivel educativo del jefe, años de escolaridad
dispmo	proporción de la disponibilidad de mano de obra familiar
restfinan	restricción financiera, capta el acceso a financiamiento de otras fuentes distintas a las del presupuesto familiar, en términos netos
restfinanor	variables restfinan como porcentaje del valor bruto de la producción agrícola (q)
proguber	dummy que capta el acceso de los hogares agrícolas a transferencias del gobierno
proble	dummy que captura si la producción agrícola del hogar experimentó algún tipo de siniestro y la cosecha fue menor al 50% de lo esperado en año normal
mafri	dummy de especialización de la producción agrícola en el cultivo de maíz y frijol
olegra	dummy de especialización de la producción agrícola en el cultivo de otros granos y oleaginosas
caf	dummy de especialización de la producción agrícola en el cultivo de café
hort	dummy de especialización de la producción agrícola en el cultivo de hortalizas
peren	dummy de especialización de la producción agrícola en cultivos perennes cuyos ciclos son mayores a un año
gran	dummy de hogar con 5 ha cultivadas o más
peq	dummy de hogar con menos de 5 ha cultivadas
indserv	proporción que refleja la dotación de servicios en la comunidad a la que pertenece el hogar de un total de nueve tipos
organi	dummy que captura la existencia de organizaciones de tipo agrícola, ejidal o campesina dentro de las comunidades
ejicom	Tipo de tenencia de la tierra ejidal y comunal
priv	Tipo de tenencia de la tierra privada
mixta	Tipo de tenencia de la tierra mixta, es decir, privada y ejidal o comunal
r1	región 1, Sur-sureste
r2	región 2, Centro
r3	región 3, Centro-occidente
r4	región 4, Noroeste
r5	región 5, Noreste

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MEXICO: AN OVERVIEW OF SOCIAL PROTECTION

1. INTRODUCTION

This report provides a strategic overview of Mexico's federal social protection system, which is comprised of both social insurance and social assistance programs. It assesses its performance to date regarding income risk management for vulnerable groups, and identifies options for stepping up that performance. In doing so it responds to an increasing consensus in Mexico regarding the need for a major social protection policy reform, even if the direction of those reforms is still in flux. The report is designed to provide a first stage diagnostic of major issues facing the social protection system, as an input to ongoing discussion and debate in Mexico, and as a platform for further technical work on the specifics of reform.

The report focuses on the role of federal government in the design and implementation of social protection policies, while recognizing that sub-national governments are playing an important role in the provision of these services, as will be explored in the next phase of the World Bank's Mexico Programmatic Poverty work. In doing so, it draws upon the first phase of the Mexico Programmatic Poverty Work as well as the urban, rural and vulnerability studies being conducted in parallel with this analysis.

The report is organized into four chapters. Chapter 1 presents a brief review of social protection concepts, and establishes a framework for determining the optimal role for government in the provision of social protection (risk management) tools, as distinct from market-provided risk management tools and those undertaken informally by and between households. Chapter 2 discusses the major sources of income vulnerability in Mexico, identifying the major risks that Mexican families faces, and explores the extent to which households have access to private risk management mechanisms for addressing these risks. Chapter 3 provides an overview and assessment of the social protection system in Mexico, and Chapter 4 discusses issues and options.

WHAT IS SOCIAL PROTECTION?

Social protection is a set of tools to manage income risk, ranging from formal mechanisms such as old-age pensions, health insurance and transfer programs to informal mechanisms such as remittances. Social protection has an important role to play in addressing not only short-term vulnerability, preventing households from temporarily falling into poverty, but a longer-term role in reducing risks that perpetuate chronic poverty**.** It is based on the idea that individuals, households, and communities are exposed to multiple income risks from different sources, both natural and man-

made, individual and covariant (World Bank, 2001), that can lead to welfare losses unless public or private social protection mechanisms are available to assist households in managing risk.

WHAT IS THE ROLE OF THE GOVERNMENT IN PROVIDING SOCIAL PROTECTION?

There are two basic rationale for governments to provide social protection: (i) to address market failures that leave families or individuals without sufficient risk-pooling mechanisms to cope with shocks, and (ii) to achieve redistributive goals, including the protection of vulnerable groups such as the ill or disabled, and via the provision of asset-building strategies, such as human capital development. The failure of private insurance markets to provide viable risk-management mechanisms provide a clear rationale for policy intervention by the government in those markets, in the form of public (or publicly-regulated) risk-pooling programs such as unemployment and health insurance. Income redistribution via social assistance programs (income transfers and asset-building programs to poor households) form the second core of social protection policy, and the extent to which governments take on this second role of social protection policy is largely a matter of choice and political will.

Social protection policies can be grouped into two major categories: social insurance and social assistance. Social insurance mechanisms are those where participants pay into the system and withdraw benefits when eligible, effectively pooling risk across all program participants. Social assistance programs are comprised of government transfers to targeted populations, funded by general tax revenues. Yet in practice the boundary between these two types of programs can break down. Social insurance programs may be partially funded from general tax revenues, such that a component of the benefit becomes in effect a subsidy. Social assistance programs, on the other hand, if not rationed by means of a budget constraint but instead available to anyone in the general population displaying conditions of eligibility, simply become risk-pooling mechanisms across the entire general population; contributions are paid via the tax system, and benefits drawn out according to need (World Bank, 2004).

What are the circumstances under which the government should intervene to provide social protection, and what is the optimal type of intervention? Building on World Bank, 2004, which draws on the comprehensive insurance framework (Erlich and Becker, 1972), we establish a basic typology of income risks, based on the two factors determining the cost of insuring against a risk, which are: (i) the frequency of the risk, from rare to constant, and (ii) size of the loss resulting from the risk, from small to catastrophic. From this typology we establish four main categories of risk, as illustrated in Figure 1: small and rare (dog bite), small and constant (minor illness), catastrophic and rare (job loss), catastrophic and constant (chronic poverty). Then we match these four major categories of risk with the consequent ideal social protection response, and the role for the government in providing that response. The role for the government is

minimal in the bottom two quadrants of the figure –where informal mechanisms by and between households can be largely successful in managing risk– and becomes larger as the size of the potential loss moves up the figure to catastrophic losses, where the role for the government in social protection provision is greatest. Similarly, the type of intervention that is ideal differs from left to right –rare losses (to the right of the figure) are most efficiently dealt with via risk-pooling (insurance, either provided by the market or the government) whereas frequent and predictable income losses, which cannot be cost-effectively insured against, are most effectively addressed via re-distributive social assistance transfers (either from the government, or between households).

Figure 1.1 Social Protection Responses and Role for Government, by Size and Frequency of Income Risks

Catastrophic

Size of loss

Catastrophic and Rare i.e. unexpected job loss – transient poverty **Ideal SP response**: risk-pooling **Goal**: address market failure (where insurance markets fail to provide) **Potential Role for Government**: **HIGH** provide social insurance schemes (funded risk-pooling mechanisms) where market fails to provide, i.e. workfare or unemployment insurance. INSURANCE	**Catastrophic and Frequent i.e. income volatility associated with informal employment, or permanent income loss due to disability or old age - and low asset base with which to manage income shocks** **Ideal SP response**: re-distributive transfers, and incentives for savings/human capital investment **Goal**: income smoothing, prevention of negative coping, and increased human capital **Potential Role for Government**: **HIGH** provide social assistance funded from general tax revenues (risk pooling across entire population) and where age-appropriate, incentives to invest in human capital. ASSISTANCE
Small and Rare i.e. dog bite **Ideal SP response**: private risk management, i.e. coping **Potential Role for Government**: **MINIMAL** - except incentives for positive coping behavior	**Small and Constant i.e. common cold** **Ideal SP response**: private risk management, i.e. self-insurance (saving) **Potential Role for Government**: **MINIMAL** - regulation of capital markets to facilitate access to savings mechanisms

Small Rare → Frequent

Frequency of loss

Appropriate social protection policy design takes into account both the potential negative effect of crowding out private transfers, and the potential positive effects of replacing detrimental private coping and mitigation strategies with formal mechanisms. Public social protection –be it in the form of risk pooling or in the form of targeted redistribution– interacts with informal risk mitigating and coping mechanisms, including private transfers**.** One key question for policymakers is whether or not a public intervention will simply displace private risk management mechanisms, such as market insurance, or informal, inter-household transfer systems. In insurance, the appropriate role for government is in regulating private insurance markets, and stepping in to provide public risk-pooling programs where markets fail (such as in the case of unemployment insurance). In targeted redistribution efforts, programs need to take into account the existence of private transfer networks, including monetary transfers as well as the exchange of commodities (food, clothing etc.) and assistance such as help with child care. If public transfers crowd out private transfers, government intervention contributes less to recipients level and safety of income and consumption than initially thought.[1] Put differently, private safety nets might fill the gaps in the absence of publicly funded programs, and may at times alleviate poverty more efficiently than government intervention (Cox and Jimenez, 1990). However, a second set of questions relate to 'negative' coping mechanisms which increase a household's vulnerability to risk and poverty in the future. Damaging behavioral responses to shocks adopted by the poor in order to mitigate (ex-ante) and cope (ex-post) with risk include, among others: the sale of productive assets, adverse incorporation under the wings of a patron, safer but low-return production techniques, and reduced investments in physical and human capital. Skoufias (2004) stresses the need to better understand the nature of private insurance strategies, pointing to the fact that a displacement of informal means of consumption insurance is not necessarily a bad consequence of government intervention. Ideally, optimal policy design takes into account both the potential negative effect of public transfers crowding out private transfers, and the potential positive effects of replacing detrimental private coping and mitigation strategies with formal mechanisms. The poor typically have relatively weak capacity for self-insurance, and limited ability to pool risks over and above extended families or other informal mechanisms. These informal mechanisms tend to be costly, and to break down in the context of covariate risks. Government action can be crucial in these areas.

[1] This is particularly true for the level and fluctuation of consumption. Informal risk coping strategies, including private transfers, are insurance mechanisms used to protect consumption from adverse shocks to income. As a result, we would expect income to fluctuate more than consumption. Since welfare ultimately derives from consumption and since consumption accounts for households' private efforts at protection, it is generally the preferred measure. It is, however, worth noting that risk mitigating strategies that successfully lower variability of consumption by lowering variability of income lead to reduced income in the future and a permanent fall in median consumption levels. Focusing on variability of consumption should therefore be accompanied by a view to changes in the long run average level of consumption (see Skoufias 2004 for a review of the main arguments from economic theory). It is, however, worth noting that some risk mitigating strategies successfully lower variability of consumption.

Two main features of the role for publicly-provided social protection emerge from this typology. First, the role for government in the provision of social protection services or programs varies from minimal to high depending on the size of the potential income loss. In the bottom two quadrants of the graph, the size of the income loss, where the risk should occur, is low. Public resources are much less effectively spent to mitigate small risks in the bottom two quadrants, where private risk management mechanisms optimally predominate. Conversely, the potential role for government grows with the size of the potential loss. In the top two quadrants of the figure, where the size of the potential loss is high, public resources can very effectively be spent to address these types of risks, as long as interventions are designed to complement rather than replace risk management tools that markets or households provide for themselves.

Second, the optimal type of intervention – risk-pooling (insurance) to address market failure vs. targeted redistribution (assistance) – depends on the frequency of the risk. Risks that are rare can be insured against, and therefore are most appropriately managed via risk-pooling mechanisms among those exposed to the risk. Risks that are frequent cannot be effectively managed via risk-pooling, and are more suited to explicit social assistance via targeted income transfers. Thus the figure also illustrates the dichotomy between the two major roles for social protection: insurance (where markets fail to provide risk-pooling among households faced with relatively rare risks, that nevertheless induce high costs should they occur) and social assistance via redistribution (where households face frequent —or permanent— risks to income coupled with having a low asset base with which to manage risk, such that even small shocks to income can be catastrophic). For example, for populations vulnerable to 'catastrophic and rare losses' (such as job loss), shown in the upper left quadrant of the figure, the optimal role for the government is to provide funded risk-pooling mechanisms (e.g., workfare). The top right quadrant illustrates populations facing frequent income losses, and for whom the impact of the shock can be catastrophic due to an insufficient asset base to effectively manage those risks. The population in this quadrant often faces chronic poverty in the absence of public interventions, and includes, for example, the poor self-employed with a permanently high degree of variability in earnings, and the poor who move into old age who experience repeated shocks as they continue to engage in the labor market but suffer decreased productivity/ability to work. For this type of risk, the role for the government is again high, and the optimal public intervention is targeted, re-distributive transfers (such as conditional cash transfers, workfare, and old age minimum pensions). Some of these programs, such as conditional cash transfers, can be tied to human capital development where these are age-appropriate, in order to reduce recidivism and facilitate the exit from chronic poverty (see Box 1.1)

Box 1.1: Social protection and chronic poverty

Social protection has a particular role to play in addressing chronic poverty, notably by moving beyond risk-pooling to the use of targeted transfers. The

combination of material poverty, extreme capability deprivation and various forms of social exclusion experienced by the chronic poor group calls for a multi-dimensional response.

Formal mechanisms for risk mitigation and coping are central to successful social protection strategies not only because they help prevent individuals falling into chronic poverty, but also because they facilitate exit from chronic poverty while preventing recidivism. Access to formal risk-pooling mechanisms matter to the chronically poor. The cost of realized risks is greater for this group due to lower endowments of physical and human assets which weaken the ability to manage shocks. Evidence also shows that the chronic poor experience higher frequency of income fluctuations, longer recovery periods, and short-range upward mobility which leaves them particularly vulnerable to recidivism. In the absence of public policy, behavioral responses adopted to mitigate and cope with risk and vulnerability can play a crucial role in maintaining the poor in poverty: "If the poor are more exposed to shocks than other groups, if they have fewer buffers to protect themselves against the realization of these shocks, and if to achieve short term security they are forced to adopt low return livelihood strategies which further increase their vulnerability over time, then risk and vulnerability will contribute to trapping individuals and households in poverty."

Sources: Yaqub (2002), Baulch (2002), Krishna (2003) and Barrientos, Hulme and Sheperd, (2001)

Governments have a particular role to play in the provision of social protection services, in coordination with other public policies such as sectoral (health and education) investments and labor markets. A well designed set of social protection policies is one component of an effective poverty reduction strategy. Social protection policies can assist households in managing income risk, while education and health investments are critical to raising incomes over the long term. Social protection policies also depend on a well-functioning labor market, and the design of social protection programs must take into account labor market incentives or disincentives. Social insurance programs are funded via contributions and the level and nature of these contributions have an important effect on incentives for formality in employment. Further, social assistance programs can create disincentives to work if benefit levels are set too high or if there is no clear exit strategy inherent in the program design. Finally, assistance programs work best if they create strong positive links to employment. These issues will be discussed more fully in Chapter 4.

In sum, there is an important role for public provision of social protection where exposure to risk is high and the potential income losses are large –and where private risk management tools fail, are insufficient, or produce negative externalities that further embed a household in poverty. The principles of social protection as laid out in this chapter can be summarized as follows: the role for government increases the larger the size of the income risk, and the type of government intervention that will be most successful varies with the frequency of the risk. Pooling risk across a large number of households (insurance) is most effective where risks occur infrequently but where the

income costs are large, should the risk occur. Insurance becomes less effective the more frequent the risk, carving out a particular role for social assistance (income transfers) particularly for the poorest households who have limited assets for risk management (the chronic poor). Private risk management tools work best where the losses associated with risks are low and the role for government intervention increases with the size of the potential income loss. Chapter 2 builds on this framework to identify major sources of income risk to which households are exposed in Mexico, as well as the evidence on private risk management tools available for managing those risks.

2. HOUSEHOLD VULNERABILITY IN MEXICO

Individuals and households face a diverse set of income risks. Social protection comprises a series of risk management strategies including informal mechanisms (e.g., savings and remittances) and formal social protection instruments (e.g., social security and social assistance) to manage those risks. Drawing on available data and existing risk and vulnerability assessments, a mixed picture emerges. Mexico has made tremendous progress in reaching certain risk groups, particularly the young, poor and rural population. However, several key vulnerable groups can be identified for whom the frequency of risk and severity of loss compels a re-examination of government policy. Among these are the elderly living in poverty and the low-income population which faces very high costs associated with health care. In addition to these idiosyncratic (individual) risks, *Mexicans* are also periodically exposed to aggregate shocks (such as economic shocks or natural disasters), yet the evidence suggests that the overall variability of consumption in the face of these risks is low. Adjustment to macroeconomic shocks has largely taken place via falling wages, such that income losses as a result of economic downturns have been diffused across the working population, as opposed to resulting in unemployment focused on certain key sectors, although some evidence points to possible changes in this adjustment mechanism in the future. Private risk management is an important component of household responses to the above risks, but its limits are also apparent. The chronic poor, for whom private risk management tools are fewest, emerge as a particularly vulnerable group.

A household's level of vulnerability, i.e., the likelihood of experiencing a loss of welfare in the future, is determined by: (i) the characteristics of risks it faces, and (ii) the household's ability to manage risks via access to private or public mechanisms. Vulnerability can be defined as the probability of experiencing a loss in the future as measured by some benchmark of welfare, such as income or consumption. In this report we define vulnerability as the probability of falling into, or further into poverty. In other words, we will focus on the probability of becoming poor or poorer. The degree of vulnerability depends on the characteristics of risks (the size of the potential loss) and on the households' ability to manage risk. Mexican households face a range of risks and employ a variety of risk management strategies, both public (i.e., social protection policies such as insurance or assistance) and private (i.e., own savings, family remittances). When the combination of private and public insurance and coping mechanisms is effective, risk ceases to be a concern as shocks do not result in adverse welfare effects.

Income shocks are idiosyncratic (individual) or covariant (economy-wide) and differ in terms of frequency, size of loss, and the mechanisms by which they are transmitted. Population-wide, the most common idiosyncratic risks affecting one's capacity to generate sufficient income are low-human capital development during childhood, health or other shocks to primary wage earners during working age, and poverty in old age due to an inability to work and insufficient retirement savings. Vulnerability to the different types of idiosyncratic risks changes as an individual moves through the stages of the lifecycle, as will be shown below. The major sources of covariant risk are macroeconomic shocks that raise the risk of income losses economy-wide and natural disasters or weather-related risks that affect the living standards and income prospects of a large segment of households in one geographic area at once.

IDIOSYNCRATIC RISK AND VULNERABILITY IN MEXICO

This analysis begins by assessing idiosyncratic risk among the Mexican population through the lens of the lifecycle, consistent with the government of Mexico's *Contigo* strategy.[2] The analysis is based on data from the *Encuesta Nacional de Ingreso y Gasto de los Hogares* (ENIGH) from 1996 and 2002, from which leading risk indicators between the rural and urban poor populations using the official poverty lines have been calculated, as outlined in Appendix tables 1-4.[3] Different sources of exposure to idiosyncratic risk can be identified across three basic stages of the lifecycle: children and youth, working age adults, and the elderly. Social protection policy responses also differ across these age groups. One major source of idiosyncratic risk –health shocks– occurs across the lifecycle, and is also discussed below.

- *Infants, children and youth* are often among the most vulnerable in a population because of the high concentration of youth among the poor and because of the long-lasting effects of shocks to the young. The young are most vulnerable to risks that affect the development of their human capital and thus future earnings potential, including malnutrition, little education and health shocks.

- *The working age population* are most vulnerable to shocks to their capacity to generate income, either idiosyncratic (i.e., health shock that impinges upon the ability to work or unemployment) or aggregate (i.e., economic crises), that cannot be coped with and therefore translate to consumption losses. Policy responses here include both income generation (by supporting training, access to credit and financial services and channels for accumulating assets) and income security (through market insurance mechanisms, notably in health and unemployment).

[2] See Chapter 3, Figure 3.14 for further details on the *Contigo* Strategy.

[3] This work serves as (i) a complement to the vulnerability analysis carried out as part of the Mexico Poverty Programmatic work, based on the analysis of rural panel data from the *Progresa* evaluation from 1998-1999 and urban panel data from the ENEU applied in 1994 and in 2001 (Skoufias 2004); and (ii) an update of the past World Bank social protection review (Arriagada and Hall, 2001), using the same methodology to provide a consistent view of the evolution of risks and social protection over time.

For the income security function, the role for publicly-provided social protection is clear because these are market failure-related shocks with severe consequences, such as a serious illness, where risk pooling mechanisms are needed. The role for social protection is not clear-cut for income generation, as will be discussed below.

- *The elderly* are most vulnerable to idiosyncratic shocks to income as they become unable to work or generate sufficient earnings due to lost productivity in old age. There is a need to provide income security (mainly through pensions and health insurance).

- Health is a risk that spans all age-groups and for which the poor show high vulnerability, as reflected in high levels of out-of-pocket expenditure and catastrophic health shocks among the poor.

Infants, children and youth: Long-term shocks to human capital

Considerable advances have been made in Mexico over the past decade with respect to the human capital development of infants, children and youth. As outlined in World Bank (2004a), Mexico has now achieved close to universal primary education, with net primary schools enrollment among 6-11 year-olds rising from 88 percent in 1980 to 93.5 percent in 2000, and a rapid expansion of lower secondary enrollment. Similar gains have been made in health with considerable reductions in infant mortality (50.9 per 1,000 live births in 1980 to 20.5 in 2003), near universal vaccination coverage (97.7 percent) and decreases in maternal mortality (from 15.6 percent in 1980 to 7.3 percent in 2000).

Table 2.1 School attendance and Age-for-grade 1996 and 2002

		Urban		***Rural***	
		Extreme poor	*All*	*Extreme poor*	*All*
School Attendance					
Ages 6-11	1996	95.5	97.5	94.4	94.9
	2002	94.8	98.0	96.1	97.0
Ages 12-14	1996	80.6	88.7	71.4	74.0
	2002	88.5	92.0	83.8	86.5
Ages 15-17	1996	47.7	64.2	25.2	30.0
	2002	49.3	66.3	44.6	53.4
Age for grade					
Ages 6-11	1996	1.04	1.01	1.10	1.08
	2002	1.05	1.01	1.05	1.03
Ages 12-14	1996	1.14	1.07	1.30	1.24
	2002	1.14	1.06	1.14	1.11

Source: WB staff calculations, ENIGH 2002.

Despite important progress in terms of meeting the needs of infants and youth, historical patterns of exclusion prevail beyond lower secondary school. Although smaller gains have also been achieved in upper secondary and tertiary, difference between income groups and urban and rural areas remain considerable. As shown in table 2.1, attendance is low and regressive at upper secondary levels, with marked urban and rural disparities. Upper secondary enrolment (among 15-17 year-olds) is 49.3 percent among the urban poor, compared to a general rate of 66.3 percent; in rural areas, enrolment drops to 44.6 percent among the poor and 53.4 percent overall. University enrolment is quite limited and markedly regressive (see appendix). It is important to note that although urban-rural gaps seem to persist, overall progress in rural areas was again matched by near stagnation of indicators in urban areas. This might have changed since 2002, in particular in the light of the decision in 2000 to extend *Oportunidades* to urban areas.

Sources of income risk during working age

In assessing the major sources of income risk among the working-age poor, two distinct groups can be identified: a younger, more urbanized, skilled population and the older, less-skilled population concentrated more heavily in rural areas. The first group has higher levels of human capital, having benefited from the advances made in health and education, notably over the past 15-20 years. By contrast, there is a lower-skilled but economically active population that constitutes 50 and 23 percent of the poor rural and urban population respectively, with no education or incomplete primary. This population is generally older, able bodied, but has limited productive capacity. Table 2.2 shows that the percentage of low-skilled workers is significantly smaller for the age group 25-40 than what is found in the age group 41-64.

Table 2.2 No education or incomplete primary (low skills) by age group, 1996 and 2002

		Urban		***Rural***	
		Extreme poor	*All*	*Extreme poor*	*All*
Ages 25-40	1996	36.7	16.7	60.8	49.4
	2002	29.0	9.5	55.4	35.1
Ages 41-64	1996	69.9	41.6	90.2	85.4
	2002	62.7	29.0	85.4	70.2

Source: WB staff calculations, ENIGH 2002.

Each of these populations requires distinct public policy interventions; the role for social protection is largest among the older working poor, soon to become elderly. The younger, more skilled population is best positioned to benefit from interventions that fall largely outside the scope of social protection, such as training

(though international experience here also points to the limits of training programs in generating higher earnings), more education and improved access to financial markets. The role for social protection becomes clearer when addressing short-term income risk arising from unemployment –however, unemployment is not a major risk at present (see below). Among the older working age population, with very low skill level and declining productivity as they approach old age, there is more scope for social protection intervention, particularly in the form of a means and age-tested targeted minimum pension benefit as this population moves into retirement age.

Unemployment is low and relatively stable in Mexico; however, the urban poor show somewhat higher unemployment than other segments of the population. In the period 1987-2003, with the important exception of the *Tequila Crisis* in 1995, unemployment remained below 5 percent despite constant increases in labor participation (Montes, Santamaría and Bendini, 2004). Unemployment rates in Mexico are very low by regional standards, including when compared to most developed economies, such as Colombia and Chile, which experienced similar or stronger episodes of growth than Mexico. Moreover, unemployment duration has also been low, with most skilled and unskilled workers finding a job within a six-month period.

Table 2.3 Unemployment and part-time employment, 1996 and 2002

		Urban		***Rural***	
		Extreme poor	*All*	*Extreme poor*	*All*
Unemployment					
1996	Male	4.6	3.2	1.5	1.5
	Female	2.5	1.8	0.9	0.6
2002	Male	5.7	2.6	0.5	1.2
	Female	1.7	1.9	0.1	0.4
Part-time job*					
1996		20.3	18.5	33.3	30.2
2002		27.7	17.9	42.1	33.5

* Share of employed population working part-time.
Source: WB staff calculations, ENIGH 2002.

A growing share of the working poor are employed in part time jobs. The percentage of the population employed in part-time jobs increased significantly more for the extreme poor in both rural and urban areas. In fact, in urban areas, the percentage of the workforce in part time jobs declined slightly, while the percentage of the extreme poor working in this status increased from 20.3 percent in 1996 to 27.7 percent. In rural areas the share of part-time employed had an overall increase, but it was significantly more pronounced among the extreme poor. This trend can be explained both by economic cycles/structural change (market liberalization) and by the increased female participation in the workforce. An increase in part time jobs among the poor does not necessarily imply an adverse phenomenon. It may be that the poor are beginning to find

part time jobs. However, the situation poses a challenge to the social security system, as part time employment rarely allows the worker to contribute sufficiently to social security systems.

With respect to unemployment insurance, Mexico's historic wage flexibility has proven to be a relatively efficient safety net in past crises in Mexico. In the 1995 crisis, GDP per capita fell by 5 percent. The labor market adjusted through a 25 percent fall in wages but relatively little unemployment. This had the effect of spreading losses relatively evenly across the population rather than concentrating the losses on a particular group (World Bank, 2004). Gonzalez-Anaya (1999) finds that this adjustment mechanism was observed in many Latin American countries during the nineties. However, this adjustment through prices (wages) a less through quantities (employment) might be changing, and with lower inflation rates unemployment might be again a more likely risk (see discussion in companion report *Urban Poverty in Mexico*, World Bank 2005).

In addition, informal coping mechanisms that involve increased labor force participation of spouses effectively protect the incomes of households when faced with unemployment shocks to heads of households, and does not translate into increased school non-attendance or reduced educational performance (year-to-grade) among children. In a recent study of the determinants of household vulnerability in urban Mexico, Skoufias (2004) finds that it is only during the *Tequila crisis* (i.e., an aggregate shock) that the loss of a job by the household head is associated with an increase in income risk. Estimates of the determinants of labor force participation show that increased labor market participation of women (added worker effect) is a common informal risk management strategy of urban households. Combined with the estimated small impact of unemployment shocks on income, this finding suggests that strategies that adjust the labor market participation of spouses have been largely successful coping mechanisms.

Box 2.1: Informal Household Risk Management Strategies in Mexico

Households engage in a number of informal risk management strategies that need to be understood in order to craft effective formal, public social protection policies. A recent study suggests that families in urban Mexico employ both household self-insuring techniques as well as risk pooling techniques at the local level in the face of shocks as means for smoothing consumption.

Spouse added worker strategies are a substantial form of informal self-insurance. There is evidence of the "added worker effect," where non-working wives enter the workforce when confronted with the loss of a spouse's income. The research found substantial reductions in household work when a woman entered the labor market, suggesting that there may be hidden costs to this type of risk management such as less time with children and losses to social capital.

Child added worker_strategies are limited. Putting children in the labor force can be seen as transferring future family income to the present and hence another self-insurance strategy with potentially high private and social costs. However, only certain groups of poor girls appear to drop out of school when a father or mother loses his or her job. The largest effect on workforce entry appears when a mother opens a micro-enterprise. As found in studies elsewhere, child labor in Mexico appears to be pro-cyclical.

Extended families are probably efficient insurers and may offer protection not easily observed in the data. The sociological and anthropological literatures suggest that extended families provide possibilities of pooling risks, while maintaining the correct "self-protection" incentives at the household level.

Migration is often resorted to as a form of income diversification and remittances play an important role in risk management in Mexico. Incomes of foreign workers are uncorrelated with their home economy and exchange rate devaluation increases the value of transfers in peso terms. However, the cost of this self-insurance strategy tends to be high in terms of lower education attainment.

Informal labor markets are not complete safety nets that offer readily available jobs. Most of those entering unemployment enter from the informal sector and the duration of unemployment is only 22 percent less than formal sector workers. This makes sense given that micro-enterprises everywhere have high failure rates.

Informal capital markets in the form of rotating credit associations, reciprocal loans, *guelaguetza*, or relations of *compadrazgo* may offer consumption smoothing and risk pooling possibilities.

Informal risk management strategies of rural households depend on two additional activities: diversification into non-farm occupations and subsistence farming.

Diversification of income sources: Diversifying income through non-farm economic activity has been an important way for Mexican rural households to concurrently increase income and mitigate risk. In reaction to the *Tequila Crisis* in 1994-95, rural households in Mexico increased their involvement in non-farm occupations, particularly low return ones which are easier to access.

Subsistence economy: Subsistence economy is commonly understood as the agricultural production of food crops carried out by farmers in one or several small plots of land for self-consumption, using family labor. Subsistence farming is rarely practiced alone but rather as a supplement to other production such as coffee or other cash crops, and it is not exclusive to poor farmers. The importance of the subsistence economy has been declining rapidly but it still is the number one safety net in rural areas

Source: "Income Risk, Household Coping Strategies and Income Security Policy in Mexico" 2001, World Bank report #22093-ME based on analysis of the National Urban Unemployment Survey (ENEU), and "A Study of Rural Poverty in Mexico", World Bank Report (Forthcoming).

The ability of households to effectively protect incomes against unemployment shocks via added-worker effect depends on: (i) the demographic

composition of the household; (ii) macroeconomic conditions (ability to mitigate the effects of employment shocks improves when the economy is growing, and falls during economic **crises**); and (iii) level of gender-based segmentation of labor markets. As referred to the above, Skoufias (2004) shows that increased labor market participation of women (added worker effect) is a common informal risk management strategy of urban households. This implies that protection against the risk to urban incomes from unemployment depends on household composition such as the existence of a non-working spouse. The inability of households headed by single women to employ added-worker risk management strategies might indicate higher exposure to risk, however this seems to be a rushed conclusion. Maloney et al. (2003) find that during the 1994-95 t*equila* crisis, female-headed households did not do any worse than the median household in terms of exposure to income risk, when corrected for income volatility in normal times. Unemployment rates in Mexico are presently low and in this context private coping mechanisms function well. However, the scope for the impact of future crises to be absorbed via downwards wage adjustments (as opposed to rising unemployment) may be limited. This is further discussed in section on economic downturns and crisis.

The Elderly

Old-age poverty is an important risk facing individuals in Mexico, and poverty rates are higher among the elderly than for the population as a whole. Recent data from international comparisons indicate that there is a gap between the national poverty rate and the 65+ poverty rate, with poverty among the elderly being more pronounced. This gap in poverty rates is not unique to Mexico among countries in the region; table 2.4 shows that a higher incidence of poverty among the elderly than for any other age group is found in six out of the eight Latin American countries included. The regional comparison, however, also shows that the rate of poverty among the elderly in Mexico is high given the country's level of development. This result is not surprising as Mexico has concentrated its poverty alleviation efforts and programs on children and young adults, a priority that is, from a social return point of view, an understandable focus, due to Mexico's thin tax base and scarce public resources. Still, the vulnerability of the elderly demands a closer look at the social protection mechanisms offered to this population.

Table 2.4 Poverty Rates among the Elderly in Latin America, 1998

	Entire Population	65 and older
Bolivia	30.5%	47.5%
Brazil	24.6%	18.5%
Chile	20.8%	23.9%
Colombia	24.0%	32.9%
Costa Rica	21.7%	29.1%
Guatemala	19.1%	27.1%
El Salvador	27.4%	38.0%
Mexico	**22.1%**	**37.6%**

Note: Comparison based on total income that includes both monetary and non-monetary income.
Source: Gill, Packard and Yermo (2004)

Access to public pension schemes among the poor is virtually non-existent in today's Mexico. Only 6.7 percent of the elderly extreme poor in urban areas and less than 1 percent in rural areas receive a pension (Table 2.5). An immediate result of lacking income security at old-age is that a large share of the elderly poor continue to work, particularly in rural areas. Coverage of pensions systems and other forms of income support among Mexico's elderly is discussed in more detail in Chapter 3, yet it is worth noting that a series of social assistance programs and transfers reach the elderly poor, including *Procampo*, *Oportunidades* (in 600,000 beneficiary households, the support is received by an elderly person), *Liconsa*, *Programa para Adultos Mayores* (covers 98 percent of elderly in Mexico City), *Acuerdo Nacional para el Campo* and *Programa Alimentario* (see appendix). With the exception of Mexico City's universal pension scheme, most of these programs target the rural poor. However, despite these programs, poverty remains prevalent among the elderly in Mexico.

Table 2.5 Pension coverage and labor force participation among the elderly, 1996 and 2002 (shares)

	Urban		*Rural*	
	Extreme poor	*All*	*Extreme poor*	*All*
Receives pension				
1996	7.9	21.2	0.9	5.5
2002	6.7	22.1	0.8	5.3
Works and does not receive a pension				
2002	29.8	24.9	57.9	49.7

Source: WB staff calculations, ENIGH 2002.

Informal risk management strategies rely on extended families, private transfers (remittances), and accumulation of assets (savings or investments). It is worth noting that the comparisons in Table 2.4 are based on total income poverty. Accumulated assets tend to increase with age, and the elderly would tend to be better off relative to other groups, if these are included. However, the value of assets held by the elderly depends critically on two institutions that are often lacking or

malfunctioning in Latin America: (i) legal institutions that protect property rights, and (ii) financial institutions that allow households to convert illiquid assets into income for consumption in old age. In addition, it is important to better understand the existing informal risk management and private transfers (inter-generational) in place, and to understand how these are affected by socio-demographic changes.

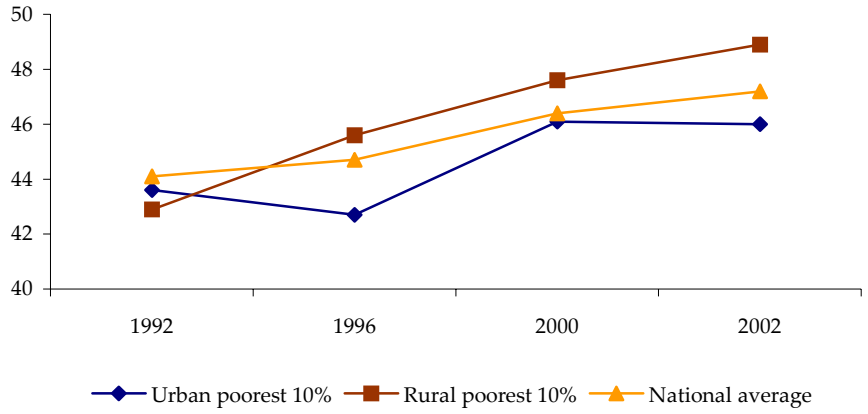
Private strategies to cope with income-risk in old-age may have adverse long-term effects. One example is how the need to protect against old-age poverty affect land inheritance patterns in rural areas. The main perceived risks faced by old land-owning men, whose possibilities of migration or participation in the labor market are diminished by age, are to be left alone, and to be unable to earn enough income to survive. Common responses to this situation observed in *ejidos* and *comunidades* are: (i) old owners cling to their land resisting any pressures to pass it on in life; (ii) at least one of the sons or daughters stay in the household to look after parents and help tilling the land, often with the promise that they will inherit it; and (iii) parents keep the family bound such that transfers keep coming in from distant children. As such, the resistance of Mexican small land holders of advanced age to pass on their lands to the young generation is part of a broader survival cum risk management strategy identified in field studies (see *A Study of Rural Poverty in Mexico*, World Bank, 2005). However, it also results in reduced agricultural productivity, youth exodus, and demographic imbalances.

Current demographic changes indicate that addressing old-age poverty may become an increasing challenge, due to the aging of the Mexican population. A recent study of demographic trends in Mexico found that the percentage of the population above 60 years of age rose from 6.6 in 1989 to 8.57 in 2002.[4] As shown in Figure 2.1, the increase in average age of household heads is particularly pronounced in rural areas. Higher life expectancy is increasing the number of elderly relative to young, which puts pressure on private risk management strategies of extended families and inter-generational transfers and formal pension systems alike. An aging population, together with urbanization and changing socio-cultural norms, also affects household composition and the effectiveness of the extended families as a safety net in old-age. Over the past decade the average number of members per household has decreased, as single-member households or two-member households without children become more common. Given that women live longer than men, many of the one-member households are composed of women above 60 years of age (Arriagada, 2001), while the growth in two-member families is driven mainly by an increasing number of older couples whose kids have left the household, the so-called empty-nesters (Ariza and Oliveira, 2004). From 1989 to 2002, the share of single-member households in urban areas rose from 4.6

[4] Ariza and de Oliveira (2004)

to 6.5 percent, while the share of two-member households with no kids rose from 6.3 to 8.3 percent.[5]

Figure 2.1. Age of Household Heads, 1992-2002



Source: ENIGH 2002.

Idiosyncratic health shocks, a major source of risk across all age groups

Exposure to health shocks twinned with insufficient capacity to manage those shocks is a major risk associated with poverty at all stages of the lifecycle. The low-income population in Mexico faces very high costs associated with health care. More than 5 million Mexican citizens face catastrophic health expenditure, resulting in at least 2 million of them falling into poverty.[6] In addition, the distribution of out-of-pocket expenditure is regressive as the poor show much higher levels of out-of-pocket expenditure than the rich. This translates into a higher frequency of catastrophic health shocks and suggests that available risk-pooling mechanisms do not reach the poor and/or do not offer efficient protection. When the survey *Lo que Dicen los Pobres* asked the poor in Mexico what they feared most in the coming 10 years, only unemployment and the death of a family member ranked higher than illness.[7]

Out-of-pocket expenditure and catastrophic health shocks. Estimates show that about 50 percent of total health expenditure in Mexico is private, almost all of which is out-of-pocket. The share of health expenditures absorbed privately by households is large based on international comparisons —for reference, the share of private expenditure of total is 25 percent in Colombia and 3 percent in the United Kingdom. Further, these costs imply a particular financing burden on the poorest households. Based on Mexico's Ministry of Health definition of catastrophic health shocks (30

[5] Ibid.
[6] "Seguro Popular and the Reform of the Mexican Health System", World Bank, processed. Catastrophic health shock defined as more than 50 percent of household income net of basic nutritional consumption
[7] Secretería de Desarollo Social, *Lo que Dicen los Pobres*, October 2003.

percent of disposable consumption, after spending on food, education and housing), the extreme poor are more likely to experience such shocks than the rest of the population (Table 2.6). About 47 percent of the poorest, urban and rural, experienced catastrophic shocks to income in 2002, compared to 26.3 percent of rural and 21.7 of urban non-poor.

Table 2.6 Percentage of population that experienced catastrophic health shocks, 2002

	Rural	Urban
Extreme poor	46.8	47.2
Moderate poor	36.5	35.0
Non-poor	26.3	21.7

Source: *Poverty in Mexico*, World Bank (2004).

Findings on catastrophic health shocks reflect inequities in health expenditure and health insurance coverage. There are significant inequalities in public health expenditure, and the poor are in general uninsured. Consequently, they frequently pay out-of-pocket for health services. Households in the first decile spend around 11 percent of income on health care while the richest spend less than 4 percent, pointing to severe problems of efficiency and equity of public health subsidies.[8] The link between public social insurance and vulnerability to catastrophic health shocks becomes even clearer when we look at households who fell into poverty as a result of illness and related out-of-pocket expenditure. A recent study found that while only 9 percent of insured households fall below the poverty line after catastrophic health care expenditures, 40 percent of uninsured households are impoverished when suffering a health shock.[9] In 2002, 73 percent of households impoverished from health expenses were not insured. There is also an urban-rural gap, as 60 percent of rural households fall below the poverty line as a result of catastrophic health care expenditures, while 17 percent of urban households face the same problem.

Box 2.2: Vulnerability to Health-Related Risk in Rural Mexico and the Impact of *Oportunidades*

***Oportunidades* cash transfers combined with free access to health clinics, played an important role in protecting income from falling when household heads experience short-term illness.** In a recent empirical analysis of vulnerability in rural Mexico, Skoufias (2004) found that in communities not covered by *Oportunidades*, households with an ill household head experienced an average income growth rate that was between 20.4 percent and 21.7 percent lower than for households where the head did not get ill. This implies that households are unable to protect their income from short-term illness.[10] In communities covered by *Oportunidades*, the growth rate of income did

[8] World Bank 2003. "Universal Health Insurance Coverage in Mexico: In Search of Alternatives", Mimeo, Washington DC: World Bank

[9] Ibid

[10] Defined as being confined to bed for a maximum of 3 days out of the last 30 days

not vary much as household heads experienced short spells of illness. More serious illnesses (in terms of duration in days and inability to leave the bed) turned out to have a smaller negative effect on income (not significantly different from zero). There were also no apparent differences between those covered and not covered by *Oportunidades*.

Consumption appears to be well insured in terms of short-term illnesses even without the access to *Oportunidades*. Consumption appears to be insured even from more severe illness shocks, as estimates using serious illness shocks instead of light illness shocks did not reverse the results.[11] One possible explanation for this is that long illness is not really a shock but rather a permanent state.

The study concludes that vulnerability could be more effectively tackled with an insurance-type of program that ensures that household welfare (consumption or income) does not fall below a socially acceptable norm. Skoufias also argues that the absence of strong effects of health shocks on consumption does not imply that households will not get any welfare benefit from health insurance. Improved health increases welfare directly, but this effect cannot be measured directly.

Source: Emmanuel Skoufias (2004)

Variations in health status across incomes, population groups and regions may also be seen as a reflection of unequal health expenditure and limited access to social insurance programs. Mexico's many achievements in the health sector over the past decades (expanded access to basic services, increased spending) have led to significant improvements in the health status of the population. Infant mortality has fallen sharply while immunization among children has become nearly universal. Yet, health status remains unequal, indicating continued inequities in access to social services. For instance, children of women living in extreme poverty are 2.5 times more likely to die before the age of one than the children of women who are not poor (World Bank, 2003). Children mortality rates from infectious diseases are over three times the national average in Chiapas, and 2.5 times in Oaxaca. The three southern states have the lowest rates of life expectancy and relatively high rates of infant and child mortality. Finally, the indigenous population also score lower on health status indicators. For instance, mortality levels are higher in the states with a high concentration of indigenous population. As will be shown in Chapter 3, differences in health status across incomes, regions and populations reflect unequal access to and quality of health and social services.

[11] Defined as being confined to bed for more than 6 days over last 60 days.

Table 2.7 Geographical variations in health status, 1998 and 2000

	Life expectancy at birth 2000		Disability-free life expectancy at birth, 1998	
	Male	Female	Male	Female
National	71.5	76.5	61.1	66.9
Chiapas	69.6	75.0	56.7	62.3
Oaxaca	69.9	75.2	56.6	63.3
Guerrero	69.9	75.3	55.2	65.7

Source: Mexico Plan Nacional de Salud 2001-2006.

The lower health status of poor and indigenous households, and households in poorer regions, may be in part due to the lower share of these populations that is covered by health insurance. However, another factor could be the generally much lower access to various basic infrastructure services, such as pipe water, sanitation, and electricity, experienced by these populations.[12]

In managing idiosyncratic risks to income, significant progress has been made in Mexico among the very young, where major changes in the acquisition of human capital are occurring as a result of public policy. Gaps persist in managing old-age poverty and catastrophic health shocks. There have been recent, major improvements in human capital development among the younger population, particularly for the rural population largely due to the notable expansion in basic health and primary education, as well as to the *Oportunidades* transfer program. At the same time, beyond lower secondary school historical patterns of disparity are still reflected in gaps between urban and rural areas and poor and non-poor populations in terms of access to lower and upper secondary school and university**.** Among the working age, unemployment is low and the duration of unemployment spells short in Mexico, while informal coping mechanisms seem to protect households against idiosyncratic unemployment shocks. However, structural changes in the way labor markets adjust might signal an increased frequency of such shocks, signaling an emerging vulnerability which will be discussed in the next section. Old age poverty is a significant problem in Mexico, which has the second highest poverty rate among the elderly in the region; the problem is also likely to grow given demographic changes signaling the aging of poor (rural) households in particular, and of the Mexican population in general. Health shocks or illness are also an acute risk for the poor in Mexico, regardless of age. High vulnerability is reflected in the frequency of catastrophic health shocks and linked to limited access to health insurance.

[12] Ruwan Jayasuriya and Quentin Wodon, 2003 "Development Targets and Efficiency in Improving Education and Health Outcomes in Mexico's Southern States" in *Development Strategy for the Mexican Southern States*, Washington, D.C.: World Bank

AGGREGATE SHOCKS, RISK AND VULNERABILITY

While the above analysis focused on individual (idiosyncratic) risk, this section looks at the role of two economy-wide, aggregate shocks in the vulnerability of Mexican households: (i) economic downturns and crises, and (ii) natural disasters.

Economic downturns and crises

In terms of poverty reduction, the positive growth effects of the entire past decade were erased by the devastating effect of the 1994-95 *Tequila Crisis*. As shown in the report *Poverty in Mexico,* poverty rates in Mexico are only now returning to pre-crisis levels. As documented by Maloney, Cunningham and Bosch (2003), the *Tequila Crisis* that erupted in late 1994 and the ensuing economic collapse came with dramatic social consequences. In 1995, prices rose 35 percent and output fell 6.2 percent. As wages remained fixed in nominal terms, real wages declined by 25-35 percent. Unemployment, while low by global standards, almost doubled from 3.9 percent to 7.4 percent.[13] Welfare outcomes were dismal: household incomes declined by roughly 30 percent, extreme poverty more than doubled between 1994 and 1996 (going from 10.1 to 26.5 percent), while moderate poverty increased from 43 to 62 percent.[14] In the period since 1995, Mexico has not experienced a major economic crisis, and successful macroeconomic policies have stabilized fundamentals such as exchange and interest rates. However, increased trade liberalization and exposure to international competition are also occurring, signaling at once major trade opportunities as well as exposure to future macroeconomic shocks with differential effects across the Mexican population and economy.

Shocks to income from economic crisis are transmitted through different channels and affect rural and urban populations differently. An economic crisis can affect household income through a range of channels: (i) via labor markets in the form of lower labor demand, increased unemployment, decreased probability of finding new employment and a decrease in the level of earnings of those still employed; (ii) changes in relative prices; (iii) cut backs in the level of public transfers; and (iv) changes in the value of and returns to assets (Skoufias 2003). As pointed out by *Poverty in Mexico,* macroeconomic stability and avoidance of an economic crisis since 1995 have been a major positive development in terms of reducing the risks facing Mexican households. However, the severity of shocks to income experienced in the 1994-95 crisis warrants a critical review of vulnerability to this type of shocks and the risk management mechanisms available.

The urban population in Mexico is particularly vulnerable to macroeconomic instability and labor market adjustments, as most of their income derives from labor.

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[13] Maloney, Cunningham and Bosch (2003).

[14] Montes, Santamaría and Bendini.

At the same time, risk coping strategies depend heavily on the labor market. Both rural and urban poverty increased dramatically as a result of the macroeconomic crisis in 1994-95, however the effect was particularly strong in urban areas.[15] For the urban population in Mexico, shocks to income from a domestic macroeconomic crisis are first and foremost transmitted via the labor markets in the form of increased unemployment and decreased real wages. The incomes of urban poor depend heavily on the labor market as 92 percent of the income of the poorest 2 deciles derives from labor, compared to a rural average of 81 percent and a regional urban average of 74 percent. The urban poor also rely more on labor market strategies as informal coping mechanisms, via the adjustment of the labor supply of household members or added-worker strategies, thus illustrating the dual role of labor markets as both a source of income risk and a means of ex-post income protection. The dependence of the rural poor on labor income is lower, which implies that even if wages and employment are affected in similar ways as in urban areas, the income shocks transmitted via labor market developments are smaller.

The rural poor are particularly exposed to potential policy reversals and budget cuts affecting public transfers that occur during economic downturns; in addition, macroeconomic shocks place strain on the private risk management mechanisms that protect both urban and rural populations in normal times. Income transfers (both private and public) represent a greater share of rural incomes. As a result, rural households are more prone to income shocks arising from changes in the macroeconomic environment that play out in terms of cuts in public expenditures on social programs (especially in countries with pro-cyclicality in public expenditures, such as Mexico) as well as changes in private transfer flows. Economic crises have been shown to depress the flow of private transfers, particularly those that originate domestically. Glewwe and Hall (1998) found that in Peru, transfer networks assisting the poor in relatively stable periods do not protect them during a major shock, where the domestic transfer network shrinks both in terms of the number of recipient households as well as the size of inter-household transfer flows. This finding is replicated in Mexico, where the crisis affected rural households not only via lowered real wages, but also in terms of a reduction of private transfers (*Poverty in Rural Mexico*). As in Peru, transfers did however provide assistance when originating from abroad, which points to the potential prominent role of international remittances (and by extension, migration). During the *Tequila* crisis, transfers from friends and relatives outside of Mexico (largely in the US), i.e., sheltered from the impact of the crisis, increased, mitigating the shock to some extent.

Despite the dismal effect of the 1994-95 crisis on welfare, poor households did not experience more *variability* in income compared to normal times.[16] Surprisingly, relative income variability did not increase for households generally considered to be among the more vulnerable groups, such as the self-employed and informal workers,

[15] World Bank Mexico Labor Market Study (forthcoming).
[16] World Bank, 2004. "Urban Poverty in Mexico"

single-parent families, young and old workers, with two important exceptions: households where the head had no income at the beginning of the period became decidedly worse off during the crisis, while households headed by less-educated heads actually did better than during normal times.[17] Finally, a comparison of rural and urban households shows that rural households experienced lesser shocks on average — probably due to the greater reliance of rural households on self-consumption. These findings are likely explained by two factors: first, the fact that the bulk of the shock was absorbed via downward pressure in wages, which diffused the income effect of the shock across a wide range of households, and second, that households employed a range of informal strategies for coping with shocks (see Box 2.1).

The most common private risk management strategies during the Tequila crisis were out-migration to the US and increased income diversification. After 1995, migration to the United States increased alongside increased diversification of rural incomes. In both rural and urban areas, however, poorer households may lack savings and other means to smooth consumption, resulting in higher consumption shocks than those households better able to mitigate (ex-ante) and cope (ex-post) with shocks to income.

In Mexico, macroeconomic shocks have not typically resulted in higher unemployment; however, this may change and wage flexibility may cease to be a safety net. To date, macroeconomic crises in Mexico tend to have resulted in labor market adjustment via a lowering of real wages as opposed to unemployment – the result of fixed nominal wages combined with inflation. Mexico's historic wage flexibility has proven to be a relatively efficient safety net in crises in Mexico. In the 1995 Tequila crisis, GDP per capita fell by 5 percent. The labor market adjusted through a 25 percent fall in wages but relatively little unemployment. This had the effect of spreading losses relatively evenly across the population rather than concentrating the losses on a particular group (Maloney, Cunningham, and Bosch, 2003). Recently, however, weaker labor market conditions combined with low total factor productivity suggest that the low unemployment that has characterized Mexico until the late 1990s will be more difficult to sustain in future crises (see Box 2.2). If this is the case, future macroeconomic shocks could be associated with more long-term unemployment, reducing the effectiveness of private risk management strategies of both urban (added-worker effect), and rural (migration to urban areas to find jobs) households. These trends may indicate an increased need for formal mechanisms such as workfare programs or unemployment insurance that mitigate covariate employment shocks.

Sectoral crises, such as the collapse in real agriculture prices experienced in the 1990s and the even more concentrated coffee crisis also represent an important source of risk to income. As shown in *Rural Poverty in Mexico*, the fall in real agricultural prices experienced by Mexican farmers in the 1990s resulted in a positive reaction through

[17] World Bank. Mexico Poverty Assessment Phase II - Poverty in Urban Mexico, forthcoming.

increased output and yields. Price incentives, however, remain low. This is largely the result of the openness of the economy, which is increasing under NAFTA, and the conditions of unequal competition faced by Mexican farmers in most crops vis-à-vis their northern neighbors, given their poorer endowments coupled with extensive agricultural subsidy programs in the United States and Canada. While Mexico also operates a comparatively small agricultural subsidy program, *Procampo,* in practice it is functioning more as a rural safety net (with moderately pro-poor targeting, though a sizeable portion of benefits also flows to farmers in higher income deciles). Impact evaluations indicate positive consumption effects on small farmers as well as some income multiplier effects on medium and large-scale farmers; however, it has been less successful in achieving its stated goals of supporting domestic producers of basic staples in adjusting to international competition under NAFTA, and helping farmers switch to more competitive crops (*Rural Poverty in Mexico*); it is also set to expire in 2008 (more on *Procampo* in Box 3.3).

Box 2.3: Has risk and vulnerability to economic shocks changed since the Tequila crises?

Numerous factors, including greater openness to trade, the fall in inflation, the slow growth in labor productivity and the weakening of labor unions may have led to more frequent labor market adjustments through unemployment than what was seen during the 1994-95 crisis.

Greater openness to trade and increased competition. One concern that has been raised with regard to trade liberalization is that increased competition leads to greater product demand elasticity which again leads to greater own wage elasticity. As a result, shocks are more directly translated to the labor market and workers face higher aggregate risk. *Lessons from Nafta* found little indication of higher unemployment or increased volatility of the labor market in Mexico following NAFTA. Looking at individual income risk in various manufacturing sectors in Mexico (Krebs, Krishna and Maloney, forthcoming), however, find that tariff reform has a significant short run effect on income risk. They also find that tariff reductions increase the cost of recessions substantially.[18]

Lowered inflation. A general increase in the propensity to be fired may also have emerged because of the success in fighting inflation. Price stability makes it more difficult to respond to aggregate shocks by reducing real wages by holding nominal wages fixed. The ability of wages to adapt to changes in economic activity and absorb shocks in times of recession seems to have declined since the late 1990s when inflation hit single-digits. The structural relationship (Okun) between output and wages seem to have suffered a break around 1999, as every decline in output has since translated into smaller

[18] Notice that the study also finds that tariff reductions lead to decreased income risk during economic booms. In addition, the welfare analysis focuses exclusively on the link between trade reform and individual income risk, and does not account for expected positive effects from economic growth and a more efficient resource allocation.

declines in wages. While Mexico experienced a decline in its growth rate between 2000 and 2001, mean real remunerations kept increasing through 2002.

Labor productivity. Despite slow labor productivity growth, Mexico was able to remain competitive in the US market until 1998 thanks to its low dollar-denominated wages. However, since the late 1990s, real wages have been steadily rising in spite of declining GDP and low labor productivity. During the last recession (2001-02), wages and unemployment increased in spite of a large GDP fall, disproportionately affecting export-oriented firms. If wages continue to rise and factor productivity is not improved, it will become increasingly difficult for Mexican exporters to remain competitive abroad, which can afflict the labor market as a whole, and particularly the poor, who have greatly benefited from export growth after 1996.

Weaker labor unions. Historically, labor codes negotiations in Mexico have emphasized employment stability. This is reflected both in the legal framework, which heavily protects employment and mandates generous severance pay and in the importance given to corporatist bargaining mechanisms such as the PACTO However, the process of privatizing and deregulating state-owned enterprises, and in general exposing firms to greater external competition, may have altered the bargaining power of workers. At the same time, various agreements and policies made by the government during Mexico's inflationary period of the late 1980s and early 1990s, urged firms to exercise restraint in raising wages and prices.

With increased competition, lost wage flexibility, continued low TFP growth and weaker bargaining power of workers, the low unemployment that characterized Mexico until the late 1990s will be more difficult to sustain. Alternatively, it may trigger an increase in informality, which could also hurt opportunities for the poor. It is important to keep in mind that macroeconomic stability (lowered inflation) and less rigid labor markets are both key in reaping the full benefits of increased trade liberalization and economic integration. Given the disastrous impact of the Tequila crises, macroeconomic stability is probably the single most important risk and vulnerability reducing policy of the post-crisis period.

Source: Lederman, Maloney and Servén (World Bank 2004), Montes, Santamaría and Bendini (World Bank 2004), and Krebs, Krishna and Maloney (Forthcoming).

Natural disasters and weather related risks

Public and private risk management strategies seem largely effective in managing natural disasters and weather-related shocks. In a recent study of vulnerability in Mexico, Skoufias (2004) finds that for all rural households, covariate risks, mostly related to weather shocks, significantly affect household incomes and consumption, although households carry out income smoothing practices that partially protect their incomes from such risks. Systemic shocks, however, are shown to be of secondary importance with respect to idiosyncratic ones. Also, panel data shows that systemic shocks related to weather and other natural disasters can have very different impacts on households, and that shocks affecting income do not necessarily lead to consumption changes. Successful practices of consumption smoothing make

consumption more protected than income. Most agricultural insurance in Mexico is oriented to middle and large commercial farmers, and as such, crop and livestock insurance is not relevant for very poor farmers.

Among production-related shocks analyzed in Skoufias (2004), *plagas* (pest) is the one with a more significant impact on income. Households who experienced a problem of pest and diseases had an average income growth rate 16 to 17 percent below other households. Again, the impact on consumption was much smaller, which was reduced by only 3 percent.

Box 2.4: *Fondo de Desastres Naturales* (FONDEN) and other risk management mechanisms

The Mexican government allocates budgetary funds for disaster relief and reconstruction efforts by placing them in FONDEN, thus providing for the repair of uninsured infrastructure, immediate assistance to restore the productivity of the farm population, and relief to low-income victims of disasters via: (i) support to rebuild homes; (ii) compensation for crop and livestock losses; (iii) temporary income and employment support over and above that traditionally offered by PET; and (iv) reconstruction of local infrastructure.

The World Bank study *Poverty in Rural Mexico* assesses FONDEN as a very useful instrument to absorb some of the income impact of large covariate shocks, but it compensates for part only of the losses and depends on a number of procedures and discretionary actions such as the declaration of emergency that limits its impact. More recently, FONDEN has started to adopt objective rules for declaring catastrophic events. This removes an ad hoc dimension in the declaration of catastrophes and reduces the political interference in FONDEN's operations.

The intention is not to compete with private insurance, and operating in parallel to FONDEN is a group of mutual insurance funds amongst farmer organizations. These farmer organizations are called *fondos de aseguramiento*, formed to provide mutual crop insurance to their members. Analysis of historic reinsurance payouts reveals that weather events, similar to those covered under FONDEN, are the primary source of systemic payouts by the *fondos*.

Source: *Poverty in Rural Mexico,* World Bank (2004) and "Agricultural Markets and Risks : Management of the latter not the former", Varangis, Larson and Anderson (2002).

As seen in urban areas**, rural households also resort to a variety of risk mitigating and coping strategies as a way of self-insurance.** These include the accumulation of assets, income diversification, sending women and children to work, withdrawing children from school, input and crop choices, precautionary savings, migration, marriage, income transfers among friends and relatives, and other informal risk sharing arrangements such as share cropping or input sharing (Skoufias, 2004). The subsistence economy, i.e., the production for self-consumption of food crops and small animals in small plots with family labor together with the access to collectively owned

natural resources, is a very important safety net in rural areas. Much of the food security of small peasant farmers is linked to this type of production (Box 2.1 discusses private risk management strategies, including subsistence farming in more detail). *Poverty in Rural Mexico* found that poorer households (two bottom quartiles) experienced less shocks than richer ones, probably reflecting a higher risk-aversion leading to less risky investments and behavior among the poor. Low yields due to production-related shocks were significantly smaller in the bottom two quartiles, which the report attributes to the planting of lower risk crops and the use of low risk technology by this group.

Yet, natural disasters and other weather related phenomena are an important source of income risk primarily to rural populations, and a key determinant of inefficiencies in crop production. The high incidence of realized shocks among farmers in rural Mexico can be seen as a reflection of the risk of agricultural production. Using data from a sample of 666 crop farmers of different parts of Mexico in 2002, the Poverty in Rural Mexico report shows that weather-related shocks are very frequent among farmers –as many as 44 percent reported having experienced one in that year. The most common shock reported was drought followed by excessive rain or hurricane. Finally, efficiency analysis showed that shocks of natural origin (rains, frosts, droughts, hail, pests, etc.) are a major determinant of inefficiency in crop production.

While coping with natural disasters once they occur falls clearly within the domain of social protection policy, rural experts place a relatively heavy focus on policies to reduce and mitigate the effects of natural disaster and weather-related risks, which fall beyond the scope of social protection. *Poverty in Rural Mexico* emphasizes the importance of promoting the use of technologies less vulnerable to prevalent risks in particular regions through appropriate research and extension. This includes promotion of crop varieties more resistant to water stress or to pests, or crops maturing at a good time according to local weather patterns. Pest control and sanitary measures in general constitute additional measures to reduce natural shocks.

Access to financial and insurance services could also play a crucial role in self-insurance strategies toward natural disasters and weather-related shocks. Again –this falls beyond the scope of social protection. Formal crop insurance is not seen as particularly useful for the rural poor, whose main income is not from independent farming and for whom the insurance is too expensive. Parametric insurance systems linked to weather parameters offer an interesting alternative. Finally, a well-developed financial system and rural financial services could play a crucial role in self-insurance and risk management strategies among the rural poor, mostly by facilitating savings and personal loans.

Box 2.5: Remittances as a source of private risk management for Mexican households

The increasing importance and magnitude of remittances

- Remittances from Mexican workers abroad reached a record 13.3 billion dollars in 2003. It exceeded foreign direct investment as a source of foreign income and amounted to some 2 percent of the country's GDP in 2003.

- Although migration is not a recent phenomenon, much of the capital flows from remittances seem to be. In general, about half of the recipients included in a study of remittances in Mexico said they had received remittances for 3 years or less.[19]

Remittances played a role in the recent growth of rural incomes, especially poor incomes

- The reduction in extreme poverty in the year 2000-02 was associated with rapid wage increase and for rural areas sine gains from remittances and transfers.

- The highest proportion of households receiving remittances is found among the poorest 20 percent of the population. In 2002, 11.2 percent of households in the poorest quintile received remittances compared to a national average of 1.2. For the poorest 20 percent of rural households this number rises to one-fifth.

	National	Urban	Rural
1st Quintile	11.2	4.0	19.5
2nd Quintile	2.5	0.8	6.8
3rd Quintile	1.0	0.7	4.2
4th Quintile	0.9	0.4	1.7
5th Quintile	0.1	0.0	1.0
Total	1.2	0.5	3.5

Note: Quintiles calculated using current income per capita net of transfers (remittances, *Oportunidades*, *Procampo* and other).
Source: World Bank (2004) – Bank staff calculations using ENIGH.

While 'coverage' of remittances is progressive and pro-rural, it is also limited. **Only a minority of the extreme poor have access to remittances**

- 86.5 percent of the poorest households do not receive remittances.

- Using post-transfer income, the share of households receiving remittances is lower for the poorest 20 percent of the population than for any other income group. The different conclusions arrived at from using post and pre-transfer income simply reflect the fact that transfers (including remittances) are an important driver of income growth among the households fortunate enough to have access to these transfers (see table below).

[19] Pew Hispanic Center & MIF. "Receptores de Remesas en Mexico", Mexico City: IADB.

Percentage of households receiving remittances by income deciles (post transfers), 2002

Income Deciles I-X, poorest to richest									
I	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*	*X*
3.2	2.1	11.2	7.6	3.0	8.1	6.3	5.9	4.9	4.7

Note: Deciles calculated using total current income per capita (post-transfer).
Source: ENIGH 2002.

Sources: World Bank *Poverty in Mexico* (2004) and Pew Hispanic Center & MIF, 2003. "Receptores de Remesas en Mexico", Mexico City: IADB

CHRONIC POVERTY AND VULNERABILITY

Chronic poverty is the inter-generational transmission of extreme poverty, often accompanied by exclusion. Its distinguishing feature is extended duration, as distinct from those who move temporarily into (and out of) poverty in the face of risk. Evidence suggests that for the chronic poor, transitory fluctuations are more frequent. In addition, poverty exits are short-range and the levels of recidivism high (Yaqub, 2002). As shown in Box 2.6, chronic poverty in Mexico corresponds to the 20 percent of the population that lives in extreme poverty.

Box 2.6: Evidence of Chronic Poverty in Mexico, Is there a '*Nucleo Duro*' of Poverty?

International evidence suggests that chronic poverty is characterized by: (i) low economic mobility but often more frequent fluctuations of income, (ii) low endowments of physical and human capital, and (iii) low return on assets which is often linked to social exclusion or discrimination. This describes well the situation of the poorest segments of the population in Mexico.

The characteristics of the extreme poor in Mexico includes: patterns of lower schooling levels, higher dependency ratios, and variable job quality coupled with some evidence of labor market discrimination are apparent. Extreme poverty is more concentrated among rural and indigenous populations, for whom poverty rates have been relatively stagnant over time and who face important aspects of social exclusion and discrimination in the labor market and elsewhere.

A recent analysis of household in Mexico over the period 1984-2000, finds that there is very little mobility of households across the income distribution, and that this lack of mobility is particularly pronounced for households in the bottom quintile (poorest 20 percent) of the distribution. Initial ranking in the income distribution is the single most powerful factor associated with mobility.[20] Twinned with the fact that extreme poverty in Mexico has hovered around 20 percent of the population over this same period, with little downward movement in the rate, these findings suggest the existence

[20] Duran Fernandez, Roberto. 2003. "La movilidad al interior de la distribución del ingreso en Mexico durante el período 1984-2000", Gaceta de Economía, 9, Numero 17.

of a '*nucleo duro*' of chronic poverty concentrated in the bottom 20 percent of the income distribution.

Are things improving? Substantial progress has been made in addressing human capital development issues among the young, and particularly among the extreme poor, notably through the introduction of the *Progresa/Oportunidades* program. However, the jury is still out regarding these relatively new programs' long-term impact on the intergenerational transmission of poverty and ultimately, reduced income inequality. Furthermore, major federal social protection programs, notably *Oportunidades*, do not reach all of the extreme poor, nor do private remittances reach the extreme poor to a significant degree. Recent initiatives have been introduced that are aimed at closing this gap, such as the Programa Alimentario (providing cash or in-kind food benefits), though it is too soon to be able to assess their impact. In sum, while *Oportunidades* represents a major advance and new, promising initiatives are being introduced, Mexico does not yet have in place a complete strategy for adressing chronic poverty, particularly with respect to income vulnerability.

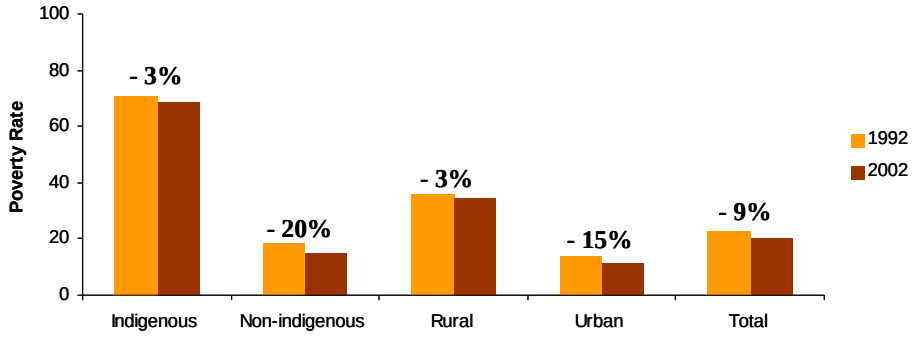
The chronic poor are those households least equipped to manage income risk as a result of their low asset base and limited access to private and public risk management tools. They are therefore among the most vulnerable to income shocks, whether idiosyncratic or aggregate. They are also the most likely to engage in negative risk coping strategies, which ultimately serve to perpetuate their poverty. Long-term costs of informal practices of risk coping (and ultimately survival) may cause permanently lowered incomes and chronic poverty**.** Damaging behavioral responses adopted by the poor in order to mitigate (ex-ante) and cope (ex-post) with risk include among others: adverse incorporation under the wings of a patron, safer but lower production techniques, reduced investments in physical and human capital. The immediate cost of planting a traditional, safer crop, rather than a more profitable but riskier one, is obvious and constrain upward mobility. Other costs, however, are less obvious as some risk management strategies reinforce not only poverty but also the structural determinants thereof. For instance, the use of informal insurance networks offered by patrons promotes clientelism and patronage both in labor markets as well as in other spheres of society.[21] This, again, can affect both the capacity of the poor to invest and save, as well as the accountability of public service provision. Formal risk pooling mechanisms offer better, less damaging alternatives to these practices.

While extreme poverty rates have been reduced significantly in terms of national average, certain sub-groups, particularly rural and indigenous households, show little progress. Preliminary evidence indicates that the rate of change of extreme poverty rates differs greatly among different sub-groups of the Mexican population. A recent study of indigenous poverty in Mexico, for example, finds striking differences in the pace with which indigenous and rural households move out of poverty vis-à-vis the

[21] See J.J. Morduch, 1999. "Issues on risk and poverty", presented at the *Stiglitz Summer Research Workshop on Poverty*, the World Bank, Washington DC, July 6-8, 1999.

rest of the Mexican population (World Bank, forthcoming). As shown in Figure 2.2, the national extreme poverty rate declined by 9 percent over a 10-year period (1992-2002), and urban poverty rates fell by 15 percent. At the same time, there was very little change in rural and indigenous poverty rates (3 percent), such that the vast majority of indigenous and rural households remained poor. The incidence of poverty is also much higher in both rural and indigenous municipalities than non-indigenous municipalities. And while there is a significant overlap between indigenous and rural municipalities, indigenous municipalities also have a significantly higher incidence of extreme poverty than rural municipalities on average. This difference is important because it suggests that indigenous people are poor for different or additional reasons than the simple fact that they mainly live in the rural sector.

Figure 2.2. Rate of Change in Extreme Poverty Rates Across Different Population Groups in Mexico: 1992-2002



Source: World Bank. 2004. Indigenous People, Poverty and Human Development in Latin America, 1994-2004 (forthcoming). Based on ENIGH survey data, 1992, 2002.

Extreme deprivation (living on less than a dollar a day), has been practically eliminated among the non-indigenous, yet affects 30 percent of the indigenous population. Another way to look at this same question is to note that by international standards, Mexico has all but eliminated extreme deprivation for the non-indigenous population (defined as households living on less than US$1 per day, using values adjusted for Purchasing Power Parity (PPP). Over the past decade (1992-2002), the non-indigenous extreme poverty rate according to this measure dropped from 6.1 to 1.3 percent. However in 2002, 30 percent of the population in indigenous municipalities was still among the extreme poor according to this international measure. In sum, indigenous people make up just 12 percent of Mexico's national population, yet are vastly over-represented among the extreme poor, and may comprise an important component of chronic poor households, for which the chances of moving out of poverty are vastly lower than for the rest of the population.

***Oportunidades* provides major benefits to the extreme poor; however, these households still need access to risk management tools.** *Oportunidades* provides access to health services and income from cash transfers, which provide major poverty

reduction benefits for poor households. The program was not design as a risk management tool, and therefore not surprisingly, Skoufias (2004) finds that in the villages that receive *Oportunidades*, recipients still resort to private coping mechanisms that in the long run prevent the accumulation of assets and an exit out of poverty. For certain types of shocks, households in *Oportunidades* villages are in fact significantly more likely to sell animals or other possessions than households in control villages (non-recipients).

SUMMARY OF FINDINGS ON RISK AND VULNERABILITY IN MEXICO

Mexican households have been more vulnerable to idiosyncratic than to aggregate risk. Two immediate priority areas for government **intervention in addressing exposure to idiosyncratic risk emerge: insurance against catastrophic health expenditures and against the risk of poverty in old age. In addition, unemployment risk maybe more important during aggregate shocks in the future.** For a large proportion of the population, in particular among the poor, vulnerability to the first two risks is high. This is reflected in the gap between poverty rates for the population at large and the elderly, and in the high costs of health care for the poor, the frequency of catastrophic health shocks, and the large proportion of people who may fall into poverty as a consequence of catastrophic health shocks. At the same time, as will be discussed in the next chapter, public social protection programs in these areas are still limited and incidence as well as expenditure patterns are regressive, notably in the provision of old-age income insurance. While the poor employ a wide range of private strategies (extended families, intra-generational transfers, among others) to insure against health and old-age risks, these are limited, maybe hampered in the future due to demographic changes and at times carry adverse long-term effects. While these are the risks that are most immediately apparent from current patterns of vulnerability in Mexico, an emerging risk may be that of unemployment and catastrophic income loss among poor segments of the population in the face of future aggregate shocks; while the risk of unemployment has been low in the past, labor market conditions may be changing such that shocks may no longer be easily absorbed via wage adjustments but through changes in employment. While private strategies to cope with unemployment are largely effective in good economic times, the opportunity to do so is reduced during aggregate economic shocks, indicating the need for mechanisms to deal with covariate employment shocks. Finally, the chronic poor are particularly exposed to income risk due to their low asset base and limited access to both public and private risk management tools, perhaps explaining the 'stickiness' of Mexico's extreme poverty rate over time, and highlighting a particularly vulnerable group as an important target for public policy intervention.

3. MEXICO'S SOCIAL PROTECTION SYSTEM: OVERVIEW AND ASSESSMENT

Mexico's social protection system has shown progress in terms of long-term financial sustainability and on improving welfare among the poor. However, the system is still fragmented with problems of equity and efficiency. As a result, a large share of the population –particularly low-income and those employed in the informal sector– experience low or non-existent protection in the face of income risks. The characteristics of the Mexican social protection system are broadly similar to those prevailing in the rest of Latin America, but Mexico also spends less than countries at similar income levels on the social sectors in general. However, the share of public social expenditures as a percentage of public expenditures is not low by international standards reflecting a thin tax base and low tax revenue. A fiscal reform is needed to continue improving and expanding poverty reduction programs as well as increasing the coverage of the social protection system. The social security system for private workers was reformed in 1997, leading to a more financially sound system. Coverage of the system has increased, although necessary further increases are still a challenge for the country. The system is regressive in terms of coverage reflecting the inequality of Mexican income distribution. The social security system for public sector workers however is highly regressive and shows huge problems of financial sustainability which generate a huge fiscal burden to current and future taxpayers. Regarding social assistance, while absorbing a relatively small share of the social protection budget[22] *(7 percent), the Oportunidades program (originally Progresa) represents an innovation of great value to poverty reduction in Mexico. At the same time, due to its design, it faces limits as a risk management tool for the poor. Other major initiatives target important risk groups, such as Procampo (a program of agricultural subsidies designed to aid rural farming households in competing under NAFTA), and Seguro Popular (a new health risk management system offering subsidized health insurance to poor households). However these programs face challenges of implementation, financing and institutional coordination as Mexico faces the challenge of providing adequate coverage to the majority of its population.*

AN OVERVIEW OF THE MEXICAN SOCIAL PROTECTION SYSTEM

Mexico's well-established social protection system is comprised of a formal sector based social insurance component providing both private and public sector workers with health benefits and retirement pensions, a national health system for the uninsured, and a wide array of social assistance programs. Elements of the social

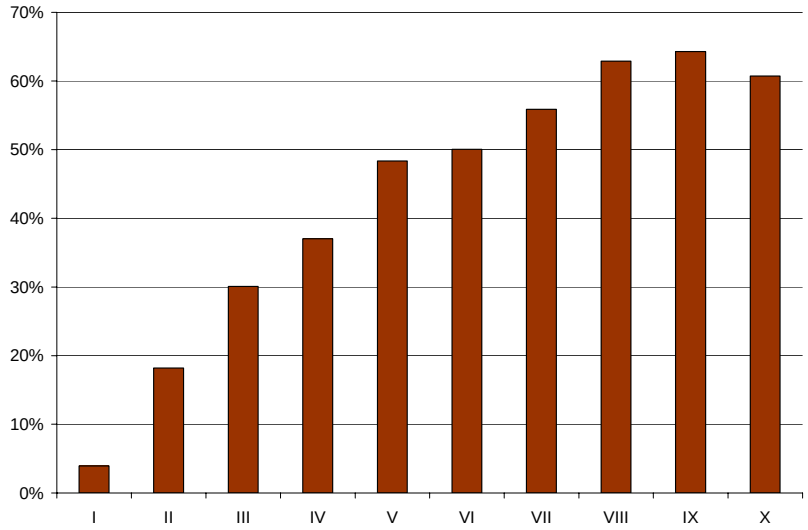
[22] Social protection defined as social security expenditure and poverty-targeted social programs. Social security includes total expenditures in IMSS and ISSSTE, which includes workers', employers' and the federal contributions.

protection system have shown progress in improving coverage and welfare among the poor. However, important challenges remain to increase the coverage and efficiency of the system.

The government's commitment to social protection dates back to 1943 and the creation of the formal social insurance program for private sector workers ran by the *Instituto Mexicano del Seguro Social* (IMSS), and a national health system, the *Sistema de Salud*. Originally, IMSS was a partially-funded defined benefits system but in reality operated from the start as a pay-as-you-go (PAYG) system. In 1997, the system was radically reformed and system of private administration of individual pension accounts was introduced. Public sector workers are covered by the *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE), which manages federal employees' accounts. In addition, the state oil company (PEMEX), the armed forces as well as other public enterprises and state governments have developed individual insurance systems. IMSS remains the most important in terms of the number of affiliates with 14 million rights holders in the formal private sector, followed by ISSSTE which covers 2.3 million government workers.[23] The figure below provides an aggregate picture, showing coverage by deciles lumping all types of workers. As observed, despite the progress, the overall coverage of major social security programs across income groups is still regressive. Similar patterns are observed for a host of programs: housing credit, paid vacations, pensions, childcare, life insurance, to name a few (Tinajero 2003). Social insurance mechanisms for the population excluded from formal sector benefits, whose workers and their families make up the majority of the population, and who tend to be poor, are weak. This segment of the population is served by the national health system and an array of social assistance programs.

[23] Mexico Public Expenditure Review, World Bank. 2004.

Figure 3.1. Social security (IMSS, ISSSTE, PEMEX) coverage across income deciles, 2002

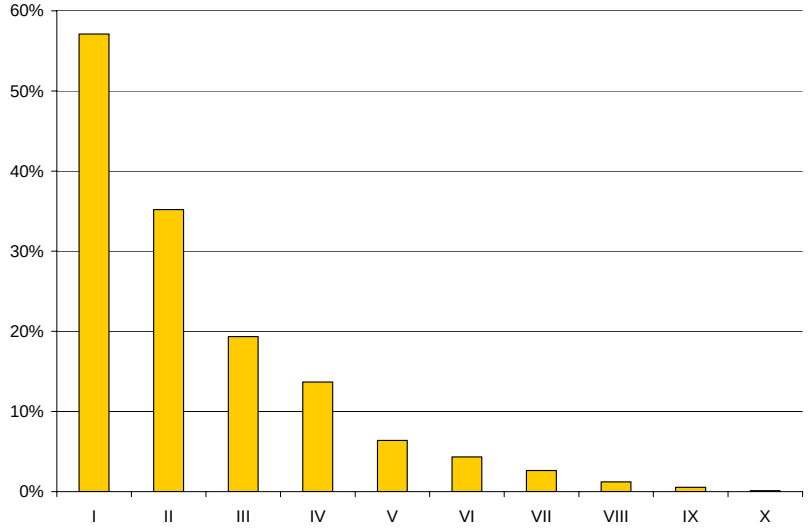


Source: ENIGH 2002.

Social assistance policy has evolved over time, closely tied to national economic development objectives, with explicit poverty-targeted programs being introduced only after the 1980s debt crisis. The largest social assistance program, both in terms of coverage and expenditures, is *Oportunidades* which provides cash transfers to poor households conditional on children's school attendance and basic health care, has proven to be a successful transfer mechanism tied to human capital accumulation objectives. *Oportunidades* is the most important social assistance program in Mexico, with an annual budget in 2002 of about 17 billion pesos (approximately 1.6 percent of total spending) and coverage of over 4 million households, equivalent to about 20 percent of the Mexican population. The program has been instrumental in Mexico's tremendous progress in education coverage, particularly at the primary level. The most direct impact of *Oportunidades,* which has been implemented primarily in rural areas to date (but is currently being expanded to urban areas) and targets the extreme poor, has been in narrowing the gap in access to education across poverty levels and between rural and urban areas. The figure below shows *Oportunidades* coverage as highly progressive, covering almost 60 percent of households in the poorest decile in 2002. Administrative data suggest that the actual number of beneficiaries of *Oportunidades* was higher than that indicated in survey data. Estimates that attempt to correct the survey data based on *Oportunidades*' own administrative data suggest that 20% of the population in the decile 1 and 40% of the population in decile 2 were uncovered. [24]

[24] Revised estimates of *Oportunidades* coverage as calculated by SEDESOL and provided to World Bank staff, 4.22.05.

Figure 3.2. *Oportunidades* Coverage Across Income Groups, 2002



Source: ENIGH 2002.

Despite the advances of *Oportunidades*, a significant portion of the extreme poor may remain uncovered. Major social assistance interventions such as *Oportunidades* are extremely well-targeted to the poor, yet still leave a significant portion of the extreme poor (households in the two poorest deciles) uncovered. According to the ENIGH household survey, in 2002, almost 40 percent of the population in the poorest decile and 46 percent of those in decile 2 – over 8 million Mexicans–were not affiliated to any public social insurance program, nor did they receive benefits from the major social assistance program, *Oportunidades* (Table 3.1). These may be taken as upper bound estimates for the number of uncovered, given that as noted above, administrative data for the program suggest even higher coverage rates for *Oportunidades* among the bottom two deciles

Table 3.1. Household coverage of major social security programs and *Oportunidades* in the poorest 2 deciles, 2002

Programs	Decile 1	Decile 2
Covered by IMSS, ISSSTE, PEMEX, etc.	**3.94%**	**18.21%**
Receives *Oportunidades*	**57.11%**	**35.20%**
Neither of the Above	**38.85%**	**46.17%**
Total	**100%**	**100%**
Neither of the Above -but covered by another pension plan	0.06%	0.15%
Neither of the Above -but receives medical benefits through work	0.05%	0.27%

Source: ENIGH 2002. Own calculations.

To what degree do the extreme poor – who have limited access to social insurance – have access to some form of social assistance? Mexico's national household surveys only allow a limited answer to this question, since incidence figures are not collected for all social assistance programs. Further, some programs, such as *Seguro Popular*, have been recently implemented such that incidence data are not yet available. However, one can begin to pose the question by crossing data on access to social insurance with data on coverage of Mexico's single largest social assistance program, *Oportunidades*, for which incidence data are collected in the national household survey. Interestingly, upper bound estimates indicate that up to one third of households in the poorest decile, and almost one half of households in the next decile, may not covered by either social insurance or *Oportunidades* (Table 3.1). Further, very few of these households have access to another pension plan, or report receiving medical benefits through work (less than 1 percent in all cases). Further, very few of them report having access to the second largest rural assistance program, *Procampo* (see Box 3.1).

Box 3.1: Who are the 8 million extreme poor uncovered by *Oportunidades*?

Over eight million extreme poor people (close to 40 percent of the extreme poor) in Mexico live in households that do not have access to the country's formal social insurance system, nor do they receive benefits from the flagship poverty reduction program, *Oportunidades*. What are the defining characteristics of this population? First, a majority (63 percent) live in rural areas. Given that the *Oportunidades* program is focused on rural areas, why are these households excluded from coverage? Most probably these are households that live in villages so small and isolated that *Oportunidades* does not operate there, given that it requires that a school and health post be in close proximity to beneficiary communities. These households also appear to be out of reach of the other major rural program, *Procampo* – less than 2 percent report receiving benefits from this program (see Box 3.3, below). They also have slightly older household heads, and more elderly inhabitants; one in five household members are over age 65, compared to one in eight among covered households. These findings suggest that isolated rural households, particularly those with elderly members, may be a particularly vulnerable group currently uncovered by the country's major social protection initiatives.

SOCIAL PROTECTION IN MEXICO – OVERVIEW OF EXPENDITURE TRENDS

Mexico's expenditures in social programs, both social assistance programs aimed at reducing poverty as well as in social insurance are low given the level of development of the country. However, the share of social expenditures as a proportion of public expenditures is comparable to countries such as Argentina, Chile, and Brazil because total public expenditures are low. This reflects a major challenge for the country, as public resources needed to continue improving and expanding poverty reduction programs and increase social insurance coverage, in particular among vulnerable

groups, is currently too limited. This implies that a fiscal reform which can expand this limited fiscal space is critical.

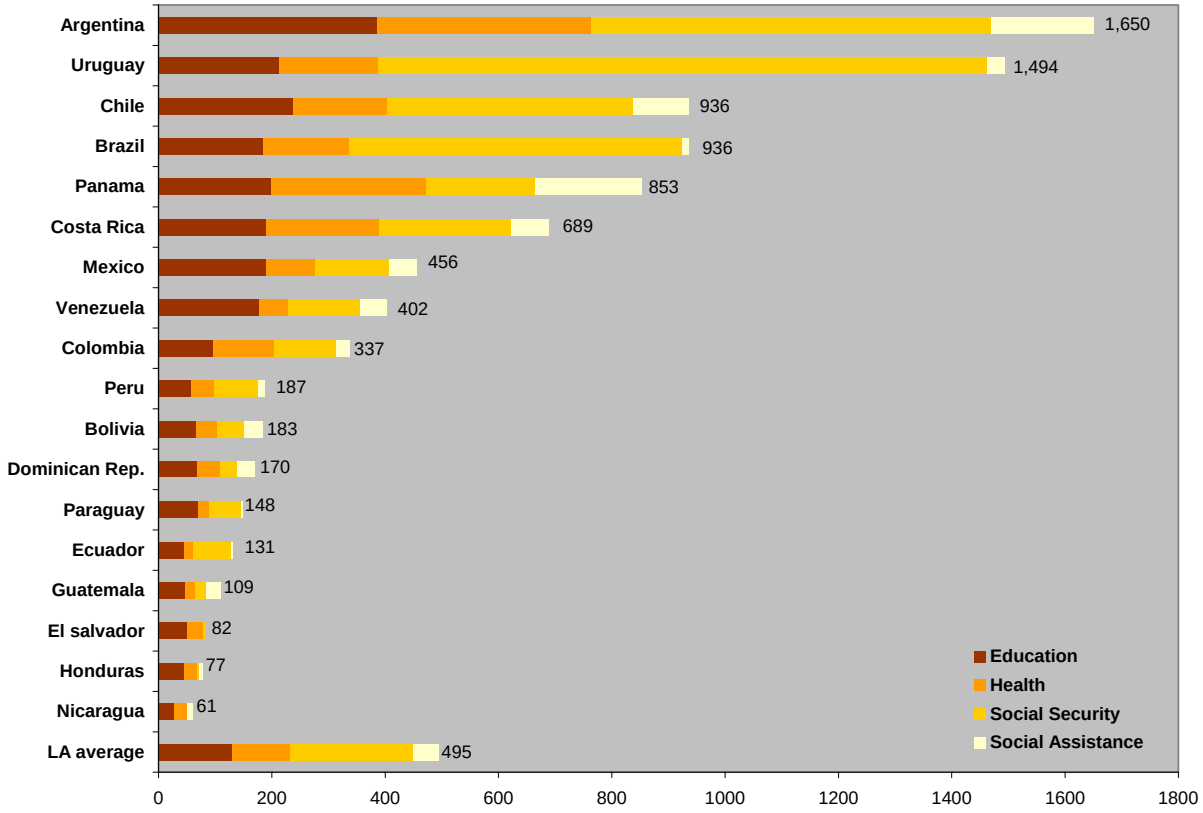
Mexico's Social Spending Relative to International Comparisons

According to international comparisons developed by ECLAC, per capita social spending in Chile and Brazil is more than twice as high as Mexico's, while Argentina and Uruguay spend more than three times as much. [25] This is despite steep cumulative declines in GDP between 1999 and 2001 in both the latter countries. Social spending in Mexico also falls short of the regional average. When disaggregating the figures, Mexico is below the regional average for spending on both health and social security. Expenditure on education is well above the regional average while expenditure on social assistance is just above the average. In both categories, however, spending in Mexico is still only a half or even a third of what countries such as Argentina and Chile spend (Table 3.2).

Mexico's share of social expenditures as a proportion of public expenditures is above 60%, similar to Argentina, Chile and Brazil. However, public expenditure as a percentage of GDP is lower than other middle-income countries in Latin America, so the challenge is not to increase the share of social expenditures but to generate an expansion of the fiscal space**.** While countries like Chile and Brazil devote 16 and 19 percent of GDP respectively to social spending, Mexico's allocation to the social sector remains at about 10 percent (see Table 3.2). Differences between countries in how expenditure is defined and recorded account for some but far form all of the difference. The critical issue is the direct link between the percentage of GDP allocated to public and social sector allocation, and the state's ability to collect taxes. The low figures shown for Mexico of per capita social expenditures and for the share of social expenditures to GDP are a direct reflection of a thin tax base and low tax revenue. The fiscal priority of social sector spending is as high in Mexico as in other upper-middle income countries (as measured by percentage of total public spending allocated to the social sector).

[25] As noted by ECLAC, statistical series on total public expenditure and social expenditure in the region differ in terms of methodology and coverage, in particular due to different ways of defining and recording social spending in national accounts. It should be noted that the figures do not include social spending funded by sub-national governments with own revenues (but do include that portion that is funded via transfers from the federal government). As the degree of decentralized state and local funding varies by country, public social spending figures are underestimated and therefore not fully comparable. Despite this caveat, the difference between social spending in Mexico and comparable middle-income countries–both in dollar terms per capita and as a percentage of GDP–is too large to be fully explained by locally financed social spending. State expenditures financed via own revenues are still relatively small in Mexico, particularly in the poorest states. For example, in Mexico's three southern states of Oaxaca, Guerrero and Chiapas, state expenditures funded by own revenues represent just 4-6 percent of total spending, the rest of which is financed via federal transfers (World Bank. Mexico Southern States Development Strategy, 2003).

Figure 3.3. Per Capita Public Social Spending, 2000-2001 (in 1997 USD)



Note: Social Assistance is the residual social spending once education, health and social security are accounted for.
Source: ECLAC, Social Panorama of Latin America 2002-2003.

Table 3.2. Budgetary Pressure and Fiscal Priority in Latin America, 2001-2002

Total public spending as a percentage of GDP (Budgetary pressure)*	Percentage of total public spending allocated to social sector (fiscal priority of social expenditure)					
	Under 40%		Between 40% and 60%		Over 60 %	
Over 30%	Nicaragua Colombia Panama	(13.2) (13.6) (25.5)	Costa Rica	(18.2)	Argentina Brazil	(21.6) (18.8)
Between 30% and 50%	Honduras Venezuela	(10.0) (11.3)	Bolivia	(17.9)	Chile	(16.0)
Under 20 %	El Salvador Dominican Rep. Peru	(4.2) (7.6) (8.0)	Guatemala Paraguay	(6.2) (8.5)	Mexico	(9.8)

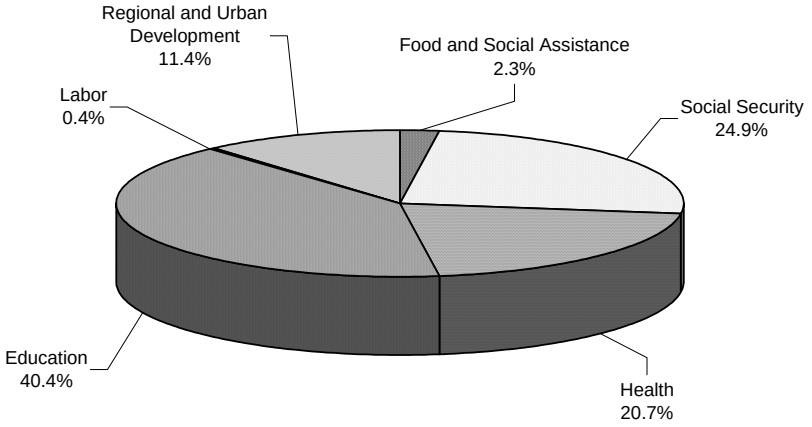
Note: Figures in parenthesis show the percentage of GDP allocated to social expenditure.
Source: ECLAC, Social Panorama of Latin America 2002-2003.

Mexico's Social Protection as a Share of Federal Social Spending

The following section presents information on social protection expenditures as reported in the *Anexo Estadístico del Cuarto Informe de Gobierno*, 2004. It follows the functional programmable expenditure categories as presented in the PEF (*Presupuesto de Egresos de la Federación*), as follows:

- '*Social spending*' reflects the budget category *desarrollo social* (social development) used in the PEF, and includes, as seen in Figure 3.4, 6 major sub-categories: education, social security, health, regional and urban development, food and social assistance, and labor.
- "*Social security*" is a sub-category of social spending, and includes all federal government outlays in pensions (which are funded by employee and employer contributions as well as transfers from the federal government);
- "*health*" is a sub-category of social spending, which includes expenditures undertaken by the Ministry of Health (SSA), Ramo 33 (FASSA) as well as health services provided by IMSS and ISSSTE; and health insurance benefits;
- "*poverty reduction*" is a cross-cutting category including all targeted poverty reduction programs; these programs are classified under both 'social spending' and 'economic sector spending'.

Figure 3.4. Composition of Federal Social Spending in Mexico, 2002



Source: Based on Anexo del Cuarto Informe de Gobierno 2004.

Social spending in Mexico is dominated by three expenditure categories: education (40 percent), social security (25 percent), and health (21 percent). As shown in the figure below, social spending is divided between five main categories: food and social assistance; social security; health (including SSA, and health benefits provided under IMSS and ISSSTE); education; rural and urban development; and labor. Education, health, and social security together account for about 86 percent of total

social spending. An additional 11 percent is spent on regional and urban development, leaving roughly 3 percent to labor and food/ social assistance interventions.

Table 3.3 provides a breakdown of social spending, and separates out programs that also fall under the crosscutting category Poverty Reduction (*Superación de la Pobreza*). Using this category to capture social assistance spending, an estimate of total social protection spending would include all targeted poverty reduction expenditures plus social security, or roughly 33 percent of total social expenditures (noting that some poverty reduction expenditures are classified under the economic as opposed to social sector), and 3.4 percent of GDP. Total social spending equals about 10 percent of GDP and close to 60 percent of total programmable spending. Table 3.4 identifies all the major programs under Poverty Reduction, including those classified under social spending and included in Table 3.3 as well as those under economic sector spending (such as agriculture and fishery development, for example) which increases the total spending on targeted poverty reduction programs from 50.5 billion pesos to over 70 billion pesos – or 0.8 percent of GDP. Social security expenditures are 2.6 percent of GDP.

Table 3.3. Federal Social Spending in Mexico by sector, 2002

	In MX pesos (Million)	Spending per capita[a]	Percentage of programmable spending[b]	Percentage of social spending	Percentage of GDP
Food and Social Assistance	14,582.8	141.5	1.4	2.3	0.2
Social Security	159,980.9	1,552.6	14.8	24.9	2.6
Health	132,878.7	1,289.6	12.3	20.7	2.1
Education	259,588.9	2,519.3	24.1	40.4	4.1
Labor	2,486.0	24.1	0.2	0.4	0.0
Regional and Urban Development	73,112.4	709.6	6.8	11.4	1.2
Total social spending	**642,629.7**	**6,236.7**	**59.6**	**100.0**	**10.3**
Poverty reduction[c]	*50,564.0*	*813.6*	*4.7*	*NA*	*0.8*

[a]Calculated using population estimates for 2002 from the Secretaría de Gobernación (Consejo Nacional de Población projections based on the XII Censo General de Población y Vivienda del 2000).
[b]Total Net Public Expenditure in 2002 was 1,484,256 million pesos, of which 73 percent (1,078,860 million pesos) was programmable.
[c]Federal spending only.
Source: Own calculations based on the Anexo del Cuarto Informe de Gobierno 2004.

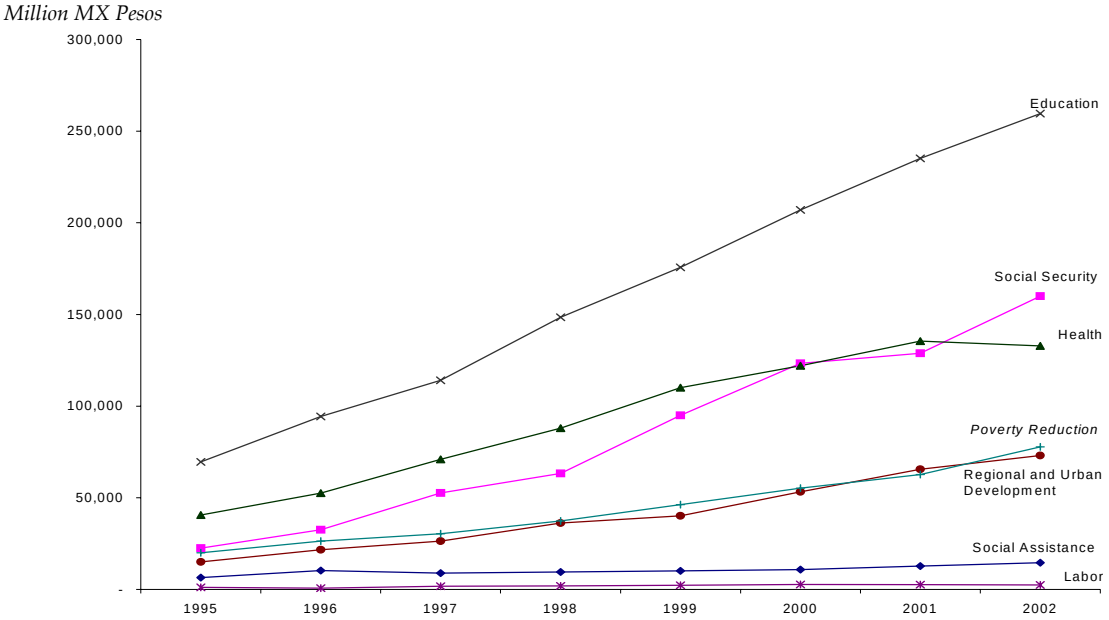
Table 3.4. Federal Spending on Selected Poverty Reduction Programs, 2002

	In MX pesos (Million)	Spending per capita (in pesos)	Spending per beneficiary[a] (in pesos)	Percentage of programmable spending
Total[b]	**77753.5**	**754.6**	**NA**	**7.2%**
Oportunidades	17,003.8	165.0	4,010.3	1.6%
Programa de Desayono Escolares	1,752.1	17.0	166.2	0.2%
Programa de Abasto Social de Leche[c]	-	-	-	-
Programa de Abasto Rural	568.0	5.5	1,705.0	0.1%
Programa de Empleo Temporal (PET)	3,867.4	37.5	4,147.0	0.4%
Programa de Opciones Productivas	520.9	5.1	894.3	0.0%
Subsidios para Vivienda	628.9	6.1	29,103.6	0.1%
Other	53,412.4	518.4	NA	5.0%

[a]This refers to spending per family in the case of *Oportunidades* and *Subsidios para Vivienda*, per producer in the case of *Programa de Opciones Productivas*, per job in the case of *PET*, and per individual for the rest.
[b]Includes federal, state and municipal spending.
[c]In 2000 and 2002, LICONSA was entirely self-financed and did not receive any federal transfers. In 2003, federal expenditure on this program was 267.6 million MX pesos.
Source: Anexo del Cuarto Informe de Gobierno 2004.

The largest single program classified under the targeted poverty reduction category is *Oportunidades*, absorbing one fifth of the total budget. In addition to *Oportunidades*, the largest poverty reduction programs include *Programas Compensatorios del CONAFE* , *Programa de Empleo Temporal (PET), Programa de Desayunos Escolares*, *Programa Opciones Productivas* and *Subsidios para Vivienda*. "Other" represents expenditures on multiple small programs for which individual budgets are not available in the *Anexo del Cuarto Informe del Gobierno*.

Figure 3.5. Trends in Social Spending and Social Protection Spending, 1995 – 2002



Source: Own calculations based on the Anexo del Cuarto Informe de Gobierno 2004

Social spending has grown rapidly in recent years, driven mainly by growing social security obligations in the unreformed ISSSTE and transition costs in IMSS; targeted poverty reduction expenditures have also increased, though less rapidly. During the 1990s, social spending overall recovered from the severe budget cuts of the 1980s. As seen in Figure 3.5, social protection expenditure (represented by spending on social assistance, social security and poverty reduction) was among the fastest growing expenditure categories, with social security spending exhibiting a relatively dramatic increase of 14.9 percent per year over the decade.

During the same period, poverty reduction expenditure also increased, yet at a slower rate. While the ratio of targeted spending to social security spending was about nine tenths in 1995, it had fallen to about one-half in 2002. A look at preliminary figures for 2003 and 2004 reveals that total spending on poverty reduction has increased by nearly 30 percent in the past two years (with a total of 100,848.6 million MX pesos budgeted for 2004).

SOCIAL INSURANCE POLICY IN MEXICO – OVERVIEW AND MAJOR CHALLENGES

Mexico's social insurance system shares many of the characteristics and challenges of many Latin American economies. On one side a formal social security system provides retirement and health benefits to formal sector employees through two different subsystems, one for private sector workers and one for public sector workers; on the other, there is a challenge of providing adequate and sustainable coverage to people in the informal sector whose workers and their families make up a large share of the population. IMSS was original characterized as a partially funded defined benefits system but in reality operated from the start as a pay-as-you-go (PAYG) system.[26] Since the 1940s, additional insurance schemes have been added, which provide often generous benefits to federal employees, the most important of which is the *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE) which manages federal employees' accounts. In addition, the armed forces, the state oil company (PEMEX) and other state companies have developed individual social insurance systems.

In 1997, a social security reform limited to IMSS was carried out, which moved toward a defined contribution system with individual accounts and private account management. The push for reform came mainly in response to the three most severe problems of the old system: financial disequilibrium, inadequate pensions and high levels of evasion resulting in low coverage.[27] The 1995 *Ley de Seguro Social* paved the way for social security reform which began in 1997, while a second set of laws passed in 1996,

[26] In a PAYG system contributions from current workers are used to pay benefits to current retirees. In a fully funded system, assets in the pension fund reserve equal the liabilities (including future) in the pension system.

[27] Grandolini, Gloria and Luis Cerda, 1998. "The 1997 Mexican Pension Reform: Genesis and Design Features", Washington DC: World Bank.

Ley de los Sistemas de Ahorro para el Retiro, allowed for privatized management. The reform moved IMSS from a PAYG (pay-as-you-go)/defined benefit system towards a defined contribution system.[28] The reform eliminated the old PAYG scheme; providing IMSS affiliates –at the time of the reform- with a choice between benefits under the old system or accumulated balances under the new system; introducing a guaranteed minimum pension for low-income workers whose accumulated savings fall short of a post-retirement income at that level; and eliminating cross subsidies among IMSS insurance branches.[29] Finally, the introduction of individual retirement funds or *Sociedades de Inversion Especializadas en Fondos para el Retiro* (SIEFORES) managed by specialized companies or *Administradores de Fondos para el Retiro* (AFORES) represented a huge change to both the financing and provision of services. The results of this reform are discussed in further detail below.

ISSSTE has not been reformed and represents an important contingent liability. Problems of the social security system's financial sustainability need to be addressed. In 2003 the social security scheme for public employees had a deficit of 21.2 billion MX pesos, set to increase to 35 billion by 2006. Today's present value of ISSSTE's implicit future liability equals 45 percent of GDP in 2002. For every peso of income, 2.5 pesos is needed in subsidy, a precarious and unsustainable financial stance (Ministry of Finance, 2004).

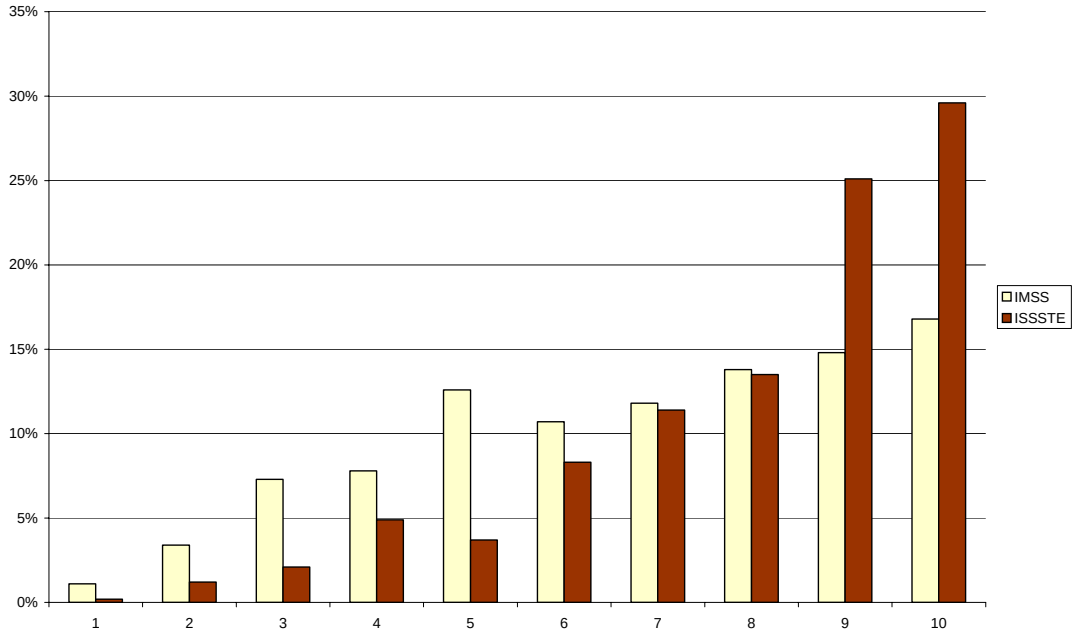
Social security and pensions

IMSS incorporates two redistributive measures: (i) a flat account subsidy to all affiliates (*Cuota Social*), and (ii) a minimum pension to poor affiliates. The *Cuota Social* is a subsidy offered to all affiliates, with substantial poverty prevention effects for the poorer segments of the affiliates. The subsidy does not vary with income and is calculated as a percentage of the minimum wage. As all affiliates receive the same amount, the *Cuota Social* share of total pension contributions is greater the smaller the affiliates income. Gill et al. (2004) find that the *Cuota Social* contributions represent more than 25 percent of total contributions of the 68.5 percent of the Mexican workforce earning 3 minimum wages or less. For these workers, the *Cuota Social* covers commission charges and allows eventual benefits to be greater than contributions, and can be seen as an incentive for low-income workers to join the system. In addition, Mexico has adopted the Chilean model of ensuring a minimum pension for contributing affiliates. The government finances the pension directly when the balance of the individual account is exhausted. Affiliates with at least 25 years of contribution and whose accumulated savings fall below a given minimum annuity are eligible for the minimum pension.

[28] Some observers have noted that the 1997 reform did not switch to a new system but in reality introduced a different PAYG system. See Espinosa-Vega, Marco and Tapen Sinha, 2000. "A primer and Assessment of Social Security Reform in Mexico", Federal Reserve Bank of Atlanta Economic Review, First quarter 2000.
[29] Grandolini and Cerda (1998).

The degree of redistribution depends on whether or not coverage expands. The design of the new system is meant to be both redistributive and to provide the correct incentives for workers to contribute, thus increasing coverage. According to the *Mexico Public Expenditure Review* (World Bank, 2004), as long as coverage expands, federal transfers to the scheme will be reasonably targeted. At any point in time, redistribution only takes place *within* the covered population.

Figure 3.6. Distribution of Additional Public Expenditure on Pensions, 1996-2002

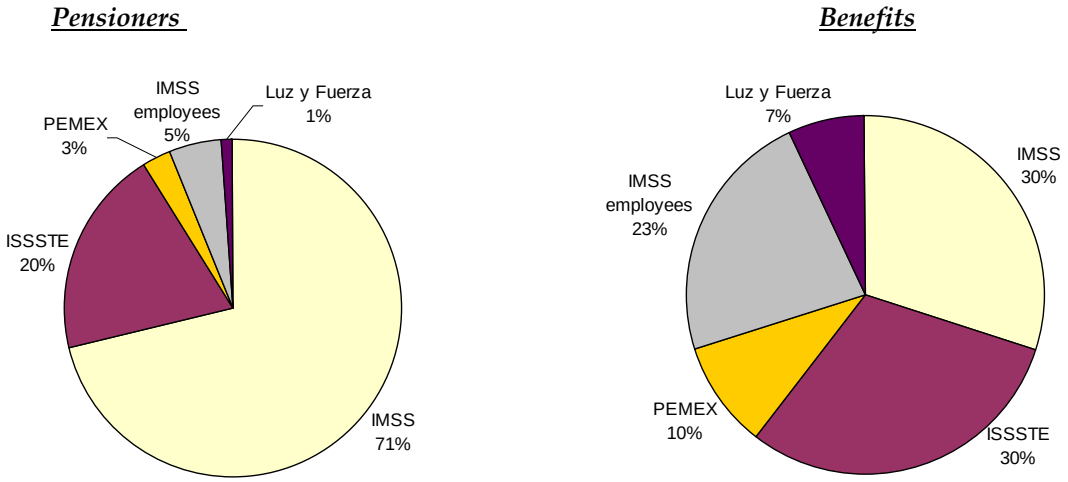


Source: Mexico Public Expenditure Review, World Bank 2004.

The distribution of increased federal expenditure on pensions, in particular given the subsidies that go to public sector workers, in the past decade has been highly regressive. Federal transfers to finance pensions of formal private and public sector workers increased greatly over the last decade.[30] Figure 3.6 shows the share of the total increase in transfers that accrued to each income decile over the period 1996-2002. For IMSS, increases were related to the transitional costs of the 1997 IMSS reform and they will diminish in time, while in the case of ISSSTE the increase in federal transfers was driven by a need to finance a growing gap between current contributions and pensions payments. Federal transfers to IMSS increased by 147 percent from 1997 to 2002 (from 21,021 to 51,986 million pesos). In the same period the ISSSTE deficit grew by 336 percent (from 3,377 to 14,728 million pesos).

[30] Mexico Public Expenditure Review (World Bank, 2004).

Figure 3.7. Distribution of pensioners and benefits received, 2003



Source: Mexico Public Expenditure Review, World Bank 2004.

Finally, significant inequalities exist between the pension systems for public and private employees and within the public system. A focus on IMSS and ISSSTE fails to reveal the full extent of existing inequalities within formal pension schemes in Mexico. In addition to ISSSTE, a range of systems cover specific groups of public employees. These groups, which include the armed forces (SEDENA, SECMAR), public workers employed by local governments, the principal state companies (PEMEX, CFE, *Luz y Fuerza*), and IMSS employees, have been able to negotiate exceptionally generous contractual obligations from the federal government, resulting in inequalities between public and private sector workers, and inequality within the public sector. For instance, while PEMEX, *Luz y Fuerza* and IMSS employees represent only 8 percent of all pensioners, they absorb more than a third of the benefits.

Regardless of positive changes in the incentives to participate, increasing coverage of social security systems for private workers is still an important challenge to the system. The objectives of the wave of reforms in Latin America in the nineties, were, among others, to make the system financially sound and increase coverage through providing better incentives to workers and firms. As with many of the reforms implemented in Latin America, observers still debate the impact of the 1997 social security reform for private sector workers in Mexico (Kaplan, 2004), particularly with respect to formal employment, but overall coverage ratios remain low, especially among the poor. In Mexico, there was a rapid surge in affiliation during the 4 years following the reforms, however, the pace of new affiliations stagnated with the deceleration of growth. In any case, systemic changes that lead to a better link between contributions and benefits are a move in the right direction. Uniform contributions to health insurance are a good example of how linking contributions to benefits increases the incentives to participate in the formal labor market and social insurance schemes. Under the old defined benefit system, contributions varied in line with the wages of the affiliate, while benefits were the same for all. In the new defined contributions system, the contribution

is uniform and based on the minimum wage, removing the perception of an extra tax on anyone earning above minimum wages relative to those who earned only minimum wage but received the same benefit. Estimates suggest that the strengthened link between contributions and expected benefits had a positive impact in Mexico resulting in an immediate surge in formal employment (Montes and Santamaría, 2004). Another view attributes the surge in formal employment to improved registries.[31] A considerable increase in federal contributions, from 0.6 to 13.9 percent of the minimum wage, was also designed to act as an aggressive stimulus to formalization (Montes and Santamaría, 2004).

In 2002, about 40 percent of the Mexican population was not covered by any pension system. Also, according to the World Bank's assessment of the government poverty reduction strategy (2004), half the population falls out of the formal health insurance system, while one tenth is without access to healthcare. Furthermore, as informal employment is linked to lower income, social insurance coverage is not only limited but also highly regressive. As a result, the overall social insurance system is dualistic, i.e., divided in terms of the covered and uncovered population, which corresponds to the formal and informal populations

Further, there are some threats to the financial sustainability of IMSS. According to a recent evaluation of the system published in the *Tercer Informe de la Situación Financiera y los Riesgos del Instituto 2003-2004*, IMSS needs to resolve three critical challenges in order to perform its functions in a sustainable and efficient manner.[32]

First, there is an ongoing dispute between the institute and its employees over the particularly advantageous retirement benefits enjoyed by these workers. Average age of retirement for IMSS employees is 53 years compared to 65 for other IMSS affiliates, yet employees of the institute retire with a pension that is on average 30 percent higher than their last salary, while other IMSS affiliates receive a pension upon retirement that is on average lower than their last salary. Consequently, the pension of an ex-IMSS employee is on average 8.3 times the size of that of any other affiliated worker – in spite of having worked on average 12 years less. This generous pension scheme is largely paid for by contributions of other IMSS affiliates and not by those of the IMSS employees themselves. The calculations in the above mentioned report show that only 6 percent of the cost is covered by IMSS employees' contributions, while 77 percent is paid for by other affiliates, representing 19 percent of total worker and employee contributions. Urgent reform is needed to redress this disequilibrium and to avoid even graver damage to the financial viability of the institute. The report projects a doubling of the number of retired IMSS employees in less than a decade.

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[31] Comments received during the June 10-11, 2004 Poverty Assessment workshop in Mexico City.

[32] IMSS, "Informe al Ejecutivo Federal y al Congreso de la Unión sobre la Situación Financiera y los Riesgos del Instituto Mexicano del Seguro Social" http://www.imss.gob.mx/IMSS/IMSS_INF/2004/fina04.htm

Second, the demographics of the Mexican population result in a relative decrease in the number of working, contributing affiliates relative to the number of retired, benefiting affiliates. Increased life expectancy will increase the weight of medical expenses for pensioners, in particular those related to chronic illnesses. Contrary to the first challenge which is particular to the Mexican system, the problem of demographic change poses challenges similar to other OECD countries' social security systems.

Third, IMSS is far from fulfilling its social obligation of securing all Mexican non public sector workers. Due to years of backlog in formal job creation and the impact of the economic downturn since 2001, only 29 percent of the economically active population was covered by IMSS in 2003. With no change in limited coverage, 11 million workers will retire with no pension in the following 25 years. The need to increase the coverage ratio runs against the urgent need to increase IMSS revenue as higher contribution rates would further decrease the incentives for informal workers and employers or self-employed to register formally. In fact, decreased contribution rates might be envisaged as one way to provide the needed incentives for workers and employers to register formally. The problem of low coverage is further complicated by dynamic changes in the labor market as job creation over the past years has taken place mainly in service and commerce sectors with smaller business structures and a high incident of micro-enterprises and self-employed. It is a known fact that the probability of formal registration increases with size. In Mexico, affiliation is optional for the self-employed. Finally, the proportion of temporary as opposed to permanently employed workers is increasing, creating problems of insufficient time of contribution. Female participation in the labor force is increasing – a population for which temporary work is more widespread. Agricultural day-workers are in a particularly fragile position due to seasonal changes in labor demand, while the problem is exacerbated among migrant workers that divide their time between Mexico and the United States.

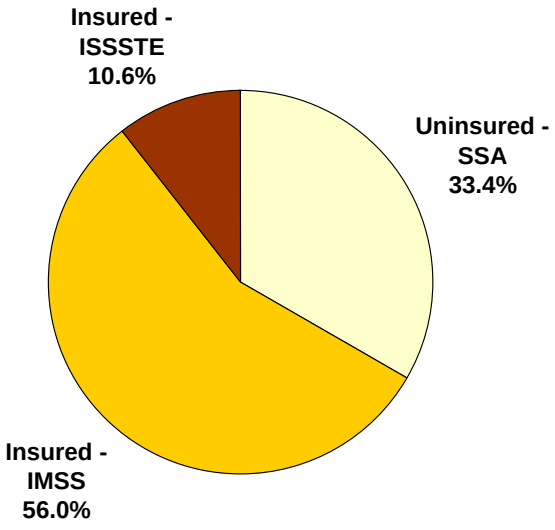
Some state governments have introduced non-contributory transfers to the old-age population in an effort to address the existing gap in old-age insurance coverage; the elderly are also covered in part by national programs such as *Oportunidades* and *Procampo*. In 2001, Mexico City Government (MCG) launched a program providing transfers to the elderly (*Programa de Apoyo Alimentario y Servicios Médicos y Medicamentos Gratuitos para los Adultos Mayores de 70 años*). The program was initially poverty targeted as only the elderly living in poor sections were eligible beneficiaries of the pension scheme. In 2003, coverage was extended to all residents at the age of 70. Other states operate transfer programs for the elderly poor, including the *Canasta Alimentaria Básica* (Michoacán), the *Programa de Atención al Adulto Mayor* (Nuevo León), and the *Pensión para Adultos Mayores* (Guerrero). National programs that are targeted to the poor also reach the elderly; *Oportunidades* reaches close to 400,000 families headed by someone over the age of 70, while more than 650,000 *Procampo* beneficiaries were over age 70 in 2004. In sum, multiple initiatives exist which reach the elderly poor either by design or accident, and government entities at multiple levels are stepping in to attempt to

address the issue. There is still the need of a coherent policy for addressing the issue of old-age poverty in an efficient, fiscally sustainable manner.

The national health system and health insurance

Overall public expenditure on health services is mildly regressive; however, it becomes neutral if private contributions to IMSS are deducted. The mid-regressive pattern in total public expenditures in health results from regressive expenditure on services for the insured (a result of limited and regressive coverage) coupled with highly progressive expenditure on services for the uninsured.[33] As shown in Figure 3.8, federal expenditure on health services can be divided into funding of institutions servicing the uninsured (Ministry of Health – SSA) and the insured (ISSSTE and IMSS). When looking at the distribution of expenditure across income deciles, public financing of health services for the uninsured is highly progressive, while the public financing of health services for the insured population in the public system is regressive in absolute terms, but not relative to income.

Figure 3.8. Federal health expenditure, insured vs. uninsured, 2002



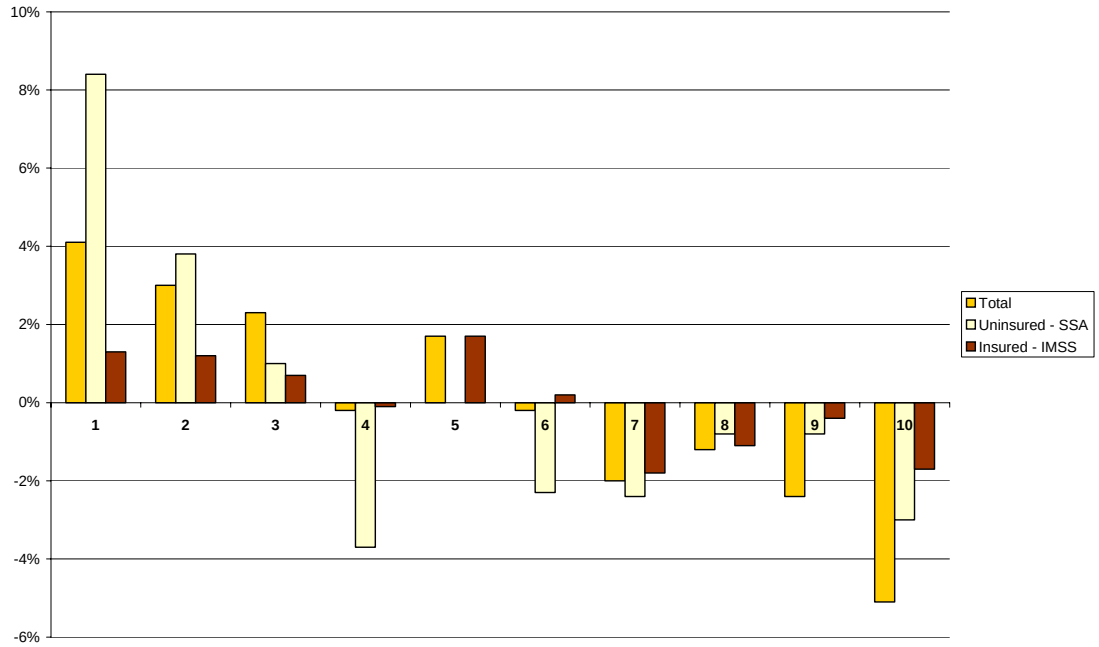
Source: Mexico Public Expenditure Review, World Bank 2004.

The expansion of public expenditure on health services in the period between 1996 and 2002 was accompanied by increased progressivity and more pro-rural spending. Overall, federal health expenditure rose by 40 percent in the time period 1996-2002. During the same period, the share of federal expenditure targeting the uninsured (SSA) increased from 21.5 percent of total expenditure in 1996 to 33.4 percent in the 2002. **This illustrates how the expansion in public expenditure between 1996 and 2002 favored the uninsured, narrowing the gap between the two parts of Mexico's**

[33] World Bank. Mexico Public Expenditure Review. 2004.

dualistic health system. As such, between 1996-2002, public spending on health became more pro-poor as the poorest 2 deciles accounted for 15 percent of spending in 2002 compared to 8 percent in 1996. It also became more pro-rural–up to 28 percent from 20 percent–reflecting both increased spending on SSA services in rural areas and an expansion of IMSS coverage in rural areas between 2000 and 2002.

Figure 3.9. Distribution across income deciles of marginal benefits from growth in public health expenditure, 1996-2002



Source: Mexico Public Expenditure Review, World Bank 2004.

However, per capita health spending varies widely geographically, with poorer states receiving less than richer ones. The state that receives the highest per capita expenditure on health (Baja California) receives more than three times more than the state that receives the least (Michoacán). Geographical differences become even starker when distinguishing between the insured and uninsured: the insured population in Baja California receives more than five times as much in per capita health expenditure as the uninsured population in Puebla.[34]

Finally, Mexico's national health system is characterized by a parallel and strong presence of private health providers that serve both the covered and uncovered populations. As a result, the national health system consists of a fragmented public system and a significant private sector operating largely in parallel with very little coordination (Cercone 2000). In short, the system is built on three pillars: one serving the insured, another serving the uninsured, and a third pillar– the private sector –serving both. First, there are the mandatory social insurance programs for formal sector

[34] Mexico Public Expenditure Review. World Bank. 2004.

employees, employers and government, funded by contributions and ran by IMSS, ISSTE etc. Second, there is the social assistance program for the uninsured financed by general revenue and provided by the public sector (i.e., SSA). Third, there are private sector health providers, used by both insured and uninsured and financed by out-of-pocket expenditures. Following the decentralization of health services in the mid-1990s, states are responsible for health services provided by the SSA to the uninsured. States also run their own health institutions.

To address the problem of limited health insurance coverage among the poor and health shocks, a voluntary insurance scheme – the *Seguro Popular* (SP)–was launched by the Ministry of Health in 2001. The *Seguro Popular* program was first piloted in 2001 and by early 2004 became known as the national program *Sistema de Protección Social en Salud* (SPSS); as of May 2005 the program provides coverage to 2,000,000 families. Although based on traditional insurance design features, the *Seguro Popular* effectively operates more as a targeted transfer mechanism built around the package of basic health services due to a heavily subsidized package of benefits coupled with a progressive contribution structure. In addition to the self-targeting mechanism of minimum benefits, the *Seguro Popular* uses an income/assets survey to evaluate capacity to pay. Although the program is funded and administered by the Ministry of Health, the actual provision of health services included in the package is devolved to the states. As of April this year, 700,000 families have signed up for the *Seguro Popular*, and the government estimates that by the end of the year 1.5 million households will have signed up. It should be noted, however, that the program presents new fiscal liabilities that must be considered, especially since the number of services offered by the program continues to grow. A second voluntary insurance scheme, the *Seguro de Salud para la Familia* (SSF), compliments the SP. The SSF operates within existing social security institutions and targets informal and self-employed workers able to pay a premium contribution. SSF coverage is still very low about 350,000 beneficiaries and has not increased much in the last year, about 2 percent.

Box 3.2: Decentralization of social spending and service provision in the 1990s – Health and Education

In the 1990s increasing decentralization led to a consequent change in the composition of social spending between federal and sub-national levels of government. Decentralization of public expenditure was rapid, and massive in terms of the magnitude of decentralized expenditure. Decentralized spending represented 42 percent of total social spending in 2000, compared to 29 percent in 1994.[35]

Rapid decentralization of resources, coupled with continued centralization of taxation and lacking incentives for states to increase their own revenue has left sub-national governments highly dependent on federal transfers. The disconnection

[35] Rodriguez, Evelyn, 2003. "Some Notes on Changing Social Policy: Mexico's Experience", presented at World Bank Safety Net Primer Launch, December 1, 2003.

between expenditure and revenue has emerged as one of the key challenges of fiscal federalism in Mexico.

Two waves of decentralization **with significant transfers of social spending and basic service provision to local governments:**

- *Late 1980s - Early 1990s*: Tax authority was not devolved, however responsibilities were delegated to states and supported by transfers. Continued federal control over spending priorities was ensured by earmarked (and conditional) transfers. Starting in the late 1980s, the provision of basic health services was gradually transferred to states, while responsibility for basic education devolved more rapidly following the 1992 *Acuerdo Nacional para la Modernización de la Educación Básica*
- *Late 1990s:* Continued decentralization, driven by increased political competition and demands from state governments ran by opposition parties. Decentralization relied on transfers, however earmarking and linkages to expanded responsibilities were greatly relaxed. Major reforms included the creation in 1998 of a new budget line–Ramo 33–which increased the predictability of health and education transfers to the states.

With the exception of the new *Seguro Popular* program, none of these decentralization reforms affected social protection policy. Both social assistance transfers and social insurance remained centralized. *Seguro Popular*, a program which involves heavily subsidized health benefits for the poor and therefore some risk pooling across households has been largely devolved to the states, following the massive decentralization of health services that occurred in the 1980s and 1990s.

Source: Giugale and Webb (2000), Haggard and Webb (2004).

SOCIAL ASSISTANCE POLICY IN MEXICO – OVERVIEW AND MAJOR CHALLENGES

The 1980s and 1990s brought about great changes in federal social policy in Mexico, as the focus of social assistance shifted towards poverty alleviation. While programs in the 1980s focused on 'compensating' the poor for their situation, the 1990s saw the emergence of more dynamic programs geared towards the development of human capital and productive capacities in the poor. This trend culminated in the launch of *Progresa* in 1997. The program combined innovative program design built on conditional transfers and cross-sectoral synergies with rigorous monitoring and evaluation.

A new wave of social policy initiatives coincided with the first structural reforms of the late 1980s and early 1990s, initiating a move away from generalized subsidies towards targeted poverty alleviation incorporating decentralized, local participation. Acknowledging that the poor were the most disadvantaged both in terms of coping under economic stress and in terms of adapting to structural adjustments, the Salinas administration developed *Programa Nacional de Solidaridad* (PRONASOL). This program was one of the first to specifically target the poor, representing an important

break with earlier policy. A second innovative feature of PRONASOL was its focus on community participation, coupled with the decentralization of both resources and decision-making. Despite these advances, the majority of poorly-targeted generalized subsidies remained in place.[36] Furthermore, programs within PRONASOL lacked well-specified objectives as well as corresponding monitoring and evaluation, contributing to the perception of PRONASOL as a vehicle for clientelism.[37]

By the 1990s the policies of PRONASOL had been discredited, paving the way for innovative social policies that turned the focus of social assistance towards building the human capital and income generating capacities of the poor. The move away from general subsidies toward targeted social assistance initiated by PRONASOL continued throughout the 1990s. Changes were made to some but not all subsidies. Generalized food subsidies such as the universal *tortilla* subsidy were phased out giving way to food subsidies targeted to the poor. In addition, important advances were made in terms of increased transparency and accountability, by ways of more systematic monitoring and evaluation.

The launch in 1997 of the *Programa de Educación, Salud y Alimentación* (*Progresa*, now called *Oportunidades*), a social assistance program targeting rural infants and youth, is the clearest manifestation of this new wave of policy initiatives. *Progresa* is a conditional cash transfer (CCT) program that provides money to extremely poor families conditional upon investments in human capital such as sending children to school or bringing them to health centers on a regular basis. This conditionality makes CCT programs an instrument not just for short-term social assistance, but for longer term human capital investments. CCT programs are part of a new generation of social programs that use demand-side financing to target the poor that includes school voucher programs and subsidized health insurance schemes. These programs' reliance on market principals, using demand-side interventions to directly support beneficiaries, is a marked departure from traditional supply-side mechanisms such as general subsidies or investments in schools, health centers and other providers of social services.

***Oportunidades* pioneered a new generation of social assistance programs (conditional cash transfers programs) that have been emulated internationally.** It also introduced consistent monitoring along with rigorous, independent evaluation. In addition to enforcing the trend towards targeted poverty alleviation, the program

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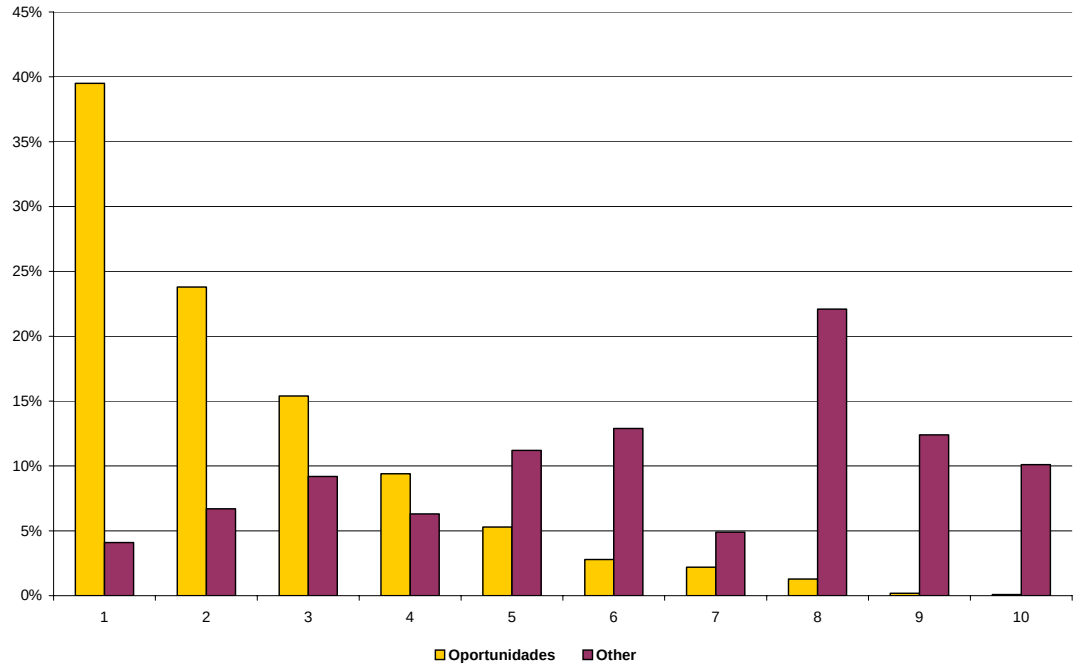
[36] López-Calva refers to an evaluation of generalized subsidies realized by the SECOFI in 1992, which shows that of every peso disbursed in the *Programa de Subsidios Generalizados*, only 50 centavos reached the beneficiaries due to high administrative costs. In addition, by favoring the urban middle class, the subsidies left behind large portions of the population. Conference proceedings from "Innovations in Social Policy Conference", SEDESOL, Mexico City, April 2003.

[37] Perceptions of clientelism were also generated by the practice of having earmarked transfers sent directly to PRONASOL committees, bypassing mayors and municipalities, following 'a distinctive political logic' (Haggard and Webb, 2004). Diaz-Cayeros and Magaloni (2003) found that the timing of PRONASOL expenditure responded to the federal electoral cycle, and allocation was in part determined by the competitiveness of electoral contests.

reoriented the focus of social assistance to building the productive capacity and human capital of the poor. Finally, by linking nutrition, health and education, the program marked a transition towards a more integrated approach to poverty alleviation. A cross-sectoral approach was seen as more effective than isolated programs in responding to the multidimensional needs of the poor. While *Oportunidades* targets infants and youth, such an integrated approach has been used in recent regional development programs developed under the current administration, including *Habitat* (urban areas) and *Microregiones* (remote and marginalized rural areas). One of the main current challenges in reforming the social protection system is to consolidate these new trends in social assistance and to disseminate the principles and lessons from *Oportunidades* to all parts of the social protection system. So far, take-up has been low.

Figure 3.10. Distribution of Households benefiting from public Scholarship Programs, 2002

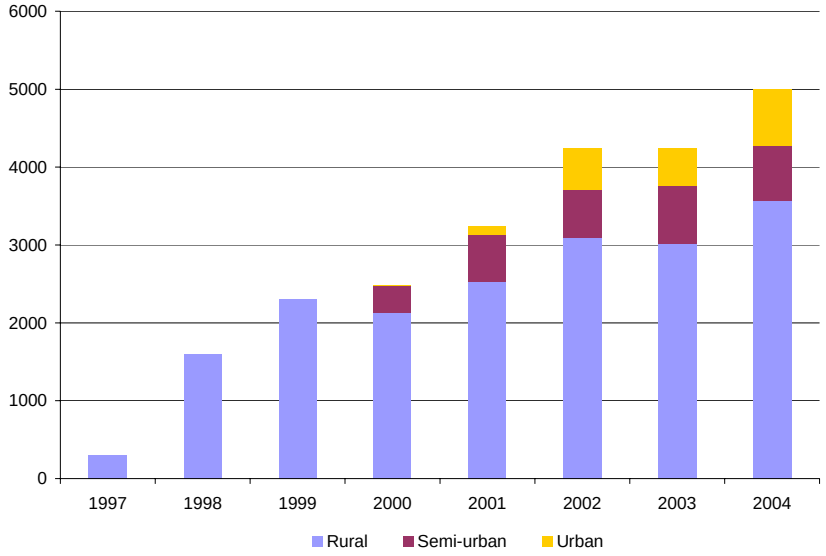


Source: Mexico Public Expenditure Review, World Bank 2004.

Increased spending on education has been highly progressive as a result of *Oportunidades* and the increase in means-tested scholarships. Figure 3.11 shows how *Oportunidades* has grown to become the largest public scholarship program in Mexico. More importantly, the graph also illustrates how progressive the program is. Of all households receiving *Oportunidades* transfers, a total of 93.4 percent were in the bottom half of the income distribution. 63.6 percent were among the poorest 20 percent of the population and 39.5 percent among the poorest 10 percent. More than 80 percent of *Oportunidades* households were in rural areas in 2002, however this has changed in the past two years due to the roll-out of the program to urban areas (see Figure 3.11).

Households benefiting from other scholarships are concentrated in urban areas (76.4 percent). This positive trend holds mainly for primary and lower secondary, while the distribution of scholarships for upper-secondary and tertiary education remains regressive.

Figure 3.11. Extension of *Oportunidades* coverage, 1997-2004 (thousands of families)



Source: Anexo del Cuarto Informe de Gobierno 2004.

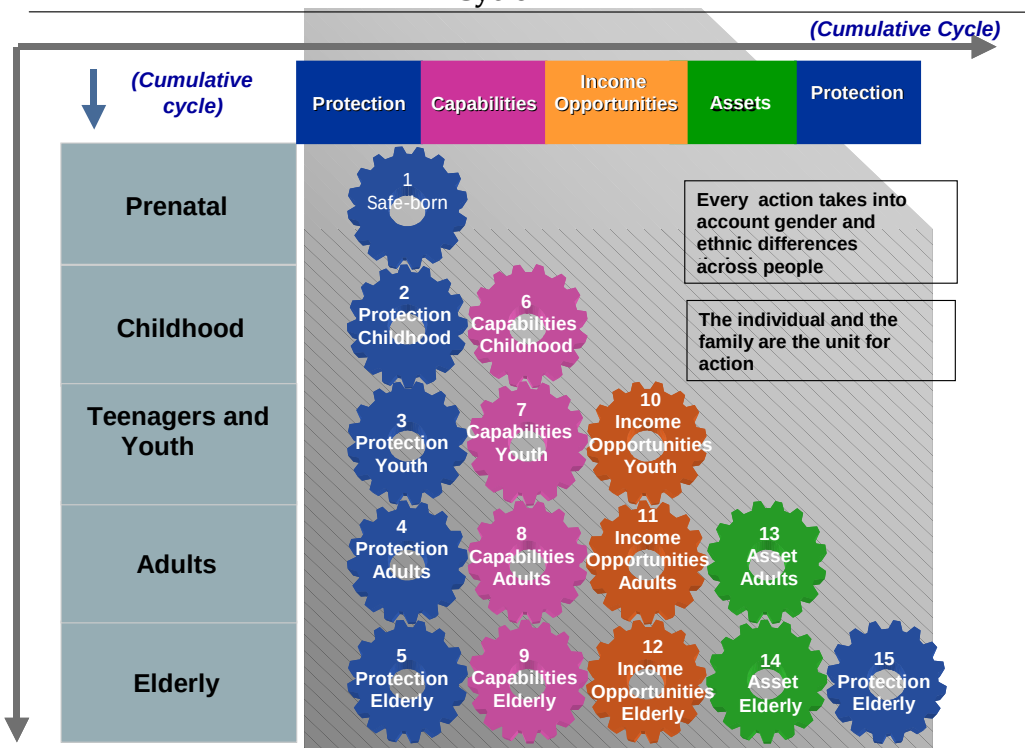
Coverage of *Oportunidades* has increased considerably in the past couple of years as the program moved to include upper-secondary students in 2001, followed by an expansion into urban areas in 2002. In 2002, the program provided more than 2.5 million scholarships to primary school children and 1.3 million scholarships to secondary school adolescents nationwide.[38] Coverage was about 60 percent more than in 2000. The original program design has not changed as a result of urban expansion, but recent experience in adapting the program to urban areas without considerations of how the model would function in a different context suggests that some program modifications may be needed. Figure 3.11 shows the number of beneficiaries over the time period 1997-2004, broken down by rural, semi-urban and urban.

In 2002, the Mexican government introduced the *Contigo* strategy, an 'umbrella' framework designed to achieve greater coherence and impact in social protection policy. Programs are designed around age and gender groups and action areas so as to ensure that individuals' needs of government services and assistance at different times in their life and in different welfare dimensions are covered. Its stated goal is to provide basic social benefits to all Mexicans, including quality healthcare and education, adequate nutrition, housing, employment security and pensions (*Secretaría Técnica*, 2003) (see Figure 3.12 below). In addition, the conceptual framework includes four transversal principles, applicable to all areas of public action: (i) equity to allocate

[38] Rubio and Soloaga (2002)

more resources to disadvantaged groups; (ii) transparency to avoid discretionary or political use of government and society; (iii) joint responsibility between the three levels of government (federal, state and municipal); (iv) integration to encourage efficient social spending by exploiting synergies, eliminating duplication and ensuring coherence in different program objectives.

Figure 3.12. *Contigo*: Interactions Between Areas of Public Action and the Life Cycle



Recent social protection initiatives illustrate the new social protection framework, in particular in terms of delivering integrated interventions drawing on synergies between sectors and programs:

- **The inclusion of upper-secondary students in *Oportunidades* was accompanied by a savings plan for participating high school students called *Jóvenes con Oportunidades*.** The program offers a bonus which grows each year from ninth grade through graduation and turns into a savings fund if the student completes high school before turning 22. The program has important links with other services. Students can use the bonus to buy health insurance such as the *Seguro Popular*, for collateral either in micro-credit or to enter into the government's housing credit program, *Tu Casa*. Alternatively, the savings can help fund higher education. By 2004, *Jóvenes con Oportunidades* operates close to 40,000 savings accounts on behalf of *Oportunidades* beneficiaries.

- ***Microregiones* is a new, largely rural crosscutting program focusing on local development in remote and marginalized areas often outside of the reach of *Oportunidades*.** The main objective of the program is to build basic social infrastructure complemented by strategies to integrate the marginalized area into a broader economic network. The program is participatory in that local communities, via local councils, take part in the decision-making process by proposing and prioritizing investments. The program also seeks to identify and support strategic centers within each region.

- **As a complement to *Microrregiones*, the *Estrategia de Abasto, Alimentación y Nutrición* offers food subsidies to families living below the food poverty line in remote and marginalized areas, specifically outside the reach of *Oportunidades*.** While there is evidence that the percent of underweight children was practically halved over the course of the decade, estimates for the share of children under 5 years of age that still suffer from stunted growth in its moderate form range as high as 18 percent.[39] Moreover, 18.6 percent of total households had a per capita income below the minimum requirement to fulfill their daily energy food intake included in the INEGI-ECLAC's basic food package.[40] About 35 percent of these households are located in remote areas with less than 500 inhabitants, and the program focuses on reaching these marginalized communities which often do not systematically receive any other support. The food subsidy is distributed using the network of *Diconsa* stores and with the support of the *Microrregiones* program.

- **A third cross-sectoral social assistance program, *Hábitat*, was launched in 2003 to combat urban poverty.** The program combines and coordinates poverty reduction programs and urban development projects and targets both poor neighborhoods and poor households. *Hábitat* has been instrumental in improving the quality and access to basic services such as water, electricity and sewage in targeted urban areas, and has helped create community development centers (*Centros de Desarrollo Comunitario*) and child care centers. Special attention is given to female heads of households, the elderly and the disabled. The program covers about 180 cities and the latest extensions of the program have focused on border cities in the North and South and 10 historic city centers. The budget for 2004 was MX$5 billion, up from MX$2 billion in 2003.

Even though Mexico's various social assistance programs may be justified by the different demands of a heterogeneous population, their sizeable number reflects potential problems of overlap and coordination. Many programs are aimed at the same target population but vary in terms of the geographical region attended, the economic sector in which the population is located, the type of instruments employed, or merely

[39] National Nutrition Survey 1999. 2001 edition and World Bank. Mexico Poverty Assessment. July 2004.
[40] Ministry for Social Development. Technical Committee for Poverty Measurement, 2002.

the entity responsible for its operation. The number of programs, by itself, generates a serious problem of inefficiency. Coordination problems grow with the number of programs, efforts are duplicated, and as a result some segments of the target population may be left unattended or covered simultaneously by more than one program.

Finally, programs formally belonging to other sectors perform central social protection functions, as seen in the income security and redistributive functions of *Procampo* (agricultural subsidy). Aside from *Oportunidades*, *Procampo* is the government's main poverty-targeted transfer program. In general, the Mexican state has been heavily involved in rural development. Expenditure in agricultural and rural development represents 34 percent of all line-ministry expenditure and almost 2 percent of GDP (*Rural Poverty in Mexico*, 2004). Naturally, many Agricultural and Regional Development (ARD) policies and programs are not directly targeted to poverty reduction, however while pursuing other goals (e.g., farm modernization or competitiveness), they directly or indirectly affect rural poverty and inequality. A subsidy such as *Procampo* also provides income security for the poor. Government transfers, both in terms of social assistance and ARD, constitute a considerable share of the incomes of the rural poor. There is an increasing trend in ARD expenditure and some evidence of increased targeting of programs. The dependency of rural poor on transfers is contrasted by the relative absence of transfers in the incomes of urban poor, new, smaller initiatives such as *Hábitat* notwithstanding. Finally, *Urban Poverty in Mexico* (World Bank, 2004) underscores the importance of the labor market as a risk coping mechanism for the urban poor.

Box 3.3: *Procampo*

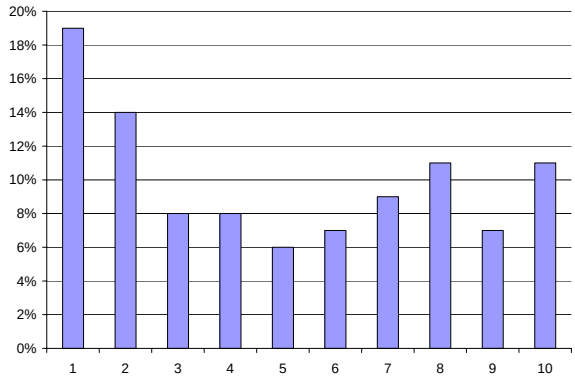
Aside from *Oportunidades*, *Procampo* is the government's main poverty-targeted transfer program. *PROCAMPO*, introduced in 1993, is a program of direct payments scheduled to end in 2008, which compensates producers for the loss of input subsidies, price supports, and import protection incurred by Mexico's entry into NAFTA. The program covers 2.8 million producers out of which 2.3 million are farmers on *ejidos*. Planned expenditure for the program was 12.4 billion pesos in 2002.

Main objectives:

- Support domestic producers of basic staples to face competition from the United States
- Help Mexican farmers switch to more competitive crops under a liberalized context

***Procampo* has a progressive overall distribution** as poor subsistence farmers represent a large proportion of producers of basic crops, the poor (as defined by the food poverty line) benefit from 33 percent of transfers. Estimates referred to in the PER show that for the poorer *ejidatarios*, the *Procampo* transfer represents up to 40 percent of income. But over 80 percent of households in the poorest households do not receive program benefits, and incidence stretches significantly across the income distribution.

Distribution of *Procampo* Transfers across income deciles, 2002



Despite a progressive distribution of transfers, *Procampo* reaches few poor households not covered by either *Oportunidades* or public social security schemes. Less than 2 percent of extreme poor households *not* covered by *Oportunidades* or IMSS receive *Procampo* transfers (ENIGH 2002).

Source: Mexico Public Expenditure Review (World Bank 2004) and Poverty in Mexico (World Bank, 2004)

In sum, although the *Contigo* strategy works well as a conceptual framework, earning the government deserved acclaim, the strategy has yet to be fully operationalized (World Bank, 2004 - Poverty Assessment Report). With the exception of a few cross-sectoral programs including *Oportunidades* and *Hábitat*, it is unclear how the wide variety of social assistance programs fit in the *Contigo* strategy. Most social and economic policies affecting the poor seem to continue along sectoral and ministerial lines; as seen in Table 2.2, social assistance policy today is delivered via almost 90 different programs, from a multitude of responsible entities, incorporating little of the *Contigo* framework into decision making.

WHERE DOES THE SOCIAL PROTECTION SYSTEM STAND TODAY?

To conclude, Mexico's social protection system is at a critical juncture. The 1997 IMSS reform of the pension system for private workers moved in the right direction by linking contributions and benefits thereby improving the financial underpinnings of the system. The ISSSTE system covering public sector employees, however, is still unreformed. As a whole, the social protection system in Mexico, as in many Latin American countries, is still fragmented on the basis of labor market status and a large fraction of the population still has no or inadequate coverage. Social insurance programs which constitute the bulk of social protection spending continue to suffer from financial instability and insufficient coverage among the poor, and despite progress in *Oportunidades*, social assistance remains fragmented.

Mexico's social protection system has seen major progress in the past two decades, as illustrated by major innovations such as the *Oportunidades* program, and the conceptually strong framework now provided by *Contigo*. Innovative approaches have emerged dealing with the multidimensional characteristics of poverty, notably through cross-sectoral programs such as *Oportunidades, Microregiones* and *Hábitat*. Monitoring

and evaluation practices are becoming increasingly rigorous. However, the majority of social assistance programs have yet to incorporate these concepts as rigorously as the government's flagship social assistance program *Oportunidades*, nor is it clear how some of the smaller social assistance programs fit into an integrated *Contigo* framework.

Box 3.4: Argentina's experience with workfare programs in times of crisis – *Jefas y Jefes de Hogar*

In response to the 2001 crisis, the Argentine government launched the workfare program, *Jefas y Jefes de Hogar Desocupados* (Unemployed Heads of Household). The program provides 150 pesos per month to unemployed household heads or their spouses in exchange for 20 hours per week of community service work, job training or work as a temporary employee of a private company. Eligible households are those with at least one of a child under the age of 18, a pregnant woman and/or a handicapped member. Either the husband or the wife can participate in the program, provided that their spouse is not working.

Program eligibility criteria were not tightly enforced – about one third of those receiving the program did not satisfy eligibility criteria. Yet, given the evidence that a fall in real wages, rather than unemployment, was the significant factor behind the decline in living standards participation by people who were not formally eligible may not have been a bad thing. In addition, the fact that beneficiary unemployment status is hard to verify in economies with high rates of informality makes this eligibility requirement unenforceable. Indicators of structural poverty such as having dependants and/or living in households with no members in the formal labor markets may have been more effective eligibility criteria in ensuring pro-poor targeting. Overall, targeting was good as about over half of the participants came from the poorest fifth of Argentine families, and all but 10 percent fell below the official poverty line.

The program is estimated to have reduced Argentina's unemployment rate by only about 2.5 percentage points. However, the effect on poverty, and more particularly on extreme poverty, was significant: close to 10 percent of the participant would have fallen below the food poverty line without the program. The program helped participants who would have suffered an appreciably sharper drop in their income without the program. Among the lowest quintile, income to males from work programs increased from 2 to 16 percent of total household income; for females, the equivalent increase was from 3.4 to 21.8 percent.

Source: Adapted from *Poverty in Urban Mexico,* Mc Kenzie (2003); Galasso and Ravallion (2004).

With regard to social security, workers in the formal sector and their families are provided social protection by social security institutes, the most prominent of which are the IMSS and ISSSTE.[41] The private pension system has the challenge of increasing

[41] The *Instituto Mexicano de Seguro Social* and the *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado*, respectively.

coverage, while the pension system for public sector workers provides generous benefits remains unreformed and maintain severe financial imbalances. Informal workers and their families, in contrast, have relatively limited access to social protection. For health care, these citizens rely mostly on the *Secretaría de Salud* (SSA) or out-of-pocket fee-for-service in the private sector. In old age, these citizens do not have a pension and hence rely on own savings and intra-family support. A large group of people, however, neither have access to these programs nor to the formal social security institutes; these citizens represent the "missing middle" of Mexico's social protection system.

Chapter 2 raised the issue of increasing risk and vulnerability to job loss and unemployment: Mexican labor markets seem to be increasingly absorbing output shocks through higher unemployment rates, yet current unemployment protection system only protects formal employees.[42] The *Poverty in Urban Mexico* report takes note of this gap in social protection, highlighting the need to develop safety nets that protect the urban poor and help them mitigate risks, particularly workfare and other social insurance programs that can be quickly deployed when a crisis hits. Lacking unemployment insurance and the limited access and uncertain future of workfare programs such as PET, may become an obstacle to the provision of comprehensive social protection of Mexican workers.

In short, despite important advances, Mexico faces substantial problems in its social protection system that must be acknowledged and addressed. Reforming the social insurance system remains a priority both in terms of addressing the coverage gaps particularly among the poor in the informal sector, as well as in response to growing financial obligations under the present system. Cast in terms of the framework established in Chapter 1, the bulk of Mexico's social protection interventions (and resources) flow towards providing risk-pooling mechanisms where markets fail to provide. **Financing for these programs, particularly in the provision of retirement insurance, involves both contributions from affiliates and a subsidy from general tax revenues, mainly for public sector workers pensions - while a substantial proportion of the population is excluded from coverage –** thus, the persistent dualistic nature of the Mexican social protection system. There have been important reforms in social protection initiatives targeting the chronic poor, but resource flows are still insufficient and the major assistance program–*Oportunidades*–does not in and of itself constitute a shock insurance mechanism. Two other major programs, *Procampo* and the new *Seguro Popular* program, do provide some form of risk management for the chronic poor, yet implementation and financing questions remain, and an important proportion of the extreme poor population appear to be excluded from even these programs. The system as a whole is less a 'system' than a set of new social assistance initiatives. Whereas *Contigo* presents a compelling and elegant framework, it has yet to be fully operationalized, and programs under its umbrella remain largely fragmented and uncoordinated.

[42] The current unemployment system consists primarily of a defunct severance pay system.

Three key issues can be identified:

- *First, the social protection system remains dualistic and fragmented, with large gaps in coverage for key vulnerable groups*. Potentially promising new programs remain uncoordinated institutionally and present challenges of financial viability. The *Contigo* strategy remains largely conceptual and the individual reforms remain ad hoc and cannot be anchored within a coherent social protection system without fundamental reform to the structure and composition of the overall system. And without fundamental reform, these individual reforms will not be sufficient to address the core, structural issues outlined above.

- *Second, Mexico faces the challenge of stepping-up and mainstreaming the social protection reform agenda*. Many of the laudable qualities Mexico brought to the reform of its social assistance system through the introduction of the flagship *Oportunidades* program need to be introduced throughout the social protection system more broadly. Indeed, without paying attention to strengthening the accountability relationships between clients, service providers and government throughout the system, the overall functioning of the system will almost certainly suffer from quality and performance problems. From a public sector management perspective, Mexico needs to mainstream the practice of introducing new programs while phasing out less viable and costly alternatives, allowing evidence-based policy to guide those decisions, and thus de-politicizing the process.

- *Third, the reform must be grounded within a strong fiscal strategy* with clear decisions made as to how reforms will be financed. Choices include reallocating expenditures within the current social protection expenditure envelope (in particular, reallocation of existing subsidies embedded in the system), or, addressing existing tax structures in order to generate greater public resources to finance the social protection system. If these questions are not addressed, new add-on policy initiatives risk further weakening the solvency and stability of the social protection system as a whole.

4. TOWARDS AN INTEGRATED SOCIAL PROTECTION STRATEGY IN MEXICO: A DISCUSSION OF ISSUES AND OPTIONS

The objective of this chapter is to lay out the most important issues that need to be addressed in the current social protection debate. The principal social protection challenge facing Mexico today is how to place risk management mechanisms within the reach of the population not currently covered by the existing social security system (the poor and the informal sector), while securing the financial underpinnings of the system. Choices used by different countries range from higher efficiency of the formal sector system in order to improve the structure of incentives faced by workers, to supplemental programs and benefit packages for informal sector and non-working groups, to de-linking the system entirely from the labor market, moving towards a unified system of universal coverage. Different policy avenues pose huge institutional and fiscal challenges that should be part of the policy debate. This chapter identifies four priority issues for the Mexican social protection reform agenda which emerge from our analysis, including: (i) the fiscal and institutional challenges of the current social security systems; (ii) inadequate health care and health insurance coverage for the poor; (iii) the lack of a strategy for addressing Mexico's high old-age poverty rates; and (iv) the need for an integrated approach to balance risk management and chronic poverty reduction. The chapter closes with a discussion of key questions for the future.

Most social protection systems in the region, including Mexico's, are dualistic, leaving a significant share of the poor population with insufficient access to health insurance, old-age pensions, and social assistance. At the center of the system are social insurance programs comprised of retirement and health plans for formal **sector employees.** Mexico is facing a classic problem of low-coverage and high-cost formal social insurance systems that are due to both the transitional costs of the IMSS' reforms and, more worryingly, the rising subsidies needed to pay benefits in the as-yet unreformed pension systems for public sector workers, mainly ISSSTE. Choices on how to address this core issue must be made. The remainder of the system is comprised of social assistance programs, with insufficient resources, are fragmented, and characterized by gaps in coverage, missing, incomplete or overlapping interventions for different vulnerable groups outside of the formal sector. The prevalence of and the number of extreme poor outside the reach of Mexico's flagship *Oportunidades* anti-poverty program, twinned with the limited capacity of that program to act as a risk management tool, all point to the prevalence of important at-risk groups that might be better served by public policy. *Oportunidades* clearly follows best practice program design principles, and successfully targets and reaches many of the poorest households.

However, it falls short of offering an integrated strategy for risk reduction among the chronic poor, and some key groups, notably the elderly, are left uncovered by this initiative. The central government has also taken the lead in beginning to address the high exposure of the poor to catastrophic health shocks, as witnessed by the new *Seguro Popular* health insurance initiative, yet the question remains of whether the dualistic system should in fact be maintained.

PENSION REFORM: ISSUES FOR THE FISCAL AND INSTITUTIONAL POLICY DEBATE

The current pension systems require urgent reforms in order to assure financial stability. The particularly advantageous retirement benefits enjoyed by IMSS' own employees constitute a significant and rapidly increasing financial burden.[43] In the case of ISSSTE, the increase in federal transfers was driven by a growing gap between current contributions and pensions payments. In 2003, ISSSTE had a deficit of 21.2 billion MX pesos, set to increase to 35 billion by 2006. For every peso of income generated by the system, 2.5 pesos is needed in a subsidy from the federal budget, a precarious and unsustainable financial stance.[44] The liabilities emanating from IMSS added up to 42 percent of GDP in 2002 and will diminish in time. The liabilities arise from the transition cost of the reforms and the annual cost will begin to decline in the next five years. The unreformed pension system in ISSSTE represents a contingent liability that now stand at around 45 percent of GDP and continue to increase at a rate of close to 2% of GDP a year.[45]

A country like Mexico may consider several broad avenues of policy reform, not necessarily exclusive from each other, and each one with different institutional and fiscal challenges that have to be part of the country's policy debate. A first avenue is to increase the coverage of the current system by improving it. A second avenue is to shift toward financing from general revenues and de-linking social protection from labor-market status. A third avenue is to create new institutions to cover the currently excluded population.

Increasing coverage through the first avenue requires a set of reforms aimed at lifting the current obstacles to expanding coverage: improving value for the money in social protection services, reducing costs of formality imposed by labor legislation rigidities, more effectively sanctioning tax evasion, and, at least for a segment of the population, increasing subsidies form general revenues. When workers and firms value the benefits attached to a formal contract less than the costs, the job will be informal. So

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[43] In section 3.3, we show that the pension of an ex-IMSS employee is on average 8.3 times the size of that of any other affiliated worker – in spite of having worked on average 12 years less.

[44] World Bank staff estimates presented to government on October 1, 2004.

[45] The numbers for IMSS come from Sphere Institute and Universidad Iberoamericana, 2004, referred to in "Social Protection reform in Mexico: Key Issues and Policy Options", World Bank Policy Memorandum , November 2004. The estimations for ISSSTE were made by the Ministry of Finance in Mexico.

improving service quality could increase the benefits of formality and more workers will be willing to pay for formal social protection. Likewise, relaxing rigid labor legislations could reduce the costs of accessing social protection, while unbundling health and pensions – which allows for a better alignment of the system with workers' preferences – may also promote formalization. In addition, more effectively sanctioning non-compliance could encourage formality. These measures by themselves would lead to a gradual increase in coverage of the formal social security institutes, financed by payroll taxes. This implies an enlargement of the relative size of the formal sector which will gradually, cover larger groups of the population. Still, despite the reform efforts that this option entails, additional efforts to improve tax collection would be needed in order to provide adequate social protection to the poor, at least during a transitional period.

Another avenue, implemented in many OECD countries, implies de-linking social protection from labor-market status and financing the system from general revenues. In this system, coverage would be based on citizenship, not on the labor-market status of individuals. Costs of formality unrelated to social protection would no longer impact social protection coverage. In fact, the distinction between a formal and informal worker would be irrelevant in terms of social protection. The challenge in this case is to improve revenue collection capacity and expand the tax base dramatically in order to be able to finance the system from general taxes only. By reducing payroll taxes, this option would increase demand for labor and thus potentially create jobs and increase efficiency. A transition would have to be carefully planned, so as to provide incentives for workers to join contributory risk-pooling schemes and to incrementally foster the use of general taxation to replace these contributions over time. The institutional, financial, and political challenges in terms of reforming the tax system are large and would need to be debated nationally.

The final avenue entails creating new programs to cover population groups currently excluded from the formal social security system, even if that implies maintaining a fragmented system. This option would avoid de-linking and may require finding the fiscal space to finance new expenditures. Any new program has to be carefully designed so as to be consistent with the current systems and would need to focus on two sometimes contradictory goals: expanding coverage *and* maintaining incentives for formality. Such a design, which would provide benefits to older people who did not have a chance to accumulate savings for their own pensions, will have non-contributory benefits, and should accomplish the anti-poverty goals without being more generous than the formal-sector benefits.

BETTER COVERAGE OF HEALTH RISKS FOR THE POOR

The issue of how to offer better health access and financial protection for the poor is at the forefront of the social insurance policy debate in Mexico. The introduction of the *Seguro Popular* program raises two issues central to the policy debate. The first is whether to operate a dualistic or 'tiered' system which offers different

categories or quality of benefits to different populations based on their income level or employment status, or to provide a single, universal health care system. The second issue is, in the case of a dualistic system, whether it is optimal to have different components of the system operated by different public institutions (as is currently the case in Mexico), or whether there are significant benefits to vertical integration. Again, countries have chosen very different approaches to the challenge of extending health care to the poor. This section offers some examples from international experience that may be useful to consider in the Mexican context: the case of Thailand, which has opted for a transitional phase where the dual system is maintained while moving towards a universal system, and the case of Costa Rica, where vertical integration of the health insurance system has accompanied expanded coverage.

"Financial Protection" as a health system goal. Financial protection can be defined as the instance in which all households are protected from falling into poverty as a result of health costs –and where, likewise, no household is prevented from moving out of poverty due to spending on health care.[46] Achieving a higher degree of financial fairness –e.g., fairness of contributions to health costs– is key to making health systems beneficial for the poor.[47] Mexico's new and promising initiatives in the health sector were in part inspired by findings in the World Health Report (2000) in which Mexico had an overall ranking of 51 out of 191 countries, yet ranked 144 on financial fairness, i.e. the fairness of contributions to cost.[48] Since the ranking was made, the Fox administration has launched a new health insurance scheme in which contribution varies with income and tends to zero for the poorest two deciles. Coverage has expanded rapidly, in particular among the target population –the poor. What is fair financing? According to WHO an easy way to gauge this is according to the share of disposable income that households have to pay to improve or protect their health, and that high shares (e.g., >50 percent) are unfair. According to this logic, a system is fair if all households pay the same proportion of disposable income on health. The most important determinant of how fairly a health system is financed is the share of repayment in total spending. As noted by WHO (2000), out-of-pocket payment is usually the most regressive way to pay for health care, and the way that most exposes people to catastrophic financial risk. Therefore, how revenues are collected has a great impact on the equity of the system.

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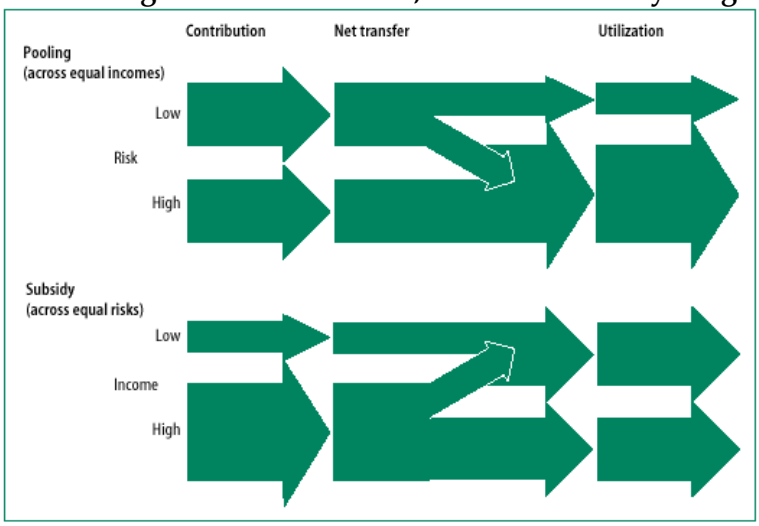
[46] "Beyond Survival: Protecting Households from the Impoverishing Cost of Health Shocks". World Bank Regional Study, forthcoming.

[47] Fairness is measured in terms of out-of-pocket expenditure as a percentage of disposable income. In a perfectly fair system the share of health expenses is equal across the income distribution.

[48] World Health Organization, 2000. "World Health Report 2000".

Figure 4.1 Pooling to redistribute risk, and cross subsidy for greater equity



Source: World Health Organization, 2000

How revenues are combined so as to share risks also matters: the argument in favor of a single pool or a small number of pools of adequate size, and against fragmentation, concerns the financial viability of pools, the administrative costs of insurance, the balance between the economies of scale and (when there is little or no competition) the risks of capture and unresponsiveness, and the limitation of risk selection (which is a matter of efficiency as well as equity). Inefficiencies in collecting and pooling revenues reduce both the funds available for investment and for providing services, and people's access to those services that can be financed.

Purchasing, finally, also affects both equity and efficiency, by determining which investments are made and which interventions are bought, and for whom. Revenues may be collected fairly and with minimal waste, and be pooled so as to assure that the healthy help support the sick and the rich help support the poor. The performance of the system will still fall short of its potential if the pooled resources are not used intelligently to purchase the best attainable mixture of actions to improve health and satisfy people's expectations.

A second set of challenges involves the institutional design of health systems. A high degree of vertical segmentation characterizes health systems in most Latin American countries, including Mexico. Different organizations such as the Ministry of Health, social security funds, the armed forces, charitable organizations or the private sector may pay their own providers, raise and allocate funds and provide services for different populations, leading to higher administrative costs and inefficiencies than may be optimal. At the other end of the spectrum are health systems in which one single organization raises, pools and allocates funds to a fairly monolithic group of independent service providers. Norway operates a health system similar to this. Some countries with multiple health insurance (social security) organizations have introduced

central collecting agencies in charge of risk equalization between population pools (Colombia, Germany and the Netherlands). International experiences show how the optimal institutional design differs with a country's socio-economic characteristics and its existing institutional framework. In addition, each system design carries its advantages and disadvantages. While central control of funds in the case of Norway makes sense, there is still scope for improved efficiency through better regional cooperation and planning. Key challenges in Mexico also include the incentives (or disincentives) to formality created by the existing dual health system (as well as changes to the incentive structure that would be brought about by further reform), federal-state relations, single vs. multiple insurers and providers, the question of portability of benefits across systems and public/private providers, and lastly, the incidence of subsidies. Many developing countries are facing challenges similar to Mexico, with some countries lending particularly useful lessons from their efforts to address these challenges via reform. Box 4.1 highlights international experience with reforming health and social security systems. As seen in the four cases discussed below, countries have approached the issue of expanding health insurance coverage differently. In addition, the four cases all show how vertical integration of health systems has accompanied or followed reform to expand coverage.

Box 4.1: International experience with extending coverage of health services and insurance

Costa Rica: One-step universalization of coverage, followed by the creation of a single risk pool. However, Costa Rica's universalization may have come at the expense of fiscal sustainability. Health services and social security coverage was universalized in Costa Rica in 1971. Affiliation to the *Caja Costarricense del Seguro Social* (CCSS) is mandatory for formal sector employees while self-employed and informal workers are encouraged to join voluntary plans with different contribution structures depending on income. Voluntary affiliation is high and CCSS today covers 89 percent of the total population. The one-step universalization was complemented by an incremental vertical integration of functions to address inefficiencies and overlaps in a fragmented health system. The mandate to provide health services, together with Ministry of Health facilities and employees, was transferred to the CCSS, which today operates as a national health insurance and pension fund, and administrator of the public health infrastructure. CCSS now has a legal mandate to extend its coverage to 100 percent of population, regardless of nationality or employment status.

Thailand: Building on a dualistic system in the transition to universal health care provision. A heavily subsidized insurance scheme for the poor, children and elderly was launched in 1975, and has since been gradually expanded. After adding two compulsory insurance schemes for public and private employees, and voluntary insurance schemes including private health insurance, over 80 percent of the population was covered in 1998. After a series of studies, the Thai government decided that the best way to move towards universal health insurance coverage was to start with a dual system for formal and informal sector before moving to a single-payer, national health insurance in the future. In 2001, the government launched a new health insurance policy,

"30 bhat treat all", to target the 20 percent of the population not yet covered by health insurance. For incidents other than accidents and emergencies, the insured must pay a contribution of 30 bhat per period. With this contribution, accessible health services are practically the same as for the other insurance schemes. After one year, 96.6 percent of the target population was registered under the new scheme.

The Republic of Korea: Gradual extension of compulsory pension and health care coverage in the 1980s, followed by vertical integration in the late 1990s. In the early 1980s, pilot programs to cover the rural and urban poor were introduced and these were generalized by the end of the decade to cover all rural and urban areas. Likewise, pension coverage has been extended incrementally. First, self-employed workers in rural areas were covered, with the government assuming two thirds of the 9 percent contribution, a subsidy that was phased out over 10 years. Later, self-employed workers in urban areas were covered on the same basis. After expanding coverage via this segmented approach, Korea pursued an integrated system. In 1998, the health insurance schemes for the self-employed (92 in rural and 135 in urban areas) merged with the public insurance program for government and school employees. In 2000, the 142 schemes covering industrial workers merged into the National Health Insurance Corporation, which became the single insurer. This resulted in all affiliates receiving the same statutory benefit package and all health care providers being reimbursed according to a standard schedule. In 2001, the schemes of government and school employees merged with that of industrial workers; however, the incorporation of the fund of the self-employed was delayed to 2004.

Taiwan: From fragmented to universal coverage with a mandatory health insurance scheme. In 1995, when Taiwan introduced legislation to create a mandatory national health insurance scheme, only half of the population was covered by a social security scheme. At first, the process seemed extremely rapid given the fact that one year later 92 percent of the population was covered. However, the process in reality started more than a decade before in the Council for Economic Planning and Development (CEPD). The first planning stage took two years of studies and the original proposal included a project to phase in the nationwide insurance program progressively until reaching universal coverage by the year 2000. The first pilot project for the expansion started with well-organized farmers groups in 1987. Political events in the first half of the 1990s created a strong political incentive to give priority to the fast expansion of social security to the whole population. A careful analysis of the pilot projects and the lessons learned from the farmers' experiences and studies on trends of health expenditures allowed introducing the legislation in 1995.

Sources: Angela Lisulo (2003), Nutta Shreshthaputra and Kaemthong Indaratna (2001), "Social Protection in Mexico: Key Issues and Policy Options", World Bank Policy Memorandum (2004).

PROVIDING OLD-AGE INCOME SECURITY FOR THE POOR

The future of old age security in Mexico will depend on two key sets of decisions and actions: (i) focused reform and rationalization of the existing social security system (as discussed in section 4.1), and (ii) tackling Mexico's old-age poverty

problem. Mexico's high rates of poverty among the elderly given its level of development, combined with the progressive aging of the Mexican population under current demographic trends, highlight the importance of developing a pro-active approach to reducing the risk of poverty in old age as an integral part of Mexico's social protection system. Options used by different countries are related to the implementation of targeted non-contributory pension. In what follows there is a discussion of the pros and cons of these systems and the experience of several countries.

Pension systems, both public and private, are the primary means of providing financial security to the elderly and to those unable to work due to disability. Because pensions are designed to replace income previously earned, they usually apply only to those in the labor force. Because they are often funded by payroll taxes, they also have implications for labor costs and employment. The three main goals of pension systems are: (i) to provide a savings vehicle (to allow individuals to redistribute across their own lifetime to avoid poverty in old age); (ii) providing a social safety net for those who become unable to work (insurance); and (iii) to redistribute from the rich to the poor to prevent poverty in old age.

When the challenge is to expand pension coverage, if more than one program or mechanism is devised, they have to be designed as part of one integral system. For example, Non-contributory systems may reduce incentives to formalization for both businesses and workers. Consequently, when using these systems it is essential to structure benefits for subsidized pensions so that only the poor want them, i.e., a minimum pension or a very basic package of health services. Modest benefits thus prompt a form of self-targeting mechanism. If a focus is kept on contributions, the informal workforce that generally includes the poorer segments of the population remains uncovered. Most systems operate with a combination of contributory social insurance and non-contributory social assistance structured around minimum benefits. Giving more weight to the latter can increase coverage but requires a country to generate the fiscal space needed to increase current expenditures permanently. Box 4.2 provides a summary discussion of the pros and cons of implementing targeted, non-contributory benefit plans for the elderly.

Box 4.2: Pros and Cons of introducing a targeted, non-contributory benefit program into the social protection system include the following:

The **major strengths** of introducing a targeted non-contributory benefit program include: (i) Covering the risk of poverty among the elderly with **a system that is "blind" to labor market history**; and (ii) "**Erasing**" **the distinction between** "**formal**" **and** "**informal**" at least with respect to poverty in old age.

The **major weaknesses** of introducing a targeted non-contributory benefit program are: (i) The system, depending on the benefit levels it provides, can introduce **disincentives** for people to participate in and contribute to the contributory system, which they need to do to help them smooth consumption, and which is desirable because

the more participants, the better the system works (this is true whether public pooling or private individual savings); and (ii**) Fiscal costs could quickly get out of hand since at least one of the eligibility criteria (old age) will be met by most people; this is no small "con" and there are plenty of examples worldwide where, because of poor targeting, the non-contributory component ends up creating enormous fiscal outlays.**

In what ways can these weaknesses be addressed?

- The incentive issue can be addressed by making the non-contributory benefit modest, (the Chilean benefit is 30 percent of the minimum wage)
- Fiscal and incentive issues can be addressed by adopting an "insurance" concept of coverage, i.e., only those that suffer the bad state (poverty in old age) actually get the benefit, but all are "covered" (just as in any insurance program, participants are covered though the risk of the eventuality occurring is small)
- Fiscal problems can also be minimized by making the non-contributory benefit taxable, along with all other sources of income (this also encourages participation in the tax system – to receive the benefit, one must file a tax claim).
- Costs can also be minimized – particularly targeting costs – by piggybacking on an existing, well-targeted poverty program, like *Oportunidades.* Chile has done this by designing a special version of the *Puente* program (see below) for elderly households
- Large savings can arise from creating time-flexible parameters around age criteria for eligibility, as life-expectancy changes, both for the contributory and the non-contributory systems. Many fiscal problems arise simply because old-age benefit programs are not designed at their inception to take into account the reality of changes in life expectancy over time.

Non-contributory, universal benefits are simple to administer and may be effective in combating old-age poverty but impose high fiscal burdens. As pointed out by Packard (2004), a universal benefit system does away with the entire covered/uncovered debate, as it by definition covers the entire population. Universal benefits have many advantages over both orthodox, contributory systems and non-contributory systems targeted to the poor – they are the simplest public poverty-prevention mechanism to administer, with the lowest transaction costs.[49] At the same time, universal benefits can be extremely costly and are viewed by many as a luxury only available to high-income nations such as New Zealand (see section 4.5, Box 4.5). While many countries, including Denmark and the Netherlands, have universal elements to their pension systems, New Zealand appears to be the only one where all state provision is made through a universal flat pension. With its current low capacity to

[49] Willmore (2000).

raise general revenue, it is not clear how Mexico could sustain the financial burden of universal pension benefits.

Non-contributory and/or minimum pension guarantees *targeted* to the poor through means-testing can provide a more efficient use of funds by funneling scarce resources to the elderly poor, but are more challenging in terms of efficient administration. Non-contributory and/or minimum pension guarantees are often more akin to social assistance than insurance, and have been implemented in many Latin American countries (see Table 4.1). Minimum pension guarantees can be nested within existing contributory social security systems as seen in the Chilean example below or in the Mexican experience with IMSS, and typically target poor workers whose low contributions have resulted in an income after retirement that falls short of some pre-defined minimum level. The gap between the actual pensions received based on earlier contributions and the minimum level of income is filled by a social assistance cash transfer - financed by general tax revenue. Non-contributory pensions often function outside the formal social security system; others are nested in existing formal pensions systems, such as Brazil's rural pension program (Box 4.3).

Table 4.1. Expenditure and Coverage of Non-Contributory Pension Programs

Country	Expenditure as percentage of GDP	Expenditure as percentage of total expenditure on Social Security	Expenditure as percentage of total Social Sector Spending	Percentage financed from general revenues	Coverage: Old Age Beneficiaries as percentage of Elderly Poor
Argentina	0.2%	4%	1%	100%	47[a]
Brazil	0.3%	5%	2%	100%	86[b]
Chile	0.4%	6%	2%	92%	37[c] and 79[c]
Costa Rica	0.3%	7%	2%	48%	45[d]
Uruguay	0.6%	6%	3%	100%	17 and 12[e]

Notes:
a. Share of indigent aged 65 and over, *Encuesta Nacional de Desarrollo Social 1998*
b. Share of recipients 67 and over with per capita income less than ¼ minimum wage receiving a pension (assistance or rural), 1999
c. Share of recipients 65 and over in deciles 1 and 2, urban and rural areas, 2000
d. Share of poor aged 65 and over, 2000
Source: ILO (2002), from Gill et al. (2004)

Box 4.3: Latin-American Experience with Non-Contributory Pensions and Minimum Pension Guarantees

Extending pension coverage to the poor when informality is high: Brazil's experience with non-contributory pension programs.

Brazil has achieved remarkable declines in old-age poverty, largely due to two non-contributory pension programs with uniform benefits.

- A rural scheme covers about 7 million with benefits, including pensions for old age, survivors and invalidity, as well as benefits for maternity and occupational accidents. Benefits are calculated based on the minimum wage, while eligibility is based on length of service in agriculture, fisheries etc.

- The *Beneficio de Prestação Continuada* provides a pension of one minimum salary paid to the elderly and disabled in households with per capita family income less than one-fourth the minimum salary. The *Beneficio de Prestação Continuada* is the largest spending category within social assistance in Brazil and accounted for 45 percent of social assistance spending in 2002.

Estimates of effective poverty reduction do not differentiate between the different types of pensions; however, when looking at the impact of all pensions on beneficiaries, destitution is reduced by about 96 percent and poverty by 29 percent. While the programs strongly reduce poverty, they also contribute to Brazil's fragile fiscal situation

Chile: Reducing poverty with a combination of targeted non-contributory pensions and minimum pension guarantees for affiliates of public social security

The Chilean pension system combines a minimum pension guarantee (MPG) for registered workers with a social assistance pension (PASIS) targeted to poor, informal workers. The MPG is available for all insured workers that have reached a contribution threshold of 20 years, as long as the sum of pensions, income and remuneration is equal to less than the minimum pension. The workers have earned the right to an annuity initially financed out of the funds in their individual accounts. When these funds are exhausted, the shortfall is financed with a transfer from the government. Both the MPG and the PASIS are financed from general revenue, primarily VAT.[50] Coverage of PASIS increased significantly in the period 1990-2000, and statistics show that the social assistance pension also increasingly reduced poverty over the decade.[51] The effect is strongest amongst the extreme poor, where by 2000 poverty had fallen by 69 percent in households benefiting from the PASIS. Finally, the program also became more progressive, with beneficiaries from the first quintile growing from 35 percent in 1990 to 53 percent in 2000.

Sources: Bertranou 2002, Truman Packard et al (2004), Gill et al. (2004).

What are the key linkages and complementarities between contributory and non-contributory pensions? The growing importance of non-contributory pensions will in the long run lead to an unsustainable financial situation for the overall pension system. As such, tax-financed benefits should not replace contributory pension schemes. Along the same lines, in a financially sustainable pensions system, contributory schemes need to cover more than a minority of the population. Improving the efficiency of collection of contributions remains crucial. Along the same lines, non-contributory

[50] Arenas de Mesa, Alberto and Fabio Bertranou, 1997. "Learning from Social Security Reforms: Two different cases, Chile and Argentina", Washington DC: World Bank.
[51] Bertranou, Fabio, 2002. "Filling the Protection Gap: The Role of Minimum Pensions and Welfare Benefits", Paper presented for ISSA Seminar on financial and actuarial bases of pension schemes.

pension benefits must be structured in a way so as not to provide disincentives to pay contributions. This has shown to be a particular concern when non-contributory pensions are combined with a minimum benefit component for contributory programs, as workers can continue to evade contribution, and still be guaranteed of receiving the same minimum amount.

The ability to operate non-contributory schemes hinges on the ability to finance them via general tax resources, which explains why they are most widely used in developed countries. Most developing and middle-income countries struggle with thin tax bases and problematic tax collection in general. In addition, scarce revenues lead to a range of competing priorities, and the sustainability of a universal scheme is easily questioned from one year to another in response to changing economic and political conditions. For instance, the gross cost of the New Zealand universal pension scheme represented 5 percent of GDP in 2001, and is estimated to rise to about 10 percent of GDP by 2051. Reforming social insurance systems with a view to expand coverage in most cases entails giving more weight to non-contributory pensions.

STRIKING THE RIGHT BALANCE BETWEEN ADDRESSING VULNERABILITY AND COMBATING CHRONIC POVERTY

The priority reforms discussed above – reforming the social security systems for public sector workers to restore fiscal soundness, extending health insurance coverage to the poor, and addressing old-age poverty – are all crucial steps toward a more effective and equitable social protection system. Yet, these changes alone will likely be insufficient in creating a cohesive, comprehensive SP strategy that can successfully address the needs of the most vulnerable in society – the chronic poor.

From international evidence we know that the chronic poor are equally, if not more, prone to experiencing income shocks. At the same time they are the least endowed with risk management tools to respond effectively to those shocks in the absence of effective public policies. As a result, transitory movements in income are more frequent among the chronic poor, recovery periods tend to be longer, while movements out of poverty are often short-range, with a high probability of recidivism. A comprehensive social protection strategy will include both the traditional risk management mechanisms and targeted policies designed to address the heightened vulnerability and thus, persistent poverty of the chronic poor. First, coverage of traditional risk management instruments need to be extended. Second, targeted redistributive transfers need to address the income vulnerability and lower physical and human endowments among the chronic poor such policies would involve. Ideally, all components of the social protection system–whether aimed primarily at risk management or primarily at redistribution and poverty reduction–need to be linked and form an integrated approach consistent with the nation's broader social protection strategy.

Chile's experience in the 1990s offers an example of how traditional social policies, regardless of how aggressive, can fail in reaching a hard core of chronic poor. To meet the challenge posed by this particularly resilient concentration of poverty, Chile switched toward a new and innovative poverty eradication strategy focused on integrated, family and community-centered interventions (Box 4.4).

How could Mexico proceed to strike the right balance between interventions addressing short-term vulnerability to risks and programs aimed at alleviating long-term structural, poverty? To meet this challenge, traditional social insurance mechanisms will need to be linked to other components of the social protection system, particularly assistance components. The entire system will also need horizontal coordination and design features that promote dynamism, flexibility and positive incentives to move up and out of the assistance system into the traditional social insurance network and labor market. Finally, design features that promote coordination across programs in response to the multi-dimensional needs of the poorest families are fundamental. *Chile Puente* is designed for exactly this purpose. As shown above, it promotes tailored bundles of programs from the *Chile Solidario* strategy to answer the specific needs of particularly hard to reach households, providing a 'bridge' for these neediest families into the social insurance network.

The past decade has seen impressive efforts in designing asset generating and multidimensional social assistance interventions to combat extreme poverty in Mexico (i.e., *Oportunidades*), yet these programs do not constitute a perfect substitute for formal risk pooling mechanisms, nor do they represent a concerted move toward a more cohesive overall social protection system. Conditional cash transfer programs facilitate risk management in some areas, e.g., by lowering the risk of school non-attendance and protecting consumption in times of crises, however they often do not correlate with other risks frequently faced by households, particularly adult household members, such as job loss, natural disasters or health problems (Rawlings 2004).[52] Recent evidence suggests that while *Oportunidades* enables income smoothing over time, the program does not appear to provide any additional insurance or protection benefit over and above that of existing programs and informal mechanisms (Skoufias, 2004). In addition, *Oportunidades* has worked largely in isolation from other social assistance or insurance initiatives. A key challenge here is to build links between *Oportunidades* and other programs and to structure the set of programs in such a way that incentives for moving up and out of social assistance are built into the programs.

Box 4.4: Chile's *Puente* Program

Despite steady declines in poverty over the last two decades in Chile, the share of the population in extreme poverty has remained virtually constant at just above 4.2

[52] Rawlings, Laura B., 2004. "A New Approach to Social Assistance: Latin America's Experience with Conditional Cash Transfer Programs", The World Bank.

percent. The existence of this hard core of chronic poverty seemingly unresponsive to existing policies and programs, spurred the formulation of a new poverty reduction strategy, *Chile Solidario*. The proactive approach of the strategy and its most prominent component–*Chile Puente*–differ substantially from the norm for social programs in the region.

Puente acts as an entry point to the social protection system for the 225,000 households targeted by the *Chile Solidario* initiative. It combines a temporary cash transfer with intensive family-based psychosocial support and is based on proactivity, a strong family focus, and a coordinated response. *Apoyos Familiares* (AF) follow assigned households for 24 months, providing psychosocial support as the family seeks to improve its living conditions. The characteristics of *Puente* beneficiaries largely coincide with the characteristics of structural or chronic poor in Chile. The four principal components of the program are:

- *Psychosocial support* to the household via the relation that the AF establishes with each family assigned to them in the homes of these families;

- *Training and education of the AF*, based on developing knowledge of the benefits and characteristics of the Program and to transfer a methodology for working with the families;

- *A regional fund for initiatives* made up of private and public sources to finance services or benefits currently not in place, that are required by the families to reach one or more of the defined minimum conditions of well-being; and

- *Monitoring and evaluation*: An online system used by the AF gathers all family information that emerges from the work sessions. Based on this system, the advancement of the program can then be viewed in each municipality, province, and region, or at the country level at whole. The system also provides statistics on main characteristics of participating families, achievements of minimum conditions after intervention, and the mobilization of resources in favor of the families.

Sources: MIDEPLAN (2003), Secretaría Ejecutiva Sistema Chile Solidario (2003); Packard (2004).

One way to improve coordination is to tackle existing overlap among agencies providing benefits and services, particularly in social assistance. Social assistance in Mexico is dominated by the flagship program *Oportunidades*. A few of other programs have taken the same integrative approach, including *Hábitat* and *Microrregiones*. However, the efficiency of operating a multitude of other programs is questionable especially with regard to potential overlap and duplication of efforts. The effectiveness is also uncertain due to the fact that many of these smaller programs lack rigorous monitoring and evaluation mechanisms, and are so small that in fact extensive impact evaluation would not be cost effective. These concerns have spurred debate on possible rationalization and consolidation, especially when put in the context of the more integrated and dynamic approach to assistance envisaged by the *Contigo* strategy.

Indeed, one of the transversal issues emphasized in the *Contigo* strategy is the need for integration, i.e., the need to encourage efficient social spending by exploiting synergies, eliminating duplication and ensuring coherence in different program objectives. In general, poor implementation of the principles applied in *Oportunidades* and conceptualized in the *Contigo* strategy is a problem across the social assistance spectrum. How can Mexico build upon its established success in *Oportunidades* to bring reform to other areas of the system? The strengthening and expansion of good programs such as *Oportunidades* is a positive trend and in many aspects a direct result of rigorous monitoring and evaluation. The continued existence and resilience to change of the not-so-good programs is a problem, and often linked to the lack of standardized monitoring and evaluation. Finally, the *Contigo* strategy itself is being challenged on different fronts. By focusing on responding to changing needs and risks across the lifecycle, important dimensions of risk and vulnerability may be lost, such as spatial differences, ethnicity and the distinction between chronic and transient poor. Addressing the needs of the chronic poor likely requires a greater emphasis on redistribution via social protection policies, more than what the current social assistance framework and expenditure envelope allows for. Finally, beyond SEDESOL, from which the *Contigo* framework emerged, there is less ownership and therefore acceptance of the basic principles, which could in part explain why the framework has not been operationalized more extensively.

A second challenge is posed by the insufficient linkages and coordination both between programs within the social protection systems (internal coherence) and between social protection and policies in other sectors of the economy (external coherence). Coherence and coordination also affect how dynamically the system is able to perform. This debate can be illustrated by taking the example of *Oportunidades* and its linkages to other programs and sectors. The program has been very successful in its impact on the health and education outcomes for extreme poor infants and youths in rural areas. The poverty alleviation impact is however determined by whether increased human capacity translates into a higher earning capacity, which again depends on interactions between *Oportunidades* graduates and the labor market and/or the agricultural sector. While the return to human capital is determined by other sectors of the economy, graduates are still in need of insurance and assistance. If graduates enter into the informal sector, having no health insurance makes them as vulnerable to catastrophic health shocks as the next person. At the same time, there is no reason why poor mothers should be in less need of health benefits after their children graduate from the program. *Jóvenes con Oportunidades* is an attempt to build dynamic linkages that addresses some of these issues. First, it creates bridges to other programs in the social protection system. For instance, the savings earned and received upon graduation can be used to buy health insurance (*Seguro Popular*) or to enter into the government's housing credit program (*Tu Casa*). A dynamic link to other economic sectors is created by supplementing the human capital of graduates with access to credit markets, as the savings can also be used as collateral for micro-credit or as a down payment on a house. *Jóvenes con Oportunidades* is a nascent program and its impact has not yet been formally

evaluated. However the approach taken illustrates how linkages between sectors and programs can be used to create incentives and assistance for beneficiaries to move 'up and out' of the system.

Clarity of objectives and a transparent operation of programs are keys to a more coherent and balanced social protection strategy. In order to build a more cohesive social protection strategy, the objectives of individual programs need to be clearly stated to facilitate evaluation, avoid possible duplication of efforts, and assist overall coordination.

Finally, to reach special groups and to increase the responsiveness of the social protection system to particularly excluded groups, countries have tailored their social protection delivery systems to meet 'customer' needs rather than mimicking government structures. Australia and Canada are among the leading countries in terms of customer-centered delivery of social services (see Box 4.7). The principle for both countries' delivery systems is to provide services along the lifecycle, rather than on the basis of governmental structures. Their experience also shows that Information Technology (IT) offers great opportunities to support the social protection system, in particular in terms of increasing responsiveness through a restructured delivery system. Again, IT systems used in social protection have been focused on the requirements and expectations of citizens rather than on the organizational structures of government institutions. For customer-centered solutions to be successful, stove-piped operations are often turned into a single-point-of-contact system (one-stop shop) that allows integrated delivery of social services via physical or electronic channels. *Chile Puente* also takes a one-stop shop approach by providing the extreme poor with a single entry point to the programs and benefits of the country's social protection system. The Chilean program pushes the customer-centric approach one step further by actively seeking out the hard-to-reach, extreme poor, in a sense 'recruiting' them for the program.

Structural determinants of chronic poverty, such as discrimination and high levels of inequality, call for a broader set of policy interventions. While a mix of risk pooling mechanisms and redistributive transfers is necessary to address the problem of chronic poverty, it might not be sufficient in dealing with social and economic structures that obstruct escape from poverty for certain groups or individuals. Tackling chronic poverty requires a multidimensional, integrated response, beyond the narrow scope of social protection.

Box 4.5: Australia's Centrelink: A government agency set up to provide a "One-stop shop" for a range of government services

Centrelink is a public service provider, established to produce more efficient and streamlined delivery of government services. The agency offers a one-stop shop for a range of services on behalf of 25 government agencies including ten ministries (departments). Main features of this one-stop shop are:

- **A customer-centered organizational structure**: The organization of Centrelink services is based on the requirements and expectations of citizens rather than on the organizational structures of government institutions. Customer service networks include customer service centers, call centers, and other specialist customer service outlets and community agents.

- **Using information technology**: Centrelink's comprehensive website operates as an information hub for all the different governmental services and programs. Customers can access and update personal information, including income statements. They can also estimate eligibility for different programs as well as file requests for certain services. In addition to the website, Centrelink Call comprises 27 networked call centers located around Australia, and automated systems are widely used.

- **Social justice and equity in access and service delivery**: Centrelink uses a range of measures to ensure that customers have equitable access to products and services, and that people are not disadvantaged by service delivery arrangements. Department of Immigration, Multicultural and Indigenous Affairs customers review the center each year to ensure that customers receive fair and equitable treatment.

Source: www.centrelink.gov.au

FINAL REMARKS

To summarize, this chapter has focused on four key emerging issues within social protection in Mexico: (i) social security reform, (ii) health risks among the poor, (iii) old-age poverty, and (iv) the need to balance public risk management mechanisms with a more integrated strategy to combat chronic poverty.

In order to tackle these challenges, Mexico faces a range of political choices. Firstly, how much redistribution? As discussed below, the role of social protection policy in promoting redistribution is not clear-cut. While largely a question of national preference, the answer also hinges on the ability to raise tax revenues and the political will to redirect subsidies currently benefiting less needy segments. A second set of questions emerge in relation to the choice of institutional design. The current system based on a payroll-financed social security system for formal sector employees may be reformed in order to increase its efficiency. Expanding coverage requires, among other, improving the value for money, improving the quality of services. Raising the quality in service provision is critical to achieving better outcomes, yet requires a political commitment to altering accountability relationships between different levels of government, service providers and the ultimate beneficiaries. It also requires complementary reforms to labor market legislation as to reduce the costs of formality. Also, even if it maintains a dualistic structure, it may be complemented by targeted social assistance to the very poor, strengthening the latter. Alternatively, some countries move to a single benefit system with universal –at least minimum- coverage, de-linked social protection benefits from the labor market. Implicitly, this alternative also

questions Mexico's ability to undertake the tax reforms needed to support a model funded by general revenues.

How much redistribution?

How much will Mexico seek to use social protection policy as a vehicle for redistribution? As discussed in Chapter 1, the state has a clear role in providing risk-pooling mechanisms where private insurance markets fail (e.g., old age and health insurance), but the role of social protection policy in promoting redistribution is more an issue of national choice. That choice, however, has clear consequences for equity and poverty reduction outcomes. The economic trade-off between growth and equity, and thus between growth and redistribution, has been refuted by both theoretical advances and international experience in recent years. At the same time, redistribution is bound to result in some economic efficiency trade-off, as exemplified in the design of social security systems where redistribution typically creates labor market distortions (Orszag and Stiglitz, 2000). For instance, the change from a defined benefit system where everybody gets the same benefits regardless of contribution, to a defined contribution system where benefit levels are linked to contributions, enhances incentives to participate. At the same time it reduces the progressiveness of the system. Indeed, international experience points to examples where redistribution has been achieved in a wide variety of ways. It was done via land reform and education in Korea, via affirmative action in Malaysia or via aggressive social policies in Chile, to name but a few examples. The choice is therefore two-fold: how much distribution; and through which means? The relative importance given to redistribution and the role assigned to the social protection system in achieving equity objectives is a question of national objectives, but is crucial to guiding the direction of social protection policy reform.

Should risks be bundled?

While the *Seguro Popular* and *Seguro de Salud para la Familia* are designed to extend health insurance to the uncovered, this population is also in need of protection against other risks, in particular related to old age. Despite national recognition of the need for extended pension coverage, the country faces several challenges as to how to do this, i.e., whether increase the efficiency of the current social security system, use targeted social assistance pensions or move towards universal pensions. However, *Seguro Popular* sets a precedent and critical issues of institutional and operational design will have to be addressed before moving towards more coherent and integrated social insurance. For instance, the institutional design of *Seguro Popular* suggests a continued dualistic system; however, how would a pension's scheme for the uncovered fit in this picture? Should old-age insurance be bundled together with the *Seguro Popular*, thus reinforcing the dualistic character of the system? If bundled with health insurance, would it make sense for the ministry of health to maintain stewardship? If not, is there a need for a new, fully-fledged social security institute operating alongside IMSS? And finally, should operation and provision of the pension benefits be decentralized to states

as has been the case for the *Seguro Popular*? Answers to these questions depend on political factors and an institutional context particular to Mexico. However, it is clear that the current fiscal situation limits the range of feasible options and that fiscal reform will be a prerequisite for the establishment of a truly integrated social insurance system.

Should social protection be de-linked from the labor market?

A review of international experience shows that countries choose to do this very differently, but few (in fact, only New Zealand) actually go all the way in fully de-linking social insurance schemes from the labor market. Far more commonly, countries vary in how far they choose to go in de-linking the system, that is, how they mix and match contributory and non-contributory schemes, and whether the system design is dualistic (with separate providers for formal and informal sector) or universal (national insurer that covers both sectors). Evidence indicates that if the aim is to improve low coverage of social insurance among the poor, relatively more emphasis needs to be placed on developing non-contributory schemes. However, many countries have contributory programs for informal workers and extending coverage to the informal sector – poor and non-poor – often implies tailored schemes that accommodate the different needs and capacity to contribute of distinct population groups.

APPENDIX TABLES

Table 1. Mexico. Leading Indicators of Social Risk by Age, Region, and Poverty Lines, 1996

Population Group/ Main Risk	Leading Risk Indicators	Indicator Value, Urban Area				Indicator Value, Rural Area			
		SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All	SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All
Ages 0–5:									
	• School attendance (age 5 only)	69.5%	72.3%	78.6%	82.5%	62.0%	62.8%	64.2%	66.3%
Ages 6–14:									
Low human capital development	• School attendance (ages 6–11)	95.5%	95.9%	96.9%	97.5%	94.4%	94.3%	94.7%	94.9%
	• Age-for-grade* (ages 6–11)	1.04	1.04	1.03	1.01	1.10	1.09	1.09	1.08
	Prop. not in correct Age-for-grade	28.50	27.50	22.90	19.50	43.50	42.40	39.90	38.40
	• School attendance (ages 12–14)	80.6%	82.1%	85.9%	88.7%	71.4%	72.2%	73.8%	74.0%
	• Age-for-grade (ages 12–14)	1.14	1.13	1.10	1.07	1.30	1.29	1.26	1.24
	Prop. not in correct Age-for-grade	51.47	49.00	41.75	35.48	74.41	72.38	68.17	65.81
Low human capital	• Child working not in school (ages 12–14)	5.9%	5.4%	4.7%	4.0%	13.9%	13.7%	12.6%	12.5%
	• Housekeeping and not in school (ages 12–14)	7.8%	7.4%	5.7%	4.4%	11.9%	11.4%	10.9%	10.7%
	Male	0.3%	0.3%	0.1%	0.3%	0.7%	0.8%	0.6%	0.6%
	Female	15.2%	14.3%	11.0%	8.6%	23.2%	22.3%	21.4%	21.1%
Violence/crime	• Inactivity—neither work nor attend school (ages 12–14)	2.4%	2.0%	1.2%	1.0%	1.3%	1.1%	1.1%	1.0%
Ages 15–24:									
Low human capital development	• School attendance (ages 15–17)	47.7%	49.6%	57.1%	64.2%	25.2%	25.5%	28.4%	30.0%
	• School attendance (ages 18–24)	13.2%	15.1%	18.3%	27.0%	4.4%	4.5%	4.6%	6.1%
	• University enrollment (ages 18–24)	4.3%	5.0%	7.4%	15.1%	0.5%	0.8%	0.9%	2.0%

Population Group/ Main Risk	Leading Risk Indicators	Indicator Value, Urban Area				Indicator Value, Rural Area			
		SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All	SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All
Low human capital	• Housekeeping and not in school (ages 15–17)	14.0%	7.4%	6.2%	10.2%	18.0%	15.6%	11.9%	22.4%
	Male	1.4%	1.2%	1.7%	1.8%	1.1%	1.0%	0.8%	0.7%
	Female	29.9%	30.0%	23.6%	19.4%	50.5%	50.8%	48.2%	45.7%
	• Housekeeping and not in school (ages 18–24)	29.1%	27.0%	24.6%	19.5%	31.4%	32.7%	32.1%	30.8%
	Male	0.8%	0.8%	0.9%	0.5%	0.3%	0.4%	0.3%	0.3%
	Female	51.6%	49.0%	44.7%	37.3%	60.1%	61.5%	61.7%	58.1%
Low income	• Unemployment (ages 15–24) Male	21.3%	19.5%	16.2%	13.3%	5.1%	5.6%	5.1%	4.9%
	Female	13.0%	12.4%	11.8%	9.9%	4.8%	5.5%	5.5%	5.2%
Violence/crime	• Inactivity (ages 15–17)	7.8%	7.3%	5.6%	4.4%	2.3%	3.1%	5.6%	4.4%
	• Inactivity (ages 18–24)	10.1%	9.3%	8.2%	6.4%	3.6%	3.5%	3.3%	3.2%
Ages 25–64:									
Low income	• Unemployment: Male	4.6%	4.4%	4.1%	3.2%	1.5%	1.8%	1.6%	1.5%
	Female	2.5%	2.6%	2.6%	1.8%	0.9%	0.7%	0.6%	0.6%
	• Part-time job (as % of all employed)	20.3%	19.7%	18.6%	18.5%	33.3%	32.8%	31.0%	30.2%
	• No education or incomplete primary (low skills) (ages 25–40)	36.7%	33.2%	24.6%	16.7%	60.8%	58.7%	54.4%	49.4%
	• No education or incomplete primary (low skills) (ages 41–64)	69.9%	66.8%	57.6%	41.6%	90.2%	89.3%	88.6%	85.4%
	• Receives pension (ages 41-64)	3.2%	3.4%	3.9%	4.9%	0.4%	0.5%	0.9%	1.6%
Ages 65+:									
Low income	• Receives pension	7.9%	10.6%	14.2%	21.2%	0.9%	1.1%	2.9%	5.5%
General population:									
Low-quality housing	• No piped water	13.9%	13.0%	9.0%	5.6%	41.2%	38.7%	34.1%	28.8%
	• No piped sewerage	32.8%	29.6%	21.1%	13.3%	82.7%	80.4%	72.9%	64.4%
	• No electricity	2.0%	1.7%	1.2%	0.7%	16.5%	14.9%	12.2%	9.6%

*Age-for-grade is calculated as [(age—grade) + 1]/6, such that an individual in the appropriate grade for age will have an age-for-grade equal to 1, whereas an individual in a lower grade than appropriate for his or her age will have an age-for-grade greater than 1.

Source: INEGI household survey: ENIGH 1996

TABLE 2. MEXICO. LEADING INDICATORS OF SOCIAL RISK BY AGE, REGION, AND POVERTY LINES (SEDESOL), 2002

Population Group/ Main Risk	Leading Risk Indicators	Indicator Value, Urban Area				Indicator Value, Rural Area			
		SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All	SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All
Ages 0–5:									
	• School attendance (age 5 only)	75.6%	79.2%	80.8%	85.9%	74.7%	75.4%	79.1%	82.4%
Ages 6–14:									
Low human capital development	• School attendance (ages 6–11)	94.8%	95.0%	96.9%	98.0%	96.1%	96.3%	96.5%	97.0%
	• Age-for-grade* (ages 6–11)	1.05	1.04	1.02	1.01	1.05	1.05	1.04	1.03
	Prop. not in correct Age-for-grade	30.92	28.65	23.26	18.78	32.66	32.29	29.11	26.52
	• School attendance (ages 12–14)	88.5%	87.2%	87.6%	92.0%	83.8%	84.1%	84.4%	86.5%
	• Age-for-grade (ages 12–14)	1.14	1.13	1.08	1.06	1.14	1.14	1.13	1.11
	Prop. not in correct Age-for-grade	50.22	48.71	36.47	29.18	53.06	52.39	48.70	43.66
Low human capital	• Child working not in school (ages 12–14)	4.1%	5.0%	3.6%	2.4%	4.3%	5.1%	5.9%	5.6%
	• Housekeeping and not in school (ages 12–14)	3.6%	3.2%	4.8%	3.0%	9.8%	8.6%	7.7%	6.1%
	Male	0.8%	0.7%	1.5%	0.7%	1.6%	1.3%	1.5%	1.3%
	Female	6.4%	6.0%	7.8%	5.1%	18.1%	16.6%	14.4%	11.1%
Violence/crime	• Inactivity—neither work nor attend school (ages 12–14)	1.0%	0.9%	0.7%	0.4%	0.3%	0.3%	0.2%	0.2%
Ages 15–24:									
Low human capital development	• School attendance (ages 15–17)	49.3%	52.9%	54.6%	66.3%	44.6%	43.5%	48.6%	53.4%
	• School attendance (ages 18–24)	12.7%	14.5%	19.5%	32.4%	7.1%	7.7%	9.3%	13.4%
	• University enrollment (ages 18–24)	52.4%	47.0%	55.6%	69.2%	7.2%	14.0%	30.8%	53.5%

Population Group/ Main Risk	Leading Risk Indicators	Indicator Value, Urban Area				Indicator Value, Rural Area			
		SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All	SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All
Low human capital	• Housekeeping and not in school (ages 15–17)	12.9%	14.4%	13.4%	9.0%	22.1%	21.3%	19.3%	16.0%
	Male	0.0%	0.0%	0.7%	0.6%	2.4%	3.4%	2.7%	2.4%
	Female	25.4%	27.9%	26.6%	17.8%	40.6%	39.0%	34.7%	29.2%
	• Housekeeping and not in school (ages 18–24)	27.2%	27.9%	23.4%	15.0%	36.8%	35.0%	33.2%	27.1%
	Male	1.0%	1.0%	1.1%	1.3%	1.3%	1.3%	1.0%	0.7%
	Female	48.7%	49.0%	41.8%	28.6%	63.3%	61.6%	61.3%	52.1%
Low income	• Unemployment (ages 15–24) Male	12.3%	10.9%	11.4%	8.2%	5.1%	5.0%	5.7%	6.8%
	Female	7.5%	8.7%	7.8%	5.4%	3.3%	4.6%	5.0%	3.7%
Violence/crime	• Inactivity (ages 15–17)	5.2%	5.0%	5.5%	3.2%	2.4%	2.7%	2.6%	2.4%
	• Inactivity (ages 18–24)	5.2%	4.5%	4.6%	3.4%	1.9%	2.0%	2.7%	3.5%
Ages 25–64:									
Low income	• Unemployment: Male	5.7%	5.0%	3.0%	2.6%	0.5%	1.1%	1.2%	1.2%
	Female	1.7%	1.7%	2.5%	1.9%	0.1%	0.1%	0.2%	0.4%
	• Part-time job (as % of all employed)	27.7%	26.4%	21.1%	17.9%	42.1%	40.2%	36.6%	33.5%
	• No education or incomplete primary (low skills) (ages 25–40)	29.0%	25.7%	18.2%	9.5%	55.4%	51.6%	44.7%	35.1%
	• No education or incomplete primary (low skills) (ages 41–64)	62.7%	57.1%	46.8%	29.0%	85.4%	85.2%	81.1%	70.2%
	• Receives pension (ages 41-64)	1.5%	2.7%	2.9%	4.6%	0.2%	0.3%	0.3%	1.5%
Ages 65+:									
Low income	• Receives pension	6.7%	8.4%	15.2%	22.1%	0.8%	0.8%	2.9%	5.3%
General population:									
Low-quality housing	• No piped water	13.9%	12.0%	7.3%	3.2%	34.9%	34.8%	29.7%	22.0%
	• No piped sewerage	28.5%	28.0%	20.0%	13.0%	90.0%	88.0%	80.0%	70.0%
	• No electricity	0.8%	0.7%	0.4%	0.2%	11.4%	10.5%	8.3%	5.6%

*Age-for-grade is calculated as [(age—grade) + 1]/6, such that an individual in the appropriate grade for age will have an age-for-grade equal to 1, whereas an individual in a lower grade than appropriate for his or her age will have an age-for-grade greater than 1.

Source: INEGI household survey: ENIGH 2002

TABLE 3. MEXICO. COVERAGE AND INCIDENCE OF SOCIAL PROGRAMS TARGETED TO KEY SOCIAL RISKS, BY REGION AND POVERTY LINES (SEDESOL), 1996

Population Group/ Main Risk	Program Coverage	Indicator Value, Urban Area				Indicator Value, Rural Area			
		SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All	SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All
Ages 0–5:									
Stunted development	• Family receives *Progresa* transfers	n.a							
	• ECD coverage	n.a.							
Ages 6–14:									
Low human capital development Violence/crime	• Receives scholarship to attend school (6–11)	1.9%	2.0%	1.8%	2.0%	3.7%	3.8%	3.9%	4.1%
	• Receives scholarship to attend school (12–14)	1.9%	2.0%	1.7%	2.2%	5.3%	5.4%	4.7%	4.5%
Ages 15–24:									
Low human capital development Low income	• Receives scholarship to attend school (ages 15–17)	1.9%	1.6%	2.6%	3.6%	2.2%	2.0%	1.5%	1.3%
	• Receives scholarship to attend school (ages 18–24)	4.5%	4.0%	3.7%	5.0%	3.9%	3.3%	4.1%	2.8%
Ages 25–64:									
Low income	• Has attended training program	2.0%	2.7%	5.1%	12.2%	0.2%	0.2%	0.7%	2.1%
	• Has access to social security system	20.4%	23.2%	32.4%	42.7%	3.9%	4.7%	7.0%	10.7%
	• Receives '*ayuda alimentaria o dispensa*'	3.1%	3.9%	7.3%	12.5%	0.7%	0.8%	1.5%	2.7%
Ages 65+:									
Low income	• Receives pension	7.9%	10.6%	14.2%	21.2%	0.9%	1.1%	2.9%	5.5%
General population:									
Low-quality housing (ages 25-64) Low access to savings/credit facilities	• Access to housing credit	4.0%	5.0%	8.9%	15.6%	0.2%	0.3%	0.9%	2.9%

Source: INEGI household survey, ENIGH 1996

TABLE 4. MEXICO. COVERAGE AND INCIDENCE OF SOCIAL PROGRAMS TARGETED TO KEY SOCIAL RISKS, BY REGION AND POVERTY LINES (SEDESOL), 2002

Population Group/ Main risk	Program Coverage	Indicator Value, Urban Area				Indicator Value, Rural Area			
		SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All	SEDESOL PL1	SEDESOL PL2	SEDESOL PL3	All
Ages 6–14:									
Low human capital development Violence/crime	• Receives scholarship to attend school (6–11)	2.9%	2.8%	2.9%	2.4%	29.4%	29.8%	27.1%	23.8%
	• Receives scholarship to attend school (12–14)	8.3%	8.1%	5.3%	4.3%	63.6%	61.4%	56.0%	46.0%
Ages 15–24:									
Low human capital development Low income	• Receives scholarship to attend school (ages 15–17)	1.8%	2.5%	1.9%	3.4%	58.8%	56.7%	49.6%	37.4%
	• Receives scholarship to attend school (ages 18–24)	19.0%	11.4%	6.1%	5.0%	24.1%	19.5%	20.2%	15.2%
Ages 25–64:									
Low income	• Has attended training program	4.7%	5.7%	10.7%	25.9%	0.6%	0.6%	2.9%	8.4%
	• Has access to social security system	20.9%	21.8%	32.9%	45.7%	2.6%	3.6%	7.9%	15.8%
	• Receives '*ayuda alimentaria o dispensa*'	3.4%	4.4%	9.1%	16.4%	0.9%	0.8%	1.8%	5.2%
Ages 65+:									
Low income	• Receives pension	6.7%	8.4%	15.2%	22.1%	0.8%	0.8%	2.9%	5.3%
General population:									
Low-quality housing (ages 25-64)	• Access to housing credit	8.2%	9.3%	16.6%	29.5%	0.8%	1.1%	2.8%	8.5%
Low access to savings/credit facilities									

Source: INEGI household survey, ENIGH 2002

Other Programs and Transfers Reaching the Elderly Poor

Program	Agency	Year	Elderly Beneficiaries	Definition of Elderly	Amount of Support	Description
PROCAMPO	SAGARPA	2003	674,894	Ages 65 and over	1030 MxP per Ha for one semester	Cash transfer program (launched in 1994) to compensate grain farmers from the price effect of increased competition brought by NAFTA. The subsidy is given to the user, not the owner, of the land, and is seasonal, such that double cropping farmers receive it twice a year.
		2004	554,189	Ages 65 and over	1120 MxP per Ha for the first semester	
OPORTUNIDADES	OPORTUNIDADES/ SEDESOL	2004	600,000	Ages 65 and over		It has over 5 million beneficiary households, of which in 600,000 an elderly person receives the support. This may be because the mother works and therefore the grandmother takes care of the children. So she receives the transfer. There is another case in which the elderly person does not have either children or grandchildren and still recieves the support.
Programa para Adultos Mayores	GDF	2002	328,000 (98% of the elderly in Mexico City)	Ages 70 and over	700 MxP monthly	Cash transfers for food expenses to the elderly in order to improve food secutiry. All the elderly living in Mexico City are eligible.
Acuerdo Nacional para el Campo: Atención a Adultos Mayores en Zonas Rurales Provisional*	SEDESOL	2003	211,307	Ages 60 and over	2,100 MxP annually	This program was created because it was one of the terms of the Acuerdo Nacional para el Campo. In 2003, 500 million pesos were destined to this purpose and rules of operation were quickly created in order to provide the support. In 2004, the program was formally launched; however, the rules of operation were not published until August and support has only begun. The objective is to improve living conditions of elderly adults over 60 years old in situation of extreme poverty in rural disperse areas (less than 2,500 people) of high and very high marginality conditions. One condition is that these people do not participate in any other similar government program, unless its objectives are different and complementary.
Atención a Adultos Mayores en Zonas Rurales	SEDESOL	2004	109,542 up to August, but support will increase to probably 714,000	Ages 60 and over	2,100 MxP annually	
Programa de Empleo Temporal	SAGARPA, SEMARNAT, SCT, SEDESOL		No data on the age of beneficiaries			Workfare program
LICONSA	SEDESOL	2003	411,217	Ages 60 and over	Buy milk at 3.50 MxP per liter	This program was created for providing better nutrition for families living in poverty. Specifically, one of their target populations is the elderly in poverty conditions. The households make a commitment to assist to orientation lectures and participate in housing and community improvement actions.
Programa Alimentario	DICONSA / SEDESOL				Food package with value of 150 MxP that the household receives monthly	Poor households living in rural localities of high and very high marginality that do not receive support from other programs like Oportunidades and LICONSA.

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Income Generation and Social Protection for the Poor: Reports
Finished printing August, 2005 in IMPRIME TUS IDEAS, S.A. de C.V., Horacio 340,
Polanco, CP. 11560, México, D.F. imprimetusideas@prodigy.net.mx
Edition 1000 copies

Insurgentes sur 1605, piso 24,
Torre Mural, colonia San José Insurgentes.
México, Distrito Federal. 03900

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