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ACRONYMS AND ABBREVIATIONS

ADD	Acute Diarrhea Diseases
BCN	Central Bank of Nicaragua
CA4	Central American Four Countries (El Salvador, Guatemala, Honduras and Nicaragua)
CAP	Public Service Center (in spanish <i>Centro de Atención al Público</i>)
CCTs	Conditional Cash Transfers
CDD	Community Driven Development
CEDLAS	Center for Distributional, Labor and Social Studies
CEPAL	Economic Commission for Latin-American and Caribbean
CIDA	Canadian International Development Agency
CNU	National Council of Universities
CONAPAS	National Commission for Water and Sanitation
CPI	Consumer Price Index
DANIDA	Danish International Development Agency
DPT	Vaccine (against Diphtheria, Pertussis and Tetanus)
DR-CAFTA	Dominican Republic–Central America Free Trade Agreement
EMNV	Living Standards Measurement Survey
EMPS	Associated Medical Firm (in spanish <i>Empresas Médicas Previsionales</i>)
ENACAL	Public Water and Sanitation Company
EU	European Union
FISE	Emergency Social Investment Fund
GDP	Gross Domestic Product
GIC	Growth Incidence Curves
GON	Government of Nicaragua
GNP	Gross National Product
HIPC	Highly Indebted Poor Countries
IDA	International Development Association
IDB	International Development Bank
IDR	Rural Development Institute
INAFOR	National Forestry
INATEC	National Technological Institute
INEC	National Statistics and Census Institute
INETER	Institute for Terrestrial Studies
INIDE	National Institute for Development Information
INSS	Nicaraguan Social Security Institute
INTA	Nicaraguan Agricultural Technology Institute
INTECNA	National Institute of Technology
IPADE	Institute for Development and Democracy (in spanish Instituto para el Desarrollo y la Democracia)

JICA	Japan International Cooperation Agency
KFW	Kreditanstalt für Wiederaufbau (Reconstruction Bank)
LAC	Latin-American and Caribbean
LSMS	Living Standards Measurement Survey
MAIS	Integrated Health Care Model (in Spanish <i>Modelo de Atención Integral de Salud</i>)
MARENA	Ministry of Natural Resources and the Environment
MAGFOR	Agricultural and Forestry Ministry
MDGs	Millennium Development Goals
MHCP	Ministry of the Finance and Public Credit
MINED	Ministry of Education
MECD	Ministry of Education, Culture, and Sports
MIFAMILIA	Ministry of the Family
MINSA	Ministry of Health
MOH	Ministry of Health
MTI	Ministry of Transport and Infrastructure
NDP	National Development Plan
NER	Net Enrollment Rate
NGO	Non-Governmental organization
PAHO	Pan American Health Organization
PAININ	Comprehensive Care Program for Nicaraguan Children
PRS	Poverty Reduction Strategy
PSS	Public Social Spending
PER	Public Expenditure Review
PINE	Comprehensive School Nutrition Program
PROCOSAN	Health and Nutrition Community Program (in spanish <i>Programa Comunitario de Salud y Nutrición</i>)
RAAN	North Atlantic Autonomous Region
RAAS	South Atlantic Autonomous Region
SDC	Swiss Agency for Development and Cooperation
SETEC	Presidential Secretariat
SILAIS	Integral Health Service Local Systems (in spanish <i>Sistemas Locales de Atención Integral de la Salud</i>)
SimSIP	Simulations for Social Indicators & Poverty
SNV	Netherlands Development Organization
SWAP	Sector Wide Approach
UNICEF	United Nations Children's Fund
UPA	Primary Agricultural Unit (in spanish <i>Unidad Primaria Agrícola</i>)
USAID	US Agency International for Development
WFP	World Food Program
WDI	World Development Indicators

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PREFACE

Poverty Assessments (PAs) are core diagnostic studies periodically prepared by the World Bank to assess the country's poverty situation and recent trends, to analyze the impact of growth and public actions on poverty, and to appraise poverty monitoring and evaluation systems. This PA was undertaken at the request of the Nicaraguan government administration under President Bolaños, whose mandate ended in January 2007, and is mostly based on information up to 2006. Given that time horizon, its capacity to comment on the new programs that have been prepared or are being contemplated by the current government under President Ortega is limited. Furthermore, the analysis in this PA takes as its point of departure the market-based and private sector-led development perspective that was broadly shared by the Bolaños administration and which was reflected in the poverty reduction strategy that was in effect at that time. This perspective differs in several important ways from the more social-oriented and public sector-led development perspective adopted by the current administration. In this context, the reader is reminded that the views expressed in the PA are solely those of World Bank staff and do not necessarily reflect the views or positions of the Nicaraguan government. The staff has used internationally recognized methodologies and best practices involving mainly analytical work of the Living Standards Measurement Surveys (LSMS), which were collected by the GON, with technical and financial support from the Bank, among other donors, in accordance to standard parameters used in many countries.

The authorities are currently in the process of updating Nicaragua's poverty reduction strategy for the period 2008-2011, to be named the Plan Nacional de Desarrollo Humano (PNDH). The PNDH is expected to build on the longer term poverty reduction strategy presented earlier by placing greater emphasis on social development and inclusive growth. As indicated in several position papers presented in 2007,⁺ the Nicaraguan authorities are committed to maintaining continuity with certain key elements of the earlier strategies that have been considered successful. These include (i) maintaining macroeconomic stability and ensuring public debt sustainability as prerequisites for reducing poverty, (ii) advancing on key social indicators toward meeting the Millennium Development Goals, (iii) diversifying the export base and leveraging regional free trade agreements in order to increase access to external markets, and (iv) preserving a policy environment conducive to attracting more private investment, including from foreign sources.

The authorities also have indicated a commitment to change certain elements of the earlier poverty reduction strategy. The most important strategic changes include:

- refocusing attention from the “cluster development strategy” that figured prominently in the earlier growth strategy and which is viewed as favoring the larger, more established economic agents, towards supporting production by the poorest households and small & medium sized enterprises, including through increased access to credit for these sectors,

⁺ These documents refer to:

Gobierno de Reconciliación y Unidad Nacional, “Programa Económico-Financiero 2007-2010 (Agosto 2007),

Gobierno de Reconciliación y Unidad Nacional, Secretaría Técnica del Poder Ciudadano (SETEC), Nicaragua: Informe de Avance del Plan Nacional de Desarrollo 2006 (Agosto, 2007), y

Gobierno de Reconciliación y Unidad Nacional, “Prioridades del Gobierno de Reconciliación y Unidad Nacional Proceso en Construcción Permanente, (Agosto, 2007).

- discontinuing the privatization agenda, which is viewed as not having worked well especially in the electricity and social security sectors, and placing more emphasis on state intervention and oversight,
- placing greater attention on promoting human development, instead of compensatory policies and what is perceived as too narrow a focus on eliminating extreme poverty, and
- improving access to public services in health and education, in part by providing these services free of charge to beneficiaries and in coordination with other line ministries. This last strategic change is associated with a broader program reorientation away from the principle of targeted interventions toward one that aims for greater universality.

While some of the recommendations offered in this report may require adaptation to these differences in development perspective, the most important poverty reduction challenges facing the Nicaraguan authorities remain unchanged. This PA is intended to provide a timely reference in drawing attention to these challenges and in helping to identify various opportunities for raising the impact of public actions on poverty, independent of the preferred development approach. This report does not necessarily reflect the policy outcomes of the country's most recent changes coincidental with a change in government that would have involved projection of scenarios not forecasted.

EXECUTIVE SUMMARY

1. Nicaragua is a small, open economy that is vulnerable to external and natural shocks. With an estimated Gross National Income (GNI) per capita of US\$1000 in 2006 (using the Atlas methodology) and a total population of 5.2 million, it is one of the poorest countries in Latin America. Forty six percent of the population lived below the poverty line in 2005 (while 15 percent lived in extreme poverty), and the incidence of poverty is more than twice as high in rural areas (68 percent) than in urban areas (29 percent). Nicaragua's social indicators also rank among the lowest in the region, commensurate with its relatively low per capita income level.

2. Nicaragua has made steady, albeit modest, progress on the economic and poverty reduction front in recent years. During 2001-06, economic growth has been stable (averaging 3.2 percent, about 1.7 percent in per capita terms), the external debt has been substantially reduced, and Poverty Reduction Strategy (PRS) spending has steadily increased. While poverty rates have fallen slightly and several welfare indicators have shown improvements, major challenges remain and it is projected that Nicaragua may only achieve half of the Millennium Development Goals (MDGs) by 2015.

3. Nicaragua's long-term development vision is set out in its National Development Plan (NDP), 2005-2009, which gives greater importance to economic growth than the strategy document that preceded it. This also serves as its second Poverty Reduction Strategy. The goals of the PRS incorporate the MDGs, and establish medium (2006-2010) to long term targets (2015). By 2005, the country had made satisfactory progress on meeting the PRS/MDG targets for reducing extreme poverty, increasing net primary enrollment, and reducing infant and child mortality. PRS/MDG targets that are currently off track and need additional efforts to sustain future improvements are: maternal mortality, access to reproductive healthcare services, chronic malnutrition, access to drinking water and sanitation, and illiteracy.

4. This National Development Plan is being revised by the new government that took office on January 2007, which has expressed interest in maintaining policy continuity in those areas that have shown progress and tackling pending development challenges. These include efforts to improve the country's growth performance while reducing poverty, macroeconomic stability as a necessary, although not sufficient, condition to stimulate growth and reduce poverty, a special focus on social issues that impact the poorest, including the MDGs, and environmental sustainability. Programmatic priorities for the new administration include a renewed focus on poverty reduction using a multi-sector approach, implementing pragmatic solutions to the energy crisis for the short to medium term; expanding water and sanitation services with environmentally sustainable solutions; sharing economic growth more broadly to tackle hunger, malnutrition and poverty; placing greater emphasis on preventive health and continuing social protection programs; extending illiteracy programs and improving education services; and, pursuing municipal decentralization, state modernization and good governance.

Poverty, Employment and Welfare

5. Using household survey data and comparative poverty lines across time, in 2005 46 percent of Nicaraguans lived in poverty compared to 50 percent in 1993. Also, there has been some progress in reducing extreme poverty, which fell from 19 percent in 1993 to 15 percent in 2005. . Notably, in the period between the years of 2005 and 1993, there has been substantial progress in

reducing the *poverty gap*, a measure of how far the poor are below the poverty line. Even so, as in many developing countries, poverty is largely a rural phenomenon in Nicaragua: more than two-thirds of the rural population is poor, and 65 percent of the poor and 80 percent of the extreme poor live in rural areas. The new government has published slightly different figures for 2005 (see Chapter 1, Box 1.1), indicating that poverty in 2005 is 48 percent and extreme poverty is 17 percent.

6. The small drop in the poverty numbers, however, may be understating the progress made in other indicators of welfare improvement in recent years. There is evidence of improvement in living standards from the basic needs indicators over the 1995-2005 period; using either Census or LSMS data. All four such indicators have improved, that is, crowding (persons per room), access to water, quality of housing, and children enrolled in school (see Chapter 1, Figure 1.14). It is unlikely that these improvements would have occurred while consumption spending was declining, suggesting the importance of measuring poverty in a multidimensional and comprehensive fashion.

7. The small increase in income among the poor has primarily derived from a resurgence in agricultural earnings. Agriculture accounts for 50 percent of the income of the poorest 20 percent. During the 2001-2005 period, agricultural employment and wages both rose, although labor productivity in agriculture declined. The explanation of these rather paradoxical trends is that there was a substantial improvement in agricultural export prices, especially for such crops as beans, coffee and meat. Thus, farmers hired more workers and paid higher wages in order to realize the gains from higher output prices. The danger is, however, that this could be a temporary event that may not be sustainable, its reversal resulting in unemployment and decline incomes for the poor.

8. Another aspect beneficial to the poor has been a shift in labor force composition and the dependency ratio. With the aging of the population, the number of people aged 15-64 increased faster than the population growth rate, and the labor force participation rate also rose. The result was a growth of 2.7 percent in the labor force (2001-05), versus 1.7 percent growth of population, implying that more people were employed per household, with a subsequent decline in the ratio of dependents to workers, improving per capita welfare. However, this also generated a downward pressure on productivity even in sectors outside of agriculture.

9. About 10 percent of the Nicaraguan population lives abroad, and about 20-30,000 migrate every year, chiefly to Costa Rica and the United States. Remittance flows are an important source of income for Nicaraguans at all levels, but the bulk of these flows go to families having more educated workers who go to better paying jobs in the United States (i.e. not the poor). Nevertheless without these remittances Nicaragua's poverty rate would have been 50 percent in 2005, instead of 46 percent.

10. Thus, the modest reduction of poverty in Nicaragua may be explained by three fundamental mechanisms, which underscore the fragility of this progress and the need for sustainable and pro-poor economic growth that provides employment opportunities in the future for the growing labor force.

- An improvement in producer prices for coffee, meat, maize and beans, which are produced by small farmers, translating in better terms of trade for agriculture with substantial gains for the poor self-employed in rural areas, but which could be easily reversed by either trade or natural shocks.

- A recent increase in migration by the poor, with Costa Rica as their main destination, whose remittances raise the household income of poor families, but are relatively modest and will tend to decline over time.
- An increase in the number of family members working among the poor, with the consequent reduction of dependency ratios, but with declining labor productivity in agriculture and in low paying jobs with scarce benefits in manufacturing, such as maquila.

The Growth Outlook and its Impact on Poverty

11. Overall economic growth has averaged about 1.7 percent per capita in real terms during 2001-2006, despite major shocks from Hurricane Mitch in 1998, a banking sector crisis (2001), and the collapse of coffee prices (2000). The improved performance in the past 10 years is the outgrowth of stabilization policies adopted in the early 1990's, which were concentrated in controlling hyperinflation, reducing the fiscal deficit and privatizing public utility companies. A second wave of reforms was initiated in 2002 designed to promote fiscal sustainability through the broadening of the tax base, the elimination of tax exemptions improved revenue, more effective budgeting and improvement of the financial position of the central bank. The government also sought access to the HIPC initiative to gain foreign debt relief. In 2004 Nicaragua reached the completion point under HIPC and bilateral and multilateral debt relief was granted for debt incurred prior to 2005.

12. Looking toward the future, Nicaragua is in a good position to build on its favorable performance. In contrast to previous periods, the stable macroeconomic environment obviates the need for a costly adjustment and its consequent negative implications for the poor. Furthermore, export growth is likely to be boosted by the implementation of the Dominican Republic–Central America Free Trade Agreement (DR-CAFTA). Nonetheless, the government faces several challenges in maintaining a stable fiscal environment conducive to growth. Chief among them are the need to: (i) resolve the current policy and regulatory impasse in the energy sector, which has resulted in increasingly frequent blackouts and rising financial losses in the electricity utility; (ii) transfer increasing expenditure responsibilities to the municipalities consequently with the legally mandated increase in central government revenue transfers; and (iii) restructure and contain the public sector wage bill, which has been increasing rapidly in recent years.

13. Rapid growth remains a key ingredient for reducing poverty. In recent years, Nicaragua's poverty elasticity with respect to growth (the response of poverty to changes in per capita income) has shown to be a modest -0.4, compared to the regional average for Latin America of -0.9. In contrast, Nicaragua's elasticity for reducing extreme poverty has been much higher: -1.4. This means that Nicaragua will need GDP growth averaging 5.5 percent per year between 2005 and 2015 to reach its MDG goal of halving extreme poverty between 1990 and 2015 (goal is 9.7 percent, and the current is 14.9 percent in 2005). International evidence however, shows that poverty reduction is clearly linked to economic growth, and that with the right combination of policies Nicaragua's elasticity of poverty to growth can be increased. The observed relationship between poverty reduction and growth for many countries confirms that unfortunately growth can occur with no declines in poverty, but in contrast, countries have not experienced a drop in poverty rates where economic growth is nil or close to zero. Reducing poverty in the future in Nicaragua is directly linked to providing productive employment, particularly as the aging of the population implies substantial growth in the working age population (aged 15-64), a phenomenon which has already been happening in the past five years. This evolution, combined with higher labor force participation rates, increasingly puts pressure on labor markets and wages, and makes the expansion of economic opportunities even more important.

Priorities for Poverty Reduction

14. Key challenges in the approach to poverty reduction can be gauged in terms of the standards set by the Millennium Development Goals (MDGs) and similar and intermediate goals of the PRS. Forecasts of recent trends in PRS indicators suggest that more than half of the MDG goals for 2015 are unlikely or very unlikely to be achieved if policies had not been modified. Present trends suggest the following results:

- Goals that are *likely* or *very possible* to be achieved: 50 percent reduction in extreme poverty, two-thirds reduction in infant and child mortality.
- Goals that are *unlikely* to be achieved: universal net primary enrollment, reduction in chronic malnutrition, access to safe water to 90 percent of the population, and declines in illiteracy rate falls to 10 percent.
- It also *very unlikely* that the planned increase in access to reproductive health services suggested by the PRS, the fall in maternal mortality by three-quarters and the increase in access to sanitation to 95 percent will be achieved.

15. While attainment of each of the goals is important by itself, they should also be viewed together because they are mutually reinforcing. Better health care increases school enrollment and reduces poverty. Better education leads to better health, higher productivity and higher incomes. And increasing income gives people more resources to pursue better education and health care and a cleaner environment. Nicaragua clearly has a long way to go and will need a concerted effort by government, private sector and civil society organizations, a good governance environment and considerable donor resources in order to move faster towards the MDGs by 2015.

16. Policy priorities can also be informed by the direct views of the poor, using qualitative survey methods. In a study done for this report, the poor were asked to rank their development priorities in a qualitative exercise, methodologically similar to the Voices of the Poor initiative. The findings of the qualitative work tend to coincide to a large extent with the findings of the quantitative assessment. The most important development priorities voiced by the beneficiaries themselves ranked from the top are water, construction and repair of roads, productive opportunities and health. These priorities coincide with quantitative findings analyzed in this report, which, however also emphasize education and access to credit as very important. The major difference between the quantitative and qualitative is in education. Education, as reported here and in the abundant international literature on the subject is a key precondition for poverty reduction, although it is given a low ranking by the poor themselves. This is not surprising given that households see education as a medium to long-term investment for children, and place more emphasis on investments that will provide them a more immediate return, including job training. It is also consistent with the perception found in household surveys that the quality of education is generally good, particularly stated by the poor, despite the fact that the quality of inputs and schooling attainment in Nicaragua is among the lowest in the whole region.

17. Overall, this report stresses a strategy centered around the following objectives:

- finding ways to accelerate growth, and to spread the effects of growth more equitably among the population, particularly by increasing the effectiveness of public programs in reaching the poor;
- improving basic infrastructure, particularly water supply, sanitation, rural roads and electricity, in order to both improve welfare directly of the poor, and improve their productivity;

- further improving basic health, nutrition as well as coverage and quality of education services in order to improve the productivity of the labor force; and,
- focusing on programs that directly raise productivity – credit, networks and associations, land titling and land markets.

Rural Development. Within the general strategy, a special focus has to be maintained on the development of rural areas, given the relatively higher concentration of the poor in those areas. Rural development needs to incorporate rural areas into government programs. However, it is crucial for a rural development strategy not to be separate from the country’s overall growth strategy as well as the sectoral strategies for infrastructure (roads, energy, water, etc.), building a competitive investment climate, and improvements in basic social services such as education and health. Rural development must use integrated interventions to comprehensively tackle all aspects of poverty by finding ways to increase rural productivity, both in agriculture and in all other sectors, and using a growing economy to absorb increases in the labor force.

The following sections look at these issues in more depth.

Making Spending More Pro-poor

18. Nicaragua has made consistent efforts to reduce poverty and inequality, and has made important reforms to advance public policies. Despite improvements, further efforts are required to increase the impact of public resources on Nicaraguans’ wellbeing. Improved impact from resources invested in poverty reduction and broad based growth is urgently needed. Nicaragua’s budgetary allocations are constrained by significant fragmentation and earmarking, which limits the scope for improved prioritization and targeting of poverty reduction programs.

19. In 2005, the central government spent 43 percent of the government’s total expenditures for social spending (Public Social Spending – PSS). PSS expenditures in Nicaragua include the areas of education, health care, water, housing and social assistance, and they represent 11 percent of the country’s GDP.^{1, 2} The largest segments were education—representing 42 percent of PSS spending—and health, at 31 percent. The Government has also defined a set of programs aimed at implementing the Poverty Reduction Strategy (PRS). PRS spending excludes social spending not aimed at the poor (i.e., public universities), but includes non-social sector programs that are geared towards the sustained reduction of poverty (i.e., rural development).³ In 2005, PRS expenditures on represented 13.1 percent of the GDP, and 12.2 percent in 2006.⁴

20. In Nicaragua, PSS spending benefit the different strata of population approximately equally, so it is not pro-poor; more than 55 percent of PSS-related expenditures benefit people who are not considered poor. However, its distribution is much less concentrated among the non-poor than the distribution of consumption. For this reason, the PSS in Nicaragua is not pro-poor but progressive. This progressive impact of PSS spending generates a reduction of 6 points in inequality, as measured by the Gini coefficient of per capita consumption. In other words, while the Gini prior to PSS is 40.1, a calculation of the Gini that takes into account this public spending (and assuming proportional taxation) is close to 34; 83 percent of this redistributive impact

¹ PSS comprises all social spending (education, health care, water, housing and social assistance), including those items not necessarily targeted to the poor.

² This proportion is similar to the current one in neighboring Honduras.

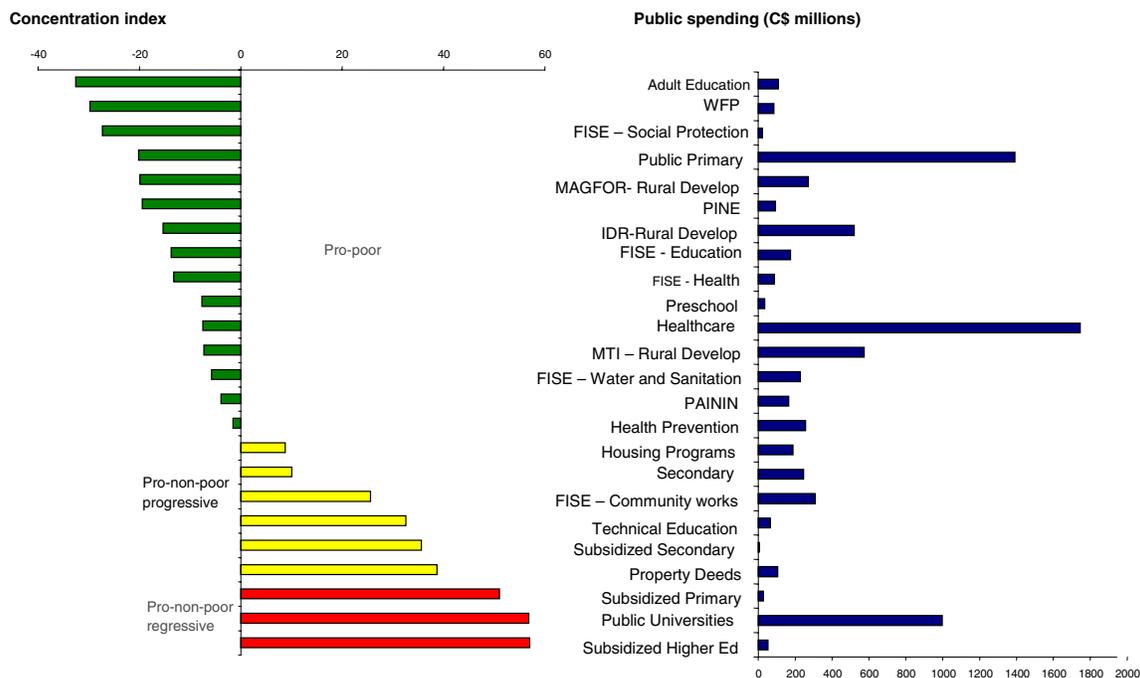
³ PRS includes all programs with a poverty focus, which includes many programs not considered to be in the social sectors.

⁴ GON (June 2007). 2006 Poverty Spending Report.

comes from expenditures in education and health. Compared with the non-poor, the poor receive a higher implicit subsidy for health and social assistance, and a lower one for education and housing.

21. One of this study’s main findings is the low level of targeting of many social programs. In fact, aggregate PSS is pro-non-poor, while PRS spending has a relatively better degree of targeting; 55 percent in contrast to 47 percent of expenditures, respectively, benefit people who are not considered poor. This is the consequence of the coexistence of programs that have very varied targeting. While the benefits of some programs are focused on the poorest, others, in contrast, benefit the non-poor to a greater extent. The programs most targeted on the poor are the adult and public primary education programs, several food programs (WFP and PINE⁵), and some FISE⁶ components (see Figure). Rural development programs also have a high degree of targeting, since they are geographically located in areas with high levels of poverty. Within the group of programs considered, at least half have a bias that favors the non-poor. Of these, however, only the higher education programs and subsidies to private education are regressive (i.e. their net impact is to worsen income distribution).

Public Spending Progressivity by Program



Source: World Bank calculations based on 2005 LSMS

22. This study’s findings indicate that there is sufficient margin for significantly increasing the degree to which social spending is targeted, whether through reallocating budget to better targeted programs, or reassigning specific program budgets to poor beneficiaries, or extending the network of social programs—currently limited by the low coverage of numerous programs—to lower income sectors. The quality of public spending is partly determined by how well targeted and what level of coverage is captured by priority projects. Often, coverage of basic services en

⁵ Programa Integral de Nutrición Escolar or School Feeding Program.

⁶ Fondo de Inversión Social de Emergencia or Emergency Social Investment Fund.

Nicaragua, which are constitutionally mandated to be universal, is limited precisely by budget fragmentation and rigidities due paradoxically to earmarking constitutionally mandated allocations. In addition, the quality of public spending is also linked to the project's effectiveness or its impact to change the target indicator, the degree of efficiency or how much the intervention costs vis-à-vis alternatives, the prioritization of projects or selection on the basis of their highest economic and social return, and the satisfaction of the beneficiaries demand expressed by civil participation.

Infrastructure

23. Economies with better and broader access to roads, electricity, transportation, credit, and telecommunications area associated with higher growth rates and lower income inequality and poverty. In Nicaragua, there has been significant progress in terms of access to basic infrastructure and productive services since 1998. The share of households with access to piped water, fixed telephone, cellular telephone, and trash collection services increased substantially between 1998 and 2005 in Nicaragua. Other housing related variables related to the household's dwellings, such as the share of dwellings with access to a toilet inside, good-quality floor, and good-quality walls also displayed a significant improvement both in rural and urban areas. However levels of infrastructure development in Nicaragua are still low relative to most Latin American countries.

24. **Roads.** The construction of roads and repair of existing roads is also listed as a top priority by leaders and people in general during the qualitative work undertaken for this report. This includes streets as well as roads leading to the urban area; other communication programs mentioned as lacking and affecting progress are bridges. Roads and bridges are key for maintaining access to schools and health centers, particularly in the rainy season when students often have to drop out of school because of flooded roads.

25. The emphasis on roads as a priority for public spending comes despite significant progress and expenditures in these areas in the recent past and significant donor support. This is due to reconstruction and rehabilitation, as well as because of a considerable back-log of paved and all-weather roads in Nicaragua vis-à-vis its level of development and in contrast to other Central American countries. For instance, IDA-financed projects restored over 3,000 km of secondary roads destroyed by Hurricane Mitch, rehabilitated the Pan American highway and improved 240 km of rural roads, linking the poor to markets, health centers and schools. Consequently, IDA involvement has helped increase the road network in working conditions by almost 20 percent between 1999 and 2006. Though significant progress has been made, indigenous households and households engaged in agricultural production are still the groups with the lowest access rates to paved roads in the country. Further investments in roads are likely to improve welfare among the poor and increase rural productivity, as better roads are associated with higher yields per hectare among producers and better access to markets for all products.

26. **Water and Sanitation.** Water and sanitation access rates are among the lowest for Latin American countries. It is unlikely that Nicaragua will reach the 2015 MDG target for water, unless investment levels and patterns are altered and management practices improved. The target for sanitation is very unlikely to be achieved by 2015, because most past progress has been made in latrines with little follow up, so more than half of them are untreated, while almost no advances have been made in terms of connections to the public sewage system. Access to safe drinking water and basic sanitation is a key basic service with direct implications for human and economic development. In Nicaragua, access to basic water and sanitation services is closely associated to

poverty;⁷ moreover, inequity in access to safe drinking water is as unequal as consumption. Given that the poor are mostly excluded from these basic public services, they tend to make their own inadequate arrangements or pay excessively high prices to water vendors for meager water supplies. By not having access to water, poverty is further aggravated and productivity constrained.

27. The relatively poor overall performance of the water and sanitation sector is predominantly due to: a) political and institutional shortcomings of the sector, and b) insufficient public budgetary resources.⁸ The sector's relative inefficiency and ineffectiveness is largely related to slow increases in coverage which is concomitant to its current lack of sustainability. In October 2005, CONAPAS elaborated and approved a coherent sector strategy in line with the National Development Plan, and further recent steps are promising.⁹ Nevertheless, a serious commitment at the political level is needed if the sector performance is to be improved significantly.

28. Achieving the MDGs in water and sanitation is particularly a challenge in **rural areas**. Taking into account increasing marginal costs, substantial social infrastructure investments will be required in rural areas, where the vast majority of the poor lives without access to water and sanitation, especially in the Atlantic and Central/Northern region. Poor and extremely poor population groups would benefit the most from such investments. Appropriate co-financing and local participation policies will be necessary to ensure adequate technology and service levels that can be managed and can be financially sustainable in the long run. Water infrastructure investments need to be accompanied with effective decentralization and capacity building strategies to strengthen local capacities, and a clearer role for municipalities.

29. In **urban areas**, one of the most urgent tasks in urban areas is to secure water provision and restore clients' confidence. A cash injection for service quality improvements in the short run will likely be inevitable to prevent a virtual collapse of the water provision in some areas. However, a profound structural reform of the urban service provider ENACAL needs to be initiated in parallel to prevent that investments turn into de facto consumption subsidies. Once visible service improvements have been achieved, a plan for a gradual adjustment of tariffs has to be elaborated, including a targeting scheme of water services to poor. Any tariff adjustment needs to maintain a pro-poor orientation for poor urban dwellers. Eventual loans and grants to ENACAL should be linked to measurable outcomes in service improvements, key management and technical efficiency figures. Additional funds will be required for expanding the urban sewage system in particular in peri urban areas and waste water treatment infrastructure in larger cities.

30. In order for water coverage to impact on health-related MDGs, **sanitation and hygiene** promotion deserves considerably more attention than it has received in the past. A more integrated approach should be seriously considered, as hygiene practices are as much a determinant of health outcomes as access to water and sanitation infrastructure. Sector resources should not only be allocated to sanitation infrastructure (hardware) but also to the aggressive promotion of better hygiene behavior (software).

⁷ Jarman (1997)

⁸ Further analysis of Public Spending is contained in the Nicaragua 2006 Public Expenditure Review.

⁹ The sector strategy also gave rise to the sector round table as a coordination forum between government and the donor community (including IDB, WSP-World Bank, SDC, UNICEF, PHO, CIDA, EU, JICA, Netherlands/SNV, and the German Cooperation KfW which currently heads the forum). In October 2006, the government and the donors agreed on a roadmap to complete a Sector Wide Approach (SWAP). In addition, a Code of Conduct on alignment and harmonization was signed.

31. **Electricity.** There is an urgent need for investments in expanding electricity networks in rural areas, in the Atlantic region, and among vulnerable segments of the population. Low access to electricity hinders welfare, especially for households working in agriculture and who deal with perishable products. Lack of access to electricity also lowers the capacity of households to run small businesses. The expansion of electricity networks will be difficult to achieve if the electricity tariff structure remains unchanged and as long as the country continues to be highly dependent on oil as the main source of energy. Furthermore, the government (through the utility service companies) should invest in monitoring electricity theft and in diversifying its sources of power away from oil-based energy. Between 15 and 20 percent of all households with access to electricity do not pay for the service. High rates of energy theft and high oil prices force suppliers to cut the service periodically in order to save costs.

Social Sectors

32. **Health.** Inequity in public healthcare services in Nicaragua is such, that even services which are free-of-charge, like immunizations and reproductive health, tend to favor the better-off rather than poor households. Access, utilization and financing of essential healthcare services has been explicitly expressed as a priority of the new administration and it needs to be incorporated into the revised NDP. Most health expenses are covered by people themselves, and even the poor, who are typically seen as the target of publicly financed actions, often opt to pay a substantial proportion of health consultations, diagnostic services and medicines. Out-of-pocket healthcare expenditures represent up to 16 percent of non-food expenditures for the poorest quintile. Ninety percent of Nicaraguans are completely uninsured, but particularly poor families are vulnerable to health shocks that either keep them or take them into poverty. INSS has to play a key role in improving healthcare equity given that it receives a public subsidy for social insurance arrangements which tends to benefit mostly the non-poor.

33. Nicaragua's healthcare system faces major challenges to improve the health status of the population: (i) inefficiencies in allocation and use of public resources, (ii) low level of financial protection for health shocks, (iii) high out-of-pocket health expenses, particularly among the poor, (iv) constraints in quality, access and, thus, low utilization of healthcare services, (v) unregulated private sector, and (vi) limited capacity of MINSA to perform its stewardship role to ensure pro-poor strategies and an efficient health system. Efforts to face these challenges should be made within an equity framework, mostly because the poor and indigenous populations obtain very little benefits.

34. Specifically, an integrated healthcare model should have the following objectives:

- Promote child, and maternal healthcare preventive services, with focus in earlier and more frequent prenatal visits, as well as broader coverage of postpartum care for women.
- Expand access to medically assisted births, as the share of women delivering under medical supervision is still low for poor and rural women.
- Avoid discontinuities in immunization coverage, particularly last doses of DPT and measles vaccine.
- Integrate key interventions into basic packages that are managed and financed by the Ministry of Health (MOH). At present, most key health interventions have been partially supported by donors outside the MOH, e.g. family planning services.
- Addressing inefficiencies in current health spending can markedly improve health outcomes of the poor, including:

- Target public healthcare resources need to primary care, prevention, and health promotion interventions;
- Use a results-based budgeting to strengthen a reversal in the allocation process which has favored metropolitan areas and hospital care;
- Move away from historical patterns of deployment of human resources, which has meant few health workers for poor rural areas; and
- Reduce human resource imbalances by decreasing over-reliance on physicians and increasing supply of nurses and auxiliary personnel, with special focus on primary healthcare.

35. **Education.** The most important factor to improve well-being is education, it is also crucial to finding and keeping a job and a decisive factor to improvements of the most of the MDGs as an associated factor. In terms of public policy, education is a top priority for Nicaragua, particularly as it is the second country with the lowest level of education in Central America, lower than expected for its income level, and only higher to Guatemala. The average years of schooling of the urban population is 6.9, compared to a regional average of 9.0; in rural areas the gap is between 3.1 and 4.9

36. Nicaragua still falls behind in Latin America in primary and secondary education service delivery (both in relation to access and quality). Education outcomes in Nicaragua have significant links with poverty and investing in education is very profitable for individuals. Indeed, estimates indicate that a Nicaraguan is expected to earn 10 percent higher wages for each additional year of schooling attained. However, despite this, 72 percent of the population does not attain complete secondary education and consequently earn wages below the poverty line.

37. While all income groups benefit from remittances, the majority go to families in the upper deciles, rather than the poor, unlike other countries in the region. The reason for this is that those people who migrate tend to be the most educated. In general, Nicaraguans who migrate with primary education tend to go to Costa Rica; while those with a secondary education tend to go to the United States where returns to education are much higher. The fact that the more educated tend to migrate suggests the need to expand opportunities within Nicaragua for education to translate into better job opportunities and higher returns to education.

38. There are substantial inequities in access and quality of preschool, secondary and post secondary education between richer and poorer households, between urban and rural areas, and between regions. Late enrollment, high dropouts, and high repetition rates altogether are preventing children, and especially those from poor families of completing primary and secondary education. Young individuals who are poor, indigenous, and who live in households engaged in agriculture attain less than 5 years of education on average. Despite progress, still 20 percent of poor children do not enroll in school at all, and simple projections show that among current young children, probably among 20 percent will not finish primary and 45 percent will not finish secondary. Late enrollment in first grade is common among children in the poorest quintiles, especially in rural areas. While first-grade enrollment should begin at age 7, only 20-30 percent of children are actually enrolled at that age. Repetition rates for primary education are on average 12 percent, above the regional average, and the annual cost of repetition at the primary level is estimated at US \$12.0 million. Moreover, only 32 percent of young people between 20 and 24 complete secondary education. Thus, most Nicaraguans accumulate little human capital before joining the labor force in their early teen-age years.

39. Both supply side limitations that hamper access to school, as well as affordability constraints limit access to school. While lack of access to facilities and financial constraints constitute important reasons why poor children do not attend primary school (especially in the Central and Atlantic regions), lack of interest and family problems have risen in importance as factors explaining school non-attendance among urban children. The need to work, financial constraints, and lack of interest are the main reasons for boys not to be enrolled in secondary/post-secondary school, while family problems, child care responsibilities, and pregnancy are the main reasons for girls not to be enrolled. Among the poor, out of pocket expenses related to sending children to school, mainly transportation, are a factor precluding attendance.

40. Regarding education quality indicators, Nicaragua has the highest pupil-teacher ratio in Latin American in both primary and secondary schools, and its teacher work force is also one of the least qualified in the region. Therefore, improvements in teacher training as well as improved teacher incentives are critical to both improve the quality of teaching and to keep the best teachers within the educational system.

41. Across the system, differences in quality of inputs seem to generally favor private over public schools; within the public system the differences are not clear cut. Quality deficiencies are also reflected in the fact that less than 14 percent of all students in 3rd and 6th grade are found to be proficient in their curriculum. In this case, private schools fare better than public, and within public schools, autonomous ones seem to have an advantage. The inequities in the system are reflected in lower performance among rural students, and those living in poorer regions. Moreover, the positive effect of the family environment and the importance of parental education as factors affecting student curriculum proficiency point to a system where inequities might grow larger if access and quality of education do not improve dramatically among the poor.

42. The net result is that many of the currently enrolled children, and those in the cohorts of youth that have already passed the years of primary and secondary schooling, have accumulated so little human capital by the time they are outside the educational system, that they are destined to remain in the 50 percent of the population in poverty. Consequently, there will continue to be large social returns to investments in basic education, adult education and technical training in the future, and this will continue to be a challenge and a need for Nicaragua.

43. **Nutrition.** Health, education and sanitation are directly linked to problems of malnutrition. It is a common perception that child malnutrition is related to insufficient access to food, however, other factors can be even more important. Inadequate maternal and child caring practices, often due to inadequate or inappropriate knowledge/education, are critical for the actions or behaviors that can translate available food into good child growth and development. Water/sanitation and adequate healthcare services are crucial for the children's health status and the incidence of disease. All three factors work synergistically; a child who does not eat well, either because there is insufficient food or because of inadequate caring practices, is more susceptible to illness, consequently disease increases nutrient loss and suppresses appetite. Thus, sick children living in areas lacking adequate water/sanitation and healthcare services, tend to be ill for long periods and eat poorly, and so a spiraling cycle downwards may lead to malnutrition.

44. Stunting is strongly linked to poverty. In Nicaragua, stunting is 2.5 times higher in children in extreme poverty compared to non-poor children; 37.2 versus 14.6 percent, respectively. Among extreme poor families, stunting levels were above 45 percent in the Central region, the highest levels in the country. Many of the poorest and most remote municipalities are found in the Central region. The Atlantic rural follows, with 36.9 percent stunting among extreme poor children.

45. Most malnutrition programs are more effective in the short-term if they use integrated approaches to address simultaneously more than one of the immediate and underlying factors associated to malnutrition. In Nicaragua, it is important to support multisectoral programs that focus on prevention and target the age group at highest risk of stunting; starting *in-utero* and continuing through the child's 2nd birthday. This integrated approach should focus on several factors that occur at child/family and community level, and which include not only insufficient access to food, but also inadequate maternal and child care practices (actions or behaviors that translate available food into good child growth and development), often related to poor knowledge/education. Low access to water/sanitation and healthcare services are also concomitant factors linked to malnutrition.

Raising Productivity

46. The poor identify low productivity as a key element in determining their poverty. While improved social services (health, education) can help raise productivity, ways need to be found to directly increase the productivity of the poor, particularly in rural areas.

47. **Agricultural Productivity.** Households engaged in agricultural production are a vulnerable group of the Nicaraguan population, showing higher poverty (at 70 percent) and lower education levels than average (93 percent of all households heads in this group have only a primary education or less). Agricultural productivity is an important determinant of welfare for the poor. Gaps in productivity are large, especially by producer size and region. Large agricultural producers display productivity levels that are more than six times than small producers. Not surprisingly, urban producers, often having better access to infrastructure, technology, and credit; are more productive than rural producers. Large inequities in productivity are also observed across regions. The Atlantic region displays the lowest levels of agricultural productivity while the Central and Pacific regions display productivity levels above the national average (in part because they are also more urban). Small-rural producers in the Atlantic region are likely to be one of the most vulnerable groups in Nicaragua: they display higher levels of poverty, low levels of education, low productivity, and limited access to infrastructure, equipment, and qualified labor.

48. Inequality in productivity is a reflection of the observed differences in quantity and quality of capital, labor, and land available to producers. Poor and small producers use more labor and less capital and land for production. Not surprisingly, farm size is generally larger among non-poor producers, especially close to urban areas. Differences in land size between poor and non-poor producers are much larger in urban areas than in rural areas: in urban areas non-poor producers have on average 7 times as much land as poor producers; in rural areas the factor is about 2. While poor and small producers generally have less access to land and capital, they employ more labor (generally unskilled) in order to conduct activities that other producers undertake using equipment (such land irrigation, seeding, and harvesting).

49. The use of agricultural inputs in Nicaragua is generally low: only 11 percent of all producers use certified seeds, 6 percent use organic fertilizers, 37 percent use chemical fertilizers, and 67 percent use insecticides. Large and non-poor producers as well as producers in the Pacific region use more inputs than poor, small, and rural producers. In particular, use of fertilizers is an important determinant of agricultural productivity. Estimates indicate that using fertilizers increases productivity levels by 22 to 34 percent nationally; moreover, it generates even larger increases in productivity (23 to 50 percent) among small and poor producers. Returns to labor are high, especially for poor producers. Estimates suggest that for every extra worker per hectare,

yields per hectare increase between 50 and 70 percent, but there are diminishing returns to additional laborers. Estimates suggest that for every 1,000 *Cordobas* invested in capital per hectare (about US\$60 per hectare), productivity is expected to increase by 7 to 10 percent. Having access to a paved road increases average yields per hectare by 17 to 20 percent.

50. **Credit Services.** With the exception of indigenous households, about 25 of every 100 households in Nicaragua received a loan in the 12 months prior to the service at all socio-economic groups. A little more than half of all loans given to households were issued by informal creditors (such family, friends, NGOs, merchants, or informal credit lines). Poor, rural, indigenous households, and households engaged in agriculture are likely to obtain their loan from an informal credit source. Surprisingly, having a land/house property title does not influence the probability that households access formal credit. The analysis reveals that loans (per capita per year) among the poor account for a large share of their yearly per-capita income. In particular, they are an important share of income for agricultural producing households (roughly 20 percent).

51. Results suggest that informal credit lines and credits from merchants are the providers of 45 out of every 100 loans in Nicaragua. These providers – generally more available to the poor – charge very high interest rates as compared to formal credit providers such as private banks, cooperatives, and other financial institutions. Estimates indicate that while interest rates charged by informal lenders can be as high as 12 percent per month, interest rates charged by formal lenders fluctuate around 4 percent per month.

52. Estimates using the 2005 EMNV suggest that about one third of loans acquired by households are used for investment purposes, while the rest are used for general household consumption (purchasing cars, houses, and other non-investment items). Households engaged in agriculture are more likely to use loans for investment-related purposes than the average household (40 vs. 30 percent). Indigenous households display the highest rate of loans used for household consumption at 76 percent.

53. **Networks and Organizations.** Access to networks and associations has become a mechanism for households to promote social participation, empowerment, and better to access markets and services. Since community-based development relies on the capacity of individuals and communities to self-organize and to use their social capital productively, the concept of participation in association becomes essential. In general, participation in association is important to access markets and inputs (e.g. producer associations); to protect individuals against other institutions (e.g. unions and consumer associations); to gain political power (community committees); and to access goods, programs, or services (e.g. religious associations and government programs).

54. In Nicaragua, participation in productive organizations increases the probability that households benefit from social programs by 15 to 16 percent. Poor households and especially those engaged in agriculture are more likely to belong to local committees and professional associations. Results indicate that nationally about 4.4 percent of all households participate in local committees, 2 percent in professional associations, 2 percent in credit unions, 8 percent in religious associations, and about 6 percent in other type organizations (such as women organizations, clubs, etc...). Participation in productive associations (such as local committees and professional associations) is higher in rural areas and especially in the central region, among agricultural producers, and among households in the bottom 3 quintiles.

55. **Land Titles.** In Nicaragua, 77 percent of all households claim to own the house where they dwell. However, 34 percent of all homeowners do not possess a property title on their property.

This is more common in rural areas and in the Central and Managua regions, where informal home ownership reaches 34 to 46 percent. Even in urban areas and among households in the richest quintiles, informal house ownership is as high as 30 percent. Informal ownership is the highest among indigenous households (at 59 percent) and among households working in agriculture (about 43 percent). Despite these high rates, few households have benefitted from titling programs in Nicaragua (less than 1 percent overall). Titling programs are more common in urban areas and especially Managua where about 2.5 percent of all households claim to have benefitted from a titling program within a year prior to the survey.

56. Lack of titling is also common among agricultural producers who claim to own land. Data suggest that 21 percent of all agricultural producers do not possess a title on their land. This fact is more frequent in the Atlantic region where about 32 percent of all producers claim to own their land without having any documentation. Interestingly, only 10 percent of all landowners who do not have a title on their land (and this holds true at all socio-economic groups) fear that they may have problems with their land in the future or that the land may be expropriated. There is also anecdotic evidence suggesting that households do not have incentives to register their property: without a title they avoid paying property taxes and using it as credit collateral.

57. Generally, having a land title is associated with better outcomes in relation to access to credit and productivity as well as with a higher probability of households renting their land for profit. In situations where land tenure insecurity is pervasive, as in Nicaragua, systematic efforts of land regularization can have positive effects on land values as well as equity. Receipt of a registered title raises land values by 30 percent and greatly increases the propensity to invest. Greater demand for regularization of land rights, especially from the poor, suggests that titling can have a positive distributional effect. Having a land title is a necessary but not sufficient condition to transform modest landholdings into viable collateral for commercial loans. Titles are as important as a well developed market for land and property in general for financial institutions to foresee associated gains above the costs involved in collateral processing, such as foreclosure and resale of land properties, and to be able to legally repossess without political impediments. In addition to efficient land markets and credit systems, titled land needs to be complemented by training, technical assistance and improved market access for increases in productivity and profits to take place.

CHAPTER I. POVERTY AND ITS MACROECONOMIC CONTEXT

1.1 Nicaragua is one of the poorest and least developed countries in Latin America, with a per capita income officially valued at US\$1,000 in 2006 and a total population of 5.2 million. Despite a steady—but small—decline in poverty indicators since 1993, Nicaragua still has very high poverty rates and weak social indicators.

1.2 The economic base for poverty reduction continues to improve, with a continuation of economic reforms and slow but steady economic growth. Despite major shocks from Hurricane Mitch in 1998, a banking sector crisis (2001), and the collapse of coffee prices (2000), overall economic growth has averaged 1.7 percent per capita in real terms during 2001-2006. Recent growth has accelerated, fueled by a surge in investment and rapid growth of exports (see Table 1.1). Inflation throughout the period has been moderate, exchange rate policies have been flexible, and democratic institutions have been maintained despite political volatility.

Table 1.1: Main Macroeconomic Indicators, 1998-2006 (percent)

	1998	1999	2000	2001	2002	2003	2004	2005	2006p
GDP real growth	3.7	7.0	4.1	3.0	0.8	2.5	5.1	4.0	3.7
Real GDP per capita growth	1.8	5.1	2.3	1.5	-0.4	1.6	3.4	2.3	2.0
Share of Value Added, primary sector	21.3	20.8	22.3	22.1	21.8	21.6	21.3	21.2	21.1
Share of Value Added, secondary sector	26.7	27.5	27.1	27.5	27.1	26.8	27.6	27.8	27.8
Private consumption per capita real growth	2.8	4.0	3.5	3.4	3.2	0.8	3.1	3.0	1.4
Gross fixed investment real growth	4.3	27.1	-16.8	-8.4	-7.1	-1.0	4.3	10.1	5.4
Consumer price inflation (year to year)	13.0	11.2	7.1	6.0	3.8	5.3	8.4	9.6	9.2
Real effective exchange rate 2000=100	98.9	96.9	100	100.9	96.9	91.2	88.6	87.7	88.2
Urban population, share of total	54.9	55	55.2	55.3	55.5	55.6	55.8	55.9	55.9
Export growth, constant prices	5.8	12.4	12.5	7.3	-3.5	9.2	16.1	5.3	12.1

Source: INEC, BCN, and World Bank.

1.3 The improved performance in recent years has been the outgrowth of stabilization policies adopted in the early 1990's, which were concentrated in controlling hyperinflation, reducing the fiscal deficit and privatizing public utility companies. A second wave of reforms initiated in 2002 were designed to promote fiscal sustainability through the broadening of the tax base, the elimination of tax exemptions to improve revenue collection, more effective budgeting, and improvement of the financial position of the central bank. The government also sought access to HIPC initiative to gain foreign debt relief. In 2004 Nicaragua reached the completion point under HIPC and bilateral and multilateral debt relief was granted for debt incurred prior to 2005. On the international front Nicaragua joined the DR-CAFTA in 2006 and has signed several trade and integration agreements with its Central American partners. Trade with Honduras, El Salvador and Guatemala is gaining importance, although the United States still remains the main trading partner.

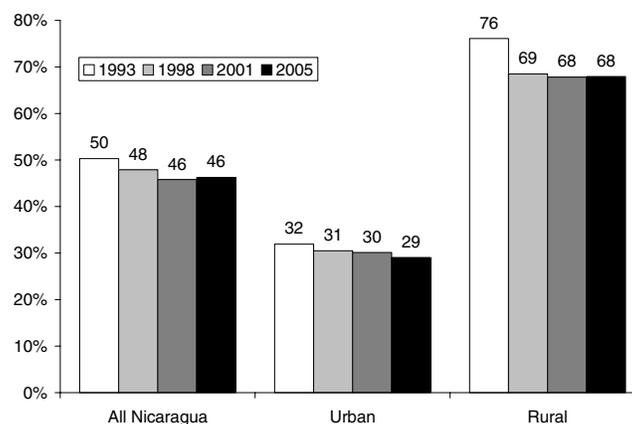
1.4 Nicaragua's long-term development vision is set out in its National Development Plan (NDP), 2005-2009, which gives greater importance to economic growth than the strategy document that preceded it. However, this Plan is already under revision by the recently installed Ortega administration (January 2007). The focus of the new administration has been on maintaining policy continuity, where appropriate, and tackling the pending development challenges, with a special focus on social issues that impact the poorest. These include efforts to improve the country's growth performance while reducing poverty macroeconomic stability as a

necessary, although not sufficient, condition to stimulate growth and reduce poverty, a special focus on social issues that impact the poorest, including the MDGs, and environmental sustainability. Programmatic priorities for the new administration include a renewed focus on poverty reduction using a multi-sector approach, implementing pragmatic solutions to the energy crisis for the short to medium term; expanding water and sanitation services with environmentally sustainable solutions; sharing economic growth more broadly to tackle hunger, malnutrition and poverty; placing greater emphasis on preventive health and continuing social protection programs; extending illiteracy programs and improving education services; and, pursuing municipal decentralization, state modernization and good governance.

A. THE EVOLUTION OF POVERTY AND INEQUALITY 1993-2005

1.5 *Given this rather positive macro environment, what happened to the welfare of the poor?* Despite favorable economic environment, the country as a whole saw essentially no change between 1998 and 2005 in the percentage of Nicaraguans living in poverty, as measured using the standard consumption-based general poverty line and the national household surveys. While overall poverty rates dropped between 1993 and 2001 (Figure 1.1), the current poverty rate of 46 percent is about the same as it was in 2001.

Figure 1.1: Headcount Total Poverty Rates by Area



Source: LSMS 1993, 1998, 2001 and 2005

1.6 More progress has been made in rural areas, with a substantial drop in rural poverty (from 76 percent to 69 percent) between 1993 and 1998. However, since 1998, rural poverty has been virtually unchanged at about 68 percent. In fact, none of the 1998-2005 changes in the overall poverty level are statistically significant. As in many poor countries, poverty is largely a rural phenomenon: 65 percent of the poor and 80 percent of the extreme poor live in rural areas.

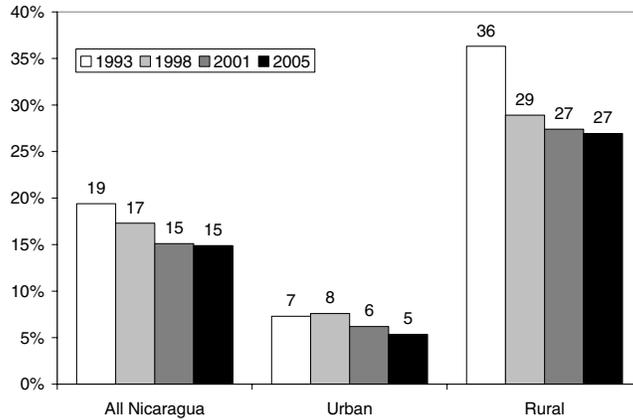
1.7 Despite the slow progress in overall poverty reduction, there has been a surprisingly large and statistically significant drop¹⁰ in the fraction of Nicaraguans living in *extreme* poverty, from 19 percent 1993 to 17 percent in 1998 and 15 percent in 2005 (see Figure 1.2.)¹¹ This implies a 40 percent drop in the extreme poverty rate, compared to only an 8 percent drop in the overall

¹⁰ At the 10 percent level.

¹¹ While the poverty line is defined in terms of a minimum basket of food and non-food requirements, the extreme poverty line is defined as the food requirement only, and is sometimes referred to as the food poverty line.

poverty rate. However, most of this decline occurred before 2001. Since then the level of extreme poverty has been constant.

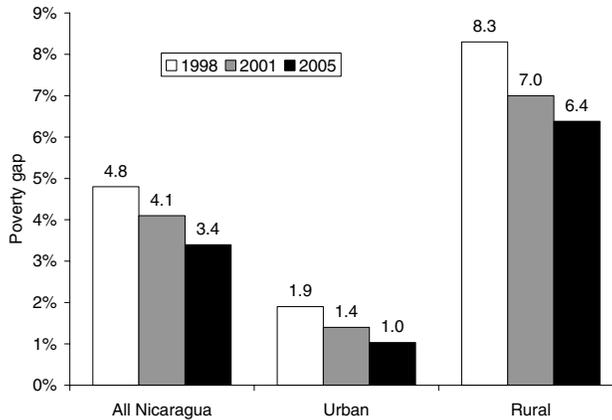
Figure 1.2: Headcount Extreme Poverty Rates by Area



Source: LSMS 1993, 1998, 2001 and 2005

1.8 Because of these substantial changes in extreme poverty, the *poverty gap* has fallen, particularly the *extreme poverty gap*. The poverty gap is an index which measures the average distance, or “gap,” between the consumption level of the poor and the poverty line. The index averages the gap over the entire population and takes it as a percentage of the poverty line. Declines in the poverty gap can be driven by a drop in the fraction of the population that is poor (the headcount) and also by increases in the average level of consumption *among* those who are poor. The extreme poverty gap is simply the poverty gap using the extreme poverty line.

Figure 1.3: Poverty Gaps by Region 1998-2005 (Extreme Poverty Line)



Source: LSMS 1998, 2001 and 2005

1.9 Large declines in the extreme poverty gap are shown in Figure 1.3. For the nation as a whole, the poverty gap has declined from 4.8 percent to 3.4 percent. This represents a decline of nearly 30 percent. Likewise, the extreme poverty gap for urban areas dropped almost by half

from its already low level of 1.9 percent to just 1.0 percent. What this indicates is that while 15 percent of Nicaraguans still live in extreme poverty, the depth of their poverty is notably less than it was in 1998.

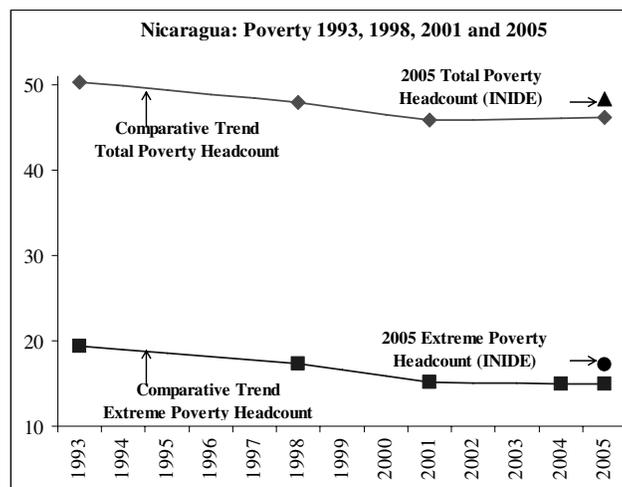
Box 1.1: Measuring and Comparing Poverty

This poverty assessment has the key objective of assessing poverty in 2005, and consistently and reliably comparing poverty in the period between the years of 2005 and 1993.¹² Internationally recognized methodologies that are used in many countries have been applied to the Nicaragua Living Standards Measurement Surveys (LSMS) of 1993, 1998, 2001 and 2005 to determine the poverty lines and poverty rates.

Poverty comparisons for 1993, 1998, 2001 and 2005 are deemed technically valid because the level of welfare associated with the extreme poverty line is kept constant by means of pricing the same minimum caloric intake and by updating the nonfood portion of the general poverty line. In all years, a person is considered extremely poor if his/her total per capita annual consumption is below the extreme poverty line, and a person is considered poor if his/her total per capita annual consumption is below the poverty line.

The 2005 extreme poverty line is determined by computing the annual cost to buy a bundle of food that provides 2,187 Kcal/day.¹³ The per capita annual extreme poverty line in 2005 is C\$3,691 or US\$221 (equivalent to C\$10.25 per person per day or US\$0.61).

The 2005 poverty line is the sum of the extreme poverty line plus an additional amount for the share dedicated to nonfood consumption. This share of nonfood consumption used for the poverty line is the same as that for households whose food consumption is around C\$3,691. The per capita annual poverty line in 2005 is C\$6,918 or US\$413.53 (equivalent to C\$19.22 per person per day or US\$1.15).



The new government of Nicaragua that took office on January 2007 revised upwards the minimum caloric intake to 2,241 Kcal/day and consequently both poverty lines are higher. INIDE's (National Institute of Information for Development, previously called INEC, National Institute for Statistics and Census) per capita annual new extreme poverty line for 2005 is C\$3,928 or US\$235 and the per capita annual new poverty line for 2005 is C\$7,155 or US\$428. As a result, the new poverty rates are not comparable with those published for previous years and it cannot be established if poverty goes up or down with these new lines. The new government figures for 2005 indicate that poverty is 48.3 percent and extreme poverty is 17.2 percent; for these rates to be comparable, the entire series of poverty rates would need to be revised backwards for 2001, 1998 and 1993 with the larger minimum caloric intake.

¹² See Annex 3 for more detailed information on the consumption aggregate and poverty lines.

¹³ This minimum caloric requirement was estimated for Nicaragua using INCAP's (Institute for Nutrition for Central America and Panamá) and PAHO's (Panamerican Health Organization) Table for Daily Dietary Recommendations (Guatemala, April, 1996).

1.10 Regional poverty also shows clear gains for almost all regions, but particularly along the Atlantic and Pacific coasts. Less progress is evident in the Central Region. The 2005 poverty map shows the distribution of poverty on a geographic basis (see Figure 1.4 for the map, and Box 1.2 for an explanation of poverty map). In comparison to 1995, the map shows where poverty has been reduced by municipality.

Box 1.2: Poverty Maps in Nicaragua

Poverty indicators for Nicaragua are generated from household surveys at the regional level, but lack the the required sample size to produce indicators for small geographical areas. Censuses do have information for the entire population of the country, but do not have information on income or consumption, or other poverty indicators. Using the poverty map methodology developed by the World Bank¹⁴, it is possible to take advantage of combining poverty indicators obtained from household surveys with the Census data, to generate poverty estimates for small areas (such as municipalities).

To classify each municipality by poverty level, the poverty gap is used, which is a measure of how far each poor individual is below the poverty line. Each municipality is then classified according to its need for more or fewer resources in relation to the aggregate national poverty gap. If the total amount of resources needed to close the national poverty gap is 100 percent, then each municipality would receive a corresponding share based on its municipal gap. For example, 0.4 percent of national resources are assigned to San José de Cusmapa —municipality with the worst poverty (92.5 percent are poor) —share corresponding to the proportion of this municipality’s poverty gap contribution to the aggregate poverty gap for the entire country. Often municipalities with lower poverty account for a larger share of resources because of the size of their population. For example, Tipitapa in Managua where 9 percent are poor is assigned a 1 percent share of resources.

An updated poverty map has been generated for 2005, which makes poverty estimates available by municipality. This poverty map is a useful tool for targeting public investments aimed at reducing poverty. The map is clear and easy to interpret. The methodology is not complex, and decision-makers can easily explain and justify the use of this tool. In addition, poverty maps for 1995¹⁵ and 2005 can now be contrasted to identify poverty changes by municipality.

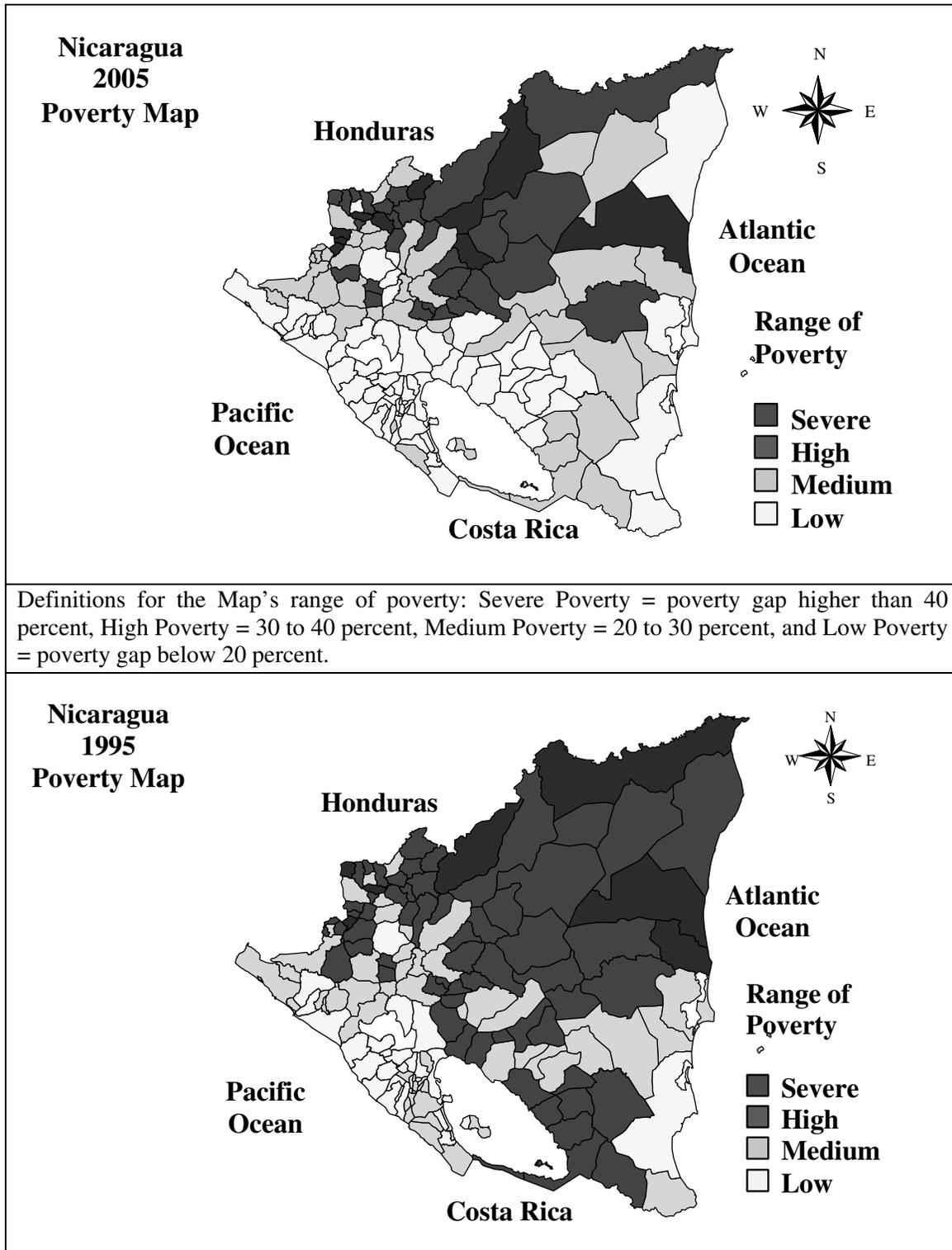
The poverty map may also be combined with other data to provide tailored information for specific programs. For example, to allocate resources from a health project it would be very useful to know which municipalities are poor and at the same time have low health coverage. Information available at the local level from the beneficiaries themselves may also be used for identifying pockets of poverty at the community level that are not detected at the municipal level.

Source: Sobrado et. al. (2007). “Nicaragua Poverty Map.” Annex 4 to Poverty Assessment.

¹⁴ Hentschel et. al. (2000)

¹⁵ The 1995 Map for Extreme Poverty was used by the Emergency Social Investment Fund (FISE), among other public programs, to allocate funds for poverty reduction. World Bank (2001). Nicaragua Poverty Assessment, Report No. 20488-NI.

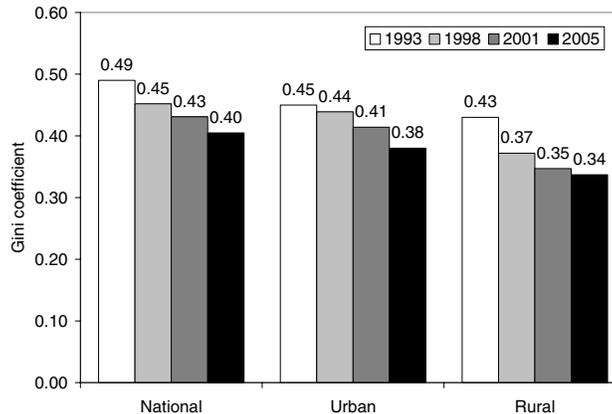
Figure 1.4: Poverty Maps, 2005 and 1995



Source: Sobrado and Rocha (2007). "Nicaragua Poverty Map" Annex 4 to Poverty Assessment.

1.11 According to survey data, there has been a substantial decline in inequality. The Gini coefficient¹⁶ for the country as a whole has dropped from 0.49 in 1993 to .45 in 1998, and to .40 in 2005, and urban and rural areas separately have seen similar drops (see Figure 1.5).¹⁷ Given that Gini indices tend to be stable overtime, this is quite a remarkable change in a relatively short period.

Figure 1.5: Inequality 1993-2005



Source: LSMS 1993, 1998, 2001 and 2005

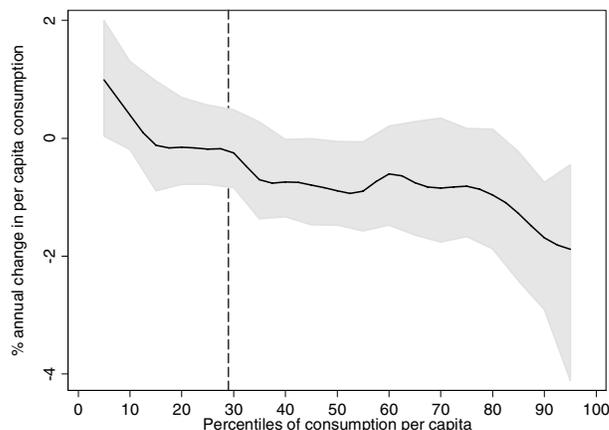
1.12 However, there is good reason to believe that these changes are more of a statistical nature than a reality. The changes in distribution over time can be disaggregated using growth incidence curves (GIC). A GIC is a plot of the growth rate for each decile of the distribution of per capita consumption. The curves are constructed based on the two household surveys, and the annual growth rates reflect average changes over the period. Figures 1.6 and 1.7 examine changes over the 1998-2005 period. The horizontal scale shows percentiles within each area—national or rural—so points at the same percentile different sectors correspond to different levels of consumption. To make this clear, the position of the poverty line in 2005 is shown in each graph as a dashed line at each figure. The extreme poverty line is shown as a dotted line in the rural GICs the figures also show 95 percent confidence intervals for the curves.

1.13 The national growth incidence curve shows the decline in inequality has been driven by two factors: an increase in consumption levels of the poor and particularly the extreme poor, and a sharp fall in consumption at the top of the distribution. Likewise, in rural areas, there are particularly strong gains for those below the extreme poverty line. Of these two factors, however, the drop at the top is by far the most important to the drop of the Gini coefficient. This can be illustrated by the fall in a “trimmed Gini” estimated by dropping the top 10 percent of the population in the national GIC curve. This trimmed Gini fell from just 0.31 to 0.30 between 1998 and 2005.

¹⁶ A measure of inequality in which zero is perfect equality and one is total inequality.

¹⁷ Note that because the 1993 consumption aggregate is not identical to that used in later surveys, comparisons between 1993 and later years should be taken as only suggestive. This is particularly relevant for measures like the Gini coefficient that are sensitive to the entire distribution of consumption.

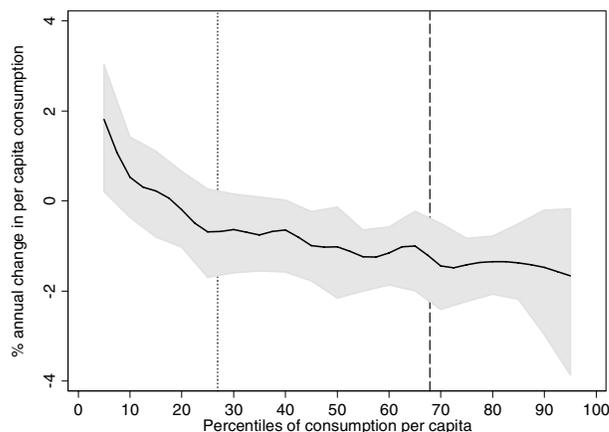
**Figure 1.6: Growth Incidence Curve 1998-2005:
National**



Source: LSMS 1998 and 2005

Note: The dashed vertical line indicates the normal poverty line in 2005. The extreme poverty line is not shown.

**Figure 1.7: Growth Incidence Curve 1998-2005:
Rural**



Source: LSMS 1998 and 2005

Note: The dashed vertical line indicates the normal poverty line in 2005, and the dotted vertical line is at the point of the extreme poverty line in 2005.

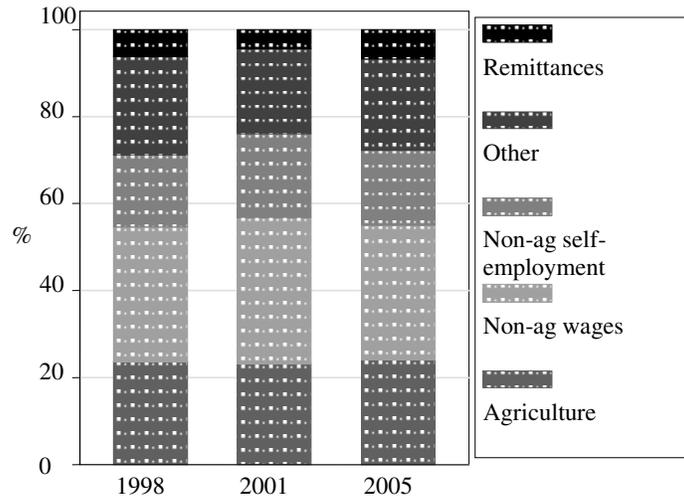
1.14 There have been real gains among the poor, their weight in the total Gini is small and most of the changes in the Gini are because of a decline of the consumption in the upper deciles. However, it seems hard to believe that this has actually occurred; there are two complementary and more likely explanations: one is that there is underreporting of income by the richer households, and the level of underreporting has increased over time. The second likely reason, is that there may have been an increase in the propensity to save, which would tend to reduce consumption. These two possibilities that cannot be disentangled.¹⁸

1.15 Nevertheless, there has been substantial progress in reducing extreme poverty. As shown in the national and rural GIC curves, there have been substantial gains for those living below the extreme poverty line, although not sufficient to push most of them over the line. Thus, extreme poverty has remained relatively constant over the period, but the extreme poverty gap has fallen. *What happened to cause the increase in welfare by the extreme poor?*

1.16 We can get some insight on this question by looking at the sources of income for the poor and non-poor, and their situation with regards to employment and labor earnings.

¹⁸ It is important to recognize that the GICs are based on cross-sectional data, not panel data which tracks individuals over time. As a result, the GICs do not reflect changes in consumption for particular households.

Figure 1.8: Sources Of Household Income By Year

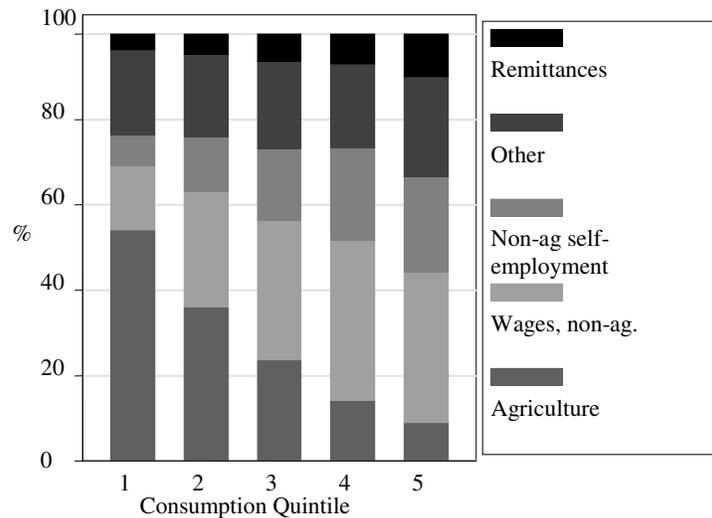


Source: LSMS 2005

Note: Percentages shown are averages of percentages across households, weighted using household sampling weights.

1.17 On average, the profiles of household income sources look very similar in 2005 and 1998. Figure 1.8 shows a breakdown of household income by major sources over this period. Of the five major categories, non-agricultural wages is the largest source of income for the average household, followed by agriculture and a broad category of “other” sources, followed by non-agricultural self-employment and finally remittances.

Figure 1.9: Sources of Household Income by Quintile, 2005

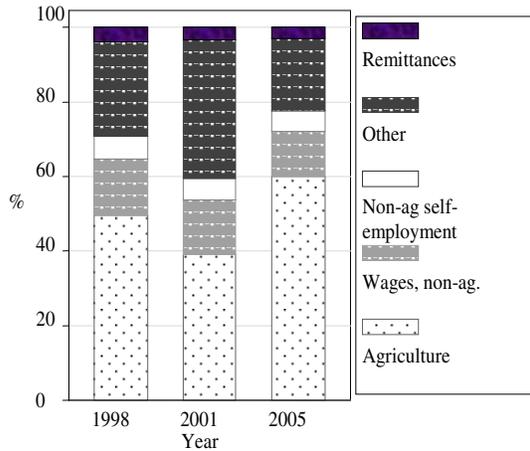


Source: Own analysis of EMNV data.

1.18 However, among the poorest twenty percent of households—those in the bottom quintile—the largest source of income is agriculture (see Figure 1.9). This sector accounts for over 50 percent of the income of lowest 20 percent (compared to less than 10 percent for the

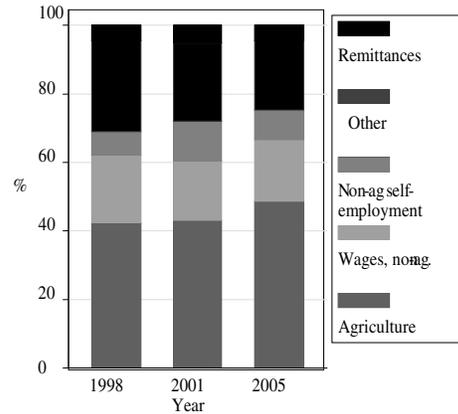
upper quintile). For the poorest, wages and self-employment income constitutes only about 20 percent of their income.

Figure 1.10: Sources of Household Income for Poorest 10 percent: 1998, 2001, and 2005



Source: LSMS 1998, 2001 and 2005

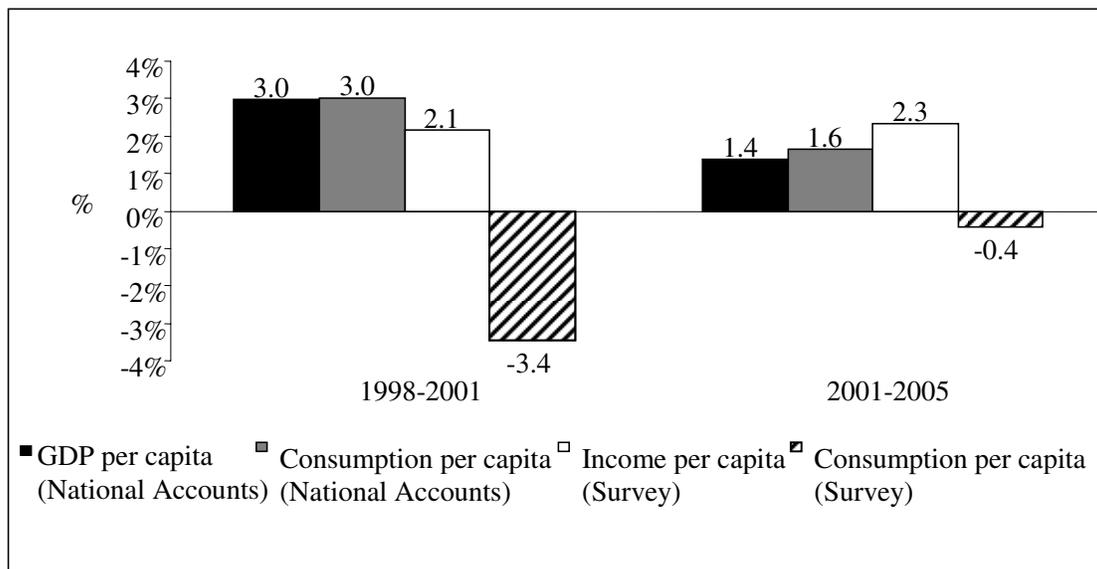
Figure 1.11: Sources of Household Income for 2nd Poorest 10 percent: 1998, 2001, and 2005



Source: LSMS 1998, 2001 and 2005

1.19 *What happened to the income of the lowest quintile since 1998?* Looking at the income of those in the bottom 20 percent of the distribution, it is clear that agriculture has grown in importance for this group. For the poorest 10 percent, agricultural income has risen from 50 to 60 percent of income (1998-2005, see Figure 1.10), while for the second poorest decile it rose from 42 to 48 percent (Figure 1.11). This suggests that the rise in income, and thus consumption, of the poorest may be due in part to an increase in agricultural earnings.

Figure 1.12: Annual Growth Rates of Private Consumption, Income, and GDP per Capita



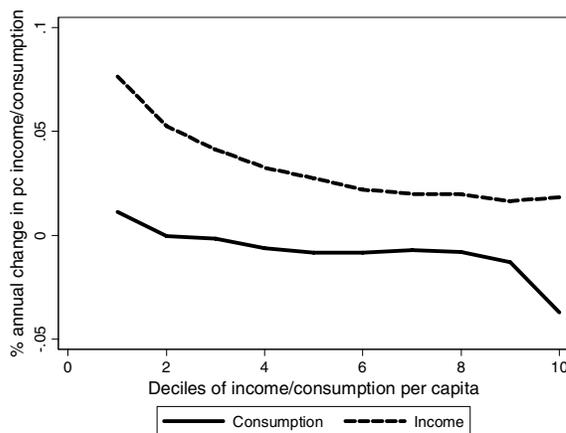
Source: BCN National Accounts, LSMS 2005

1.20 Another factor explaining the sluggish decline in poverty numbers is an apparent gap between the growth of income and the growth of consumption. Following international best practice, poverty is measured here in terms of consumption, rather than income, because consumption is more stable over time and more likely to be correctly reported. However, if we examine the changes in consumption and income over time, we note that income has been rising faster than consumption.

1.21 Income in the household surveys roughly follows the growth of per capita income and per capita private consumption in the national accounts (see Figure 1.12). Yet consumption in the surveys shows a decline. Between 2001 and 2005, per capita consumption rose by 1.6 percent per annum in the national accounts, but declined by -.4 percent if we rely on the survey data. Between 1998 and 2001 the survey shows a decline of -3.4 percent in per capita consumption, but grew by 3.0 percent according to the national accounts. Yet, both national accounts and surveys show positive gains for per capita income. *How is this possible?*

1.22 A comparison of survey income and consumption by deciles also shows substantially higher growth rates for income over consumption, particularly pronounced in the upper decile and in the lowest decile (see Figure 1.13). This gives further weight to the argument that consumption by the upper decile is underreported, but also supports the idea that there has been

Figure 1.13: Growth Rates of Consumption, Income, and GDP per Capita, 1998-2005



Source: LSMS 2005

substantial growth of income and consumption in the lowest deciles. *But why is the growth of consumption so much lower than the growth of income?* Normally, income is underreported, although the survey does include such non-monetary items as owner occupied dwellings, gifts and payments in kind, and self production/consumption. There are three possible reasons for this large gap.

- First, there may have been a large increase in household savings, which squares with the significant increase in fixed investment in 2004-2005;
- Second, households may have purchased consumer durables in increasing amounts – the consumption aggregate reported here

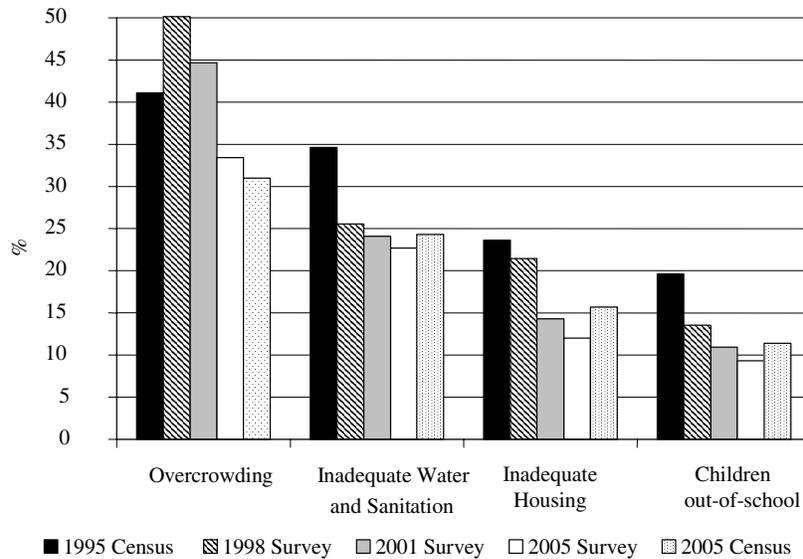
only includes the pro-rated use of the asset. (e.g. the “consumption” of a refrigerator designed to last ten years would be recorded only at one-tenth of its cost); and/or

- Third, it may be traced to the underreporting of consumption or errors in the values placed on the consumption items in the survey, such as the selection of prices for own production, and these biases have increased over time.

1.23 In fact, survey income seems to be much more in line with the growth of GDP per capita and private consumption (see Figure 1.11), while survey consumption is inconsistent with both. *How can this idea of improved welfare over time in Nicaragua be tested?* One way is to look at how the various basic needs change over a period of time. Figure 1.14 shows changes in four basic needs indicators between 1995 and 2005. These are crowding (people per room), access to water and sanitation, housing materials, and school attendance. The Government has defined

levels of adequacy for each of these indicators, to indicate when these basic needs are unsatisfied¹⁹. All four indicators show improvement over the 1995-2005 period; using either Census or LSMS data.

Figure 1.14: Basic Needs Index Components, 1998-2005 (National Level)



Source: Census and LSMS data

1.24 Using just the household survey data, overcrowding has dropped from 50 percent in 1998 to 33 percent, people with inadequate access to water from 26 to 23 percent, households with inadequate housing from 21 to 12 percent, and households with children out of school from 13 to 9 percent. Some of these items reflect better public services (water, schools), but housing quality clearly reflects higher levels of income/consumption. Even improved access to water and schooling requires private contributions to cover costs. It would be hard to believe that significant improvements in housing quality could have occurred without a significant increase in disposable income which has been used to improve the quality and size of dwellings (including better roofs, digging wells for water, improved flooring). Indeed, there is evidence that people define poverty more in terms of housing than income, since housing status is more apparent (see Box 1.3).

1.25 However, poverty is not defined only by material well being, as measured by income and assets, but also in terms of access to services and opportunities. The qualitative survey done for this report shows evidence of economic progress, but a strong perception of stagnancy due to low quality services and lack of access of opportunities. People often point out that opportunities exist for the rich but not for the poor. In addition, poverty is measured by the poor themselves in a more relativistic way; comparing current conditions to past conditions, and in contrast to their neighbors. People see themselves often as poor even in communities where there are no poor according to the quantitative poverty line, while even in communities with 100 percent poverty, people define both poor and non-poor. Poverty is multi-dimensional, and includes such aspects as security, human rights, discrimination and violence. Nicaragua still suffers from chronic problems of violence, some of which are a legacy of the Sandinista-Contra war (see Box 1.4).

¹⁹ Note that the figure shows values calculated from both censuses and surveys, and due to differences in the wording of questions, the values are not fully comparable between the two data sources. In what follows in the text, only the household survey data is used, in order to focus on the changes since 1998.

While clearly much progress has been made in these areas, including the institution of a more democratic political process and greater security, more still needs to be done.

Box 1.3: Defining Poverty: Results from a Qualitative Survey

Poverty indicators used in conventional poverty work are not always able to reflect on the complexity of community dynamics and settings. In a rural community in the municipality of Quilali most households are considered poor or extremely poor using quantitative measures of consumption. During a wealth ranking exercise people categorize members of the community as poor, very poor, moderate and rich. Contrary to other more wealthy communities in the sample where having a car, a profession or a stable job matter, in this community having food daily makes a household not poor, and owning arable land makes a person fall somewhere between moderate and rich¹. The main indicator however is the house; owning a home versus renting or squatting and as well as the type of house are indicators used in this community as a measure for economic welfare. A household with a bigger and nicer dwelling is considered not poor, regardless of their consumption ability. In a rural community in Waspmam, people noted that the abundance of fish and other food resources enable even the poorest people to eat; one person said “food is not the problem in the community, it is the lack of housing and good land that make people vulnerable”.

Source: Del Carpio “Voices of Nicaragua”. Background Paper to Poverty Assessment

Box 1.4: On-going Security Concerns and War Memories Negatively Affect Nicaraguans

Security concerns are an important part of the lives of the poor, and range from petty theft to gang violence and natural resource conflicts. In a rural community in the Pacific region, the community is dominated by one big family; members of this family threaten outsiders from coming into the community while terrorizing the locals via threats (including gun use and poisoning of drinking waters). One man said, “They stand on the corners and night, drunk and on drugs. I am very afraid at night because I have been robbed by them before. There are two gangs in the community, but we are lucky because they attack outsiders more than insiders”. The police avoid coming into the community to deal with crime reported because of the strength of the gang. Service providers, such as water and electricity, refuse to come into the community to install new services.

Remnants from the war still permeate the memories of people. The large scale displacements during the war re-shaped the social dynamics of many communities and interrupted the strengthening of existing social networks; people in a rural community in RAAS agreed that some of the leadership and organizational voids that exist today evidence the effects of the war on the people. In one community in RAAN community members consider that the divisions that currently exist in the community are a direct result from the war. The ex-combatants have designated themselves as leaders however only part of the community supports them and the other part supports the elected leaders. One person interviewed stated that her fear of being killed is still very present because her son deserted during the war. Another woman who fought being displaced stated that “in the time of war the Sandinistas wanted us to leave the community, but we did not leave because we felt that if we were going to die it was better to die here; my son however was taken when he was 12 by the military service but he was so small that they left him on the road and he escaped. When he was 16 the contras captured him and I never knew anything about him again”.

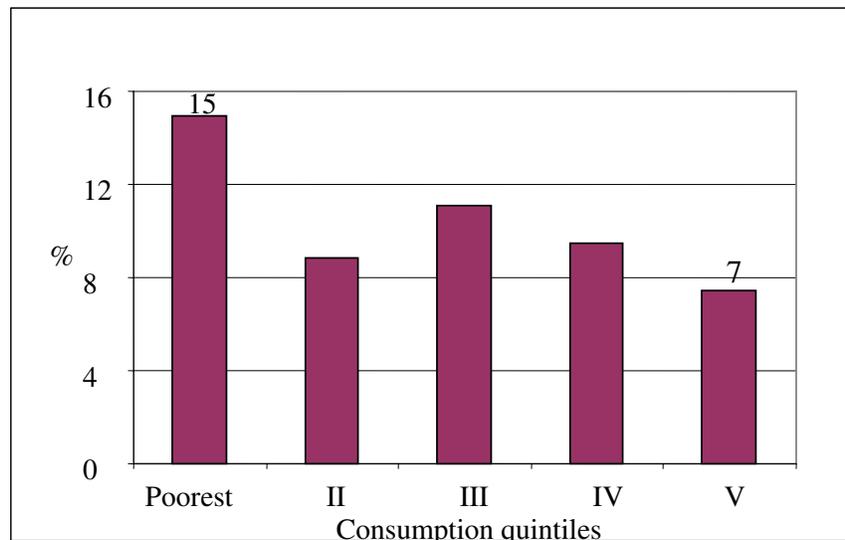
Source: Del Carpio “Voices of Nicaragua”. Background Paper to Poverty Assessment

B. EMPLOYMENT AND LABOR INCOME

1.26 The poor, in particular, have few assets, and their ability to earn income depends on the sale of their labor income in the labor market, or their ability to produce as self-employed farmers or artisans. Trends in employment and labor income will have an important bearing on welfare and poverty. *What has happened to labor income, and does it substantiate the idea that welfare has improved for the poor?*

1.27 During the past five years, Nicaragua started seeing an important change in the population structure, with working age population (those between 15 and 64 years of age), increasing its share of total population. Working age population grew at an average rate of 2.7 percent per year, compared to a 1.7 percent population growth, during the period 2001-05. This means that each working adult now has to support a lower number of dependants. However, it also means that a large fraction of the population will have to find jobs. Between 2001 and 2005 the economy had an inflow of around 350,000 new workers. Furthermore, the cohort ages 10 to 15, which will have completed the transition into working age within the next 5 years, will potentially imply an additional 590,000 workers in the labor market²⁰. Thus the opportunities and challenges offered by this population transition will continue to be present in the next decade.

Figure 1.15: Remittances as a share of household consumption



Source: LSMS 2005

1.28 One outlet for the growing labor force continues to be out-migration. It is estimated that about 20-30,000 Nicaraguans migrate every year, and 10 percent of the Nicaraguan population now resides abroad, chiefly in Costa Rica and the United States. Official remittances have increased 90 percent during the last ten years reaching \$600 million in 2005 (or an amount equal to 40 percent of total exports and 12 percent of GDP). Most migrants do not come from poor families, but rather are those with more education, and 68 percent of remittances go to families in the upper two deciles. Nevertheless, the impact of remittances on reducing poverty is significant. Remittances constitute 15 percent of the income of the lowest decile, versus 8 percent for the upper two deciles (see Figure 1.15). Thus, they have been a significant factor in raising the

²⁰ This increase is net of those aged 60 to 64 who will be exiting the labor market.

welfare of the poor. Without remittances, the overall poverty rate would have been 4 percentage points higher, as would the extreme poverty rate (see Table 1.2).²¹

Table 1.2: Poverty Rates with and without Remittances (percent)

	Total consumption (a)	Consumption without remittances (b)	Difference (a-b)	Standar d Error
Poverty rate				
National	46.0	49.9	-3.9	1.4
Urban	28.9	34.3	-5.4	1.8
Rural	67.7	69.6	-1.9	1.5
Extreme Poverty				
National	14.8	19.3	-4.5	0.8
Urban	5.4	10.9	-5.5	0.8
Rural	26.6	29.8	-3.2	1.4
Source: LSMS 2005, World Bank estimates				

1.29 Within Nicaragua, the growing labor force was absorbed disproportionately by the manufacturing and agricultural sectors. Almost all sectors experienced positive employment growth during 2001-05. Average annual total employment growth was 4 percent, which exceeded the growth in the labor force (3 percent). The growing labor force was largely absorbed by the agricultural, manufacturing and commerce sectors. These sectors account for around 67 percent of total employment, and they accounted for 84 percent of total employment growth (see Table 1.3). Agriculture alone accounted for 40 percent of employment growth, with a growth rate of employment of 4.8 percent per annum.

Table 1.3: Evolution of employment by sectors 2001-2005

Sector	Average annual employment growth (%)	Share of total employment generation (%)	Change in the share of total labor force (percentage points)
Agriculture	4.80	39.5	1.11
Mining and Utilities	-3.25	-1.0	-0.32
Manufacturing	8.99	29.8	2.52
Construction	-0.04	-0.1	-0.76
Commerce	2.65	15.2	-1.09
Transport	2.35	2.3	-0.23
Financial Services	7.18	5.2	0.36
Government Services	5.39	4.2	0.17
Community Services	1.13	4.8	-1.77
Total employment	3.90	100.0	0.02
Labor force	2.98		

Source: LSMS 2001 and 2005

1.30 Over 56 percent of the poor were employed in agriculture in 2005, and this share seems to have increased from 2001 to 2005 (see Table 1.4)²². Employment by the poor employed in

²¹ For further discussion of remittances and their impact, see background paper Herrera and Murrugarra (2007)

manufacturing also increased significantly, from 8.8 percent to 11 percent. The rising share of employment in agriculture is significant, since it runs counter to the normal development model in which labor with low marginal productivity in rural areas is gradually assimilated into higher productivity jobs in urban areas, with resulting higher productivity for those remaining in agriculture, and expansion in farm size. *Why is the reverse happening in Nicaragua?*

Table 1.4: Employment by sector and poverty level, shares of total employment (percent)

Sector	Poor		Non Poor		Total	
	2001	2005	2001	2005	2001	2005
Agriculture	53.57	55.66	16.98	17.25	31.71	32.82
Mining and Utilities	0.95	0.76	1.54	1.13	1.30	0.98
Manufacturing	8.85	11.04	14.10	16.89	11.99	14.51
Construction	5.09	3.83	5.39	4.98	5.27	4.51
Commerce	12.99	11.85	29.53	28.56	22.87	21.79
Transport	1.86	1.90	5.33	4.93	3.93	3.70
Financial Services	1.15	1.03	3.74	4.44	2.70	3.05
Gvt. Services	1.24	1.40	4.14	4.34	2.97	3.15
Community Services	14.30	12.54	19.25	17.49	17.26	15.48
Total	100.00	100.00	100.00	100.00	100.00	100.00

Source: LSMS 2001 and 2005

1.31 The explanation seems to be that the amount of labor that has to be absorbed increased 2001-2005, during a period of limited growth, given the increase in the numbers aged 15-64, and an increase in the labor force participation rate. The result was declining labor productivity in both agriculture and manufacturing (see Table 1.5). Output per worker declined by 9 percent in agriculture, 16 percent in manufacturing and 2 percent overall.

Table 1.5: Employment shares and productivity, by sectors of economic activity

Sector	Output per worker (1994 \$C)			Employment/population of working age		
	2001	2005	Percentage change	2001	2005	Absolute Change
Agriculture	10,973	9,988	-9.0	19.21	20.60	1.39
Manufacturing	25,032	21,097	-15.7	7.26	9.11	1.85
Mining and utilities	43,097	55,364	28.5	0.79	0.62	-0.17
Construction	14,701	15,393	4.7	3.19	2.83	-0.36
Commerce	12,505	13,005	4.0	13.86	13.68	-0.18
Transport	28,418	31,084	9.34	2.38	2.32	-0.06
Government	37,223	32,239	-13.4	1.80	1.98	0.17
Other	14,308	15,643	9.3	12.09	11.64	-0.45
Average/Total	15,757	15,477	-1.8	60.59	62.78	2.19

Source: LSMS 2001 and 2005

²² The Household survey for 2001 shows a rural share of the population that is inconsistent with the census. According to the household survey (LSMS 2001), the share of rural population increased between 2001 and 2005. The census shows the opposite. Apparently the survey of 2001 is underestimating the rural population. If this is the case, the increase in the share of employed in agriculture might be due exclusively to under-representation of rural households in the survey of 2001.

1.32 Given lower productivity, one would expect to see lower wages in these sectors as well. Indeed manufacturing wages did decline slightly during the period (-2 percent), however agricultural wages increased by 17 percent (Table 1.6). Given the importance of agriculture for the poor, it is important to explain how labor productivity fell while wages rose in agriculture.

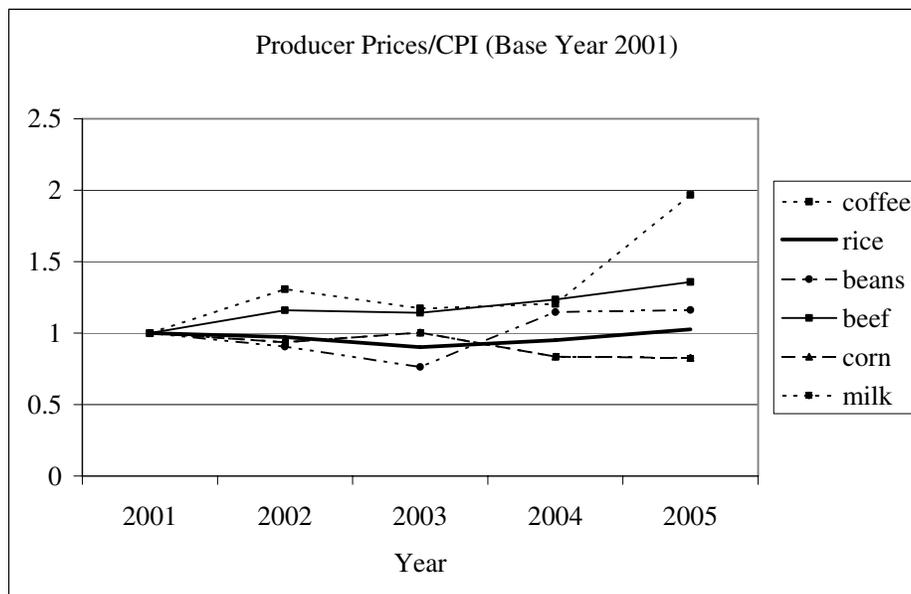
Table 1.6: Wages by sector of economic activity

Sector	Median wage (2001 \$C)		
	2001	2005	Real growth (%)
Agriculture	6,840	8,018	17.2
Mining and Utilities	20,000	23,495	17.5
Manufacturing	12,600	12,364	-1.9
Construction	10,080	10,000	-0.8
Commerce	13,329	13,364	0.3
Transport	18,900	18,327	-3.0
Financial Services	18,175	21,238	16.9
Government Services	23,665	25,833	9.2
Community Services	12,179	14,118	15.9

Source: LSMS 2001 and 2005

1.33 The explanation of this seems to lie with the terms of trade, which substantially improved in agriculture over the period. Since productivity is measure in constant price output per worker, changes in agricultural output prices which increase real earnings in agriculture are not captured. Improved terms of trade allow or induce farmers to hire more workers since declining marginal physical products for additional workers are offset by higher marginal revenue products. Terms of trade for agricultural products are shown in Figure 1.16 below (= producer prices/CPI). Relative prices for coffee rose almost 100 percent between 2001 and 2005 (after a sharp drop in 2002), while prices for corn (maize), beans, and meat are 30-40 percent higher.

Figure 1.16: Terms of Trade for Major Agricultural Products



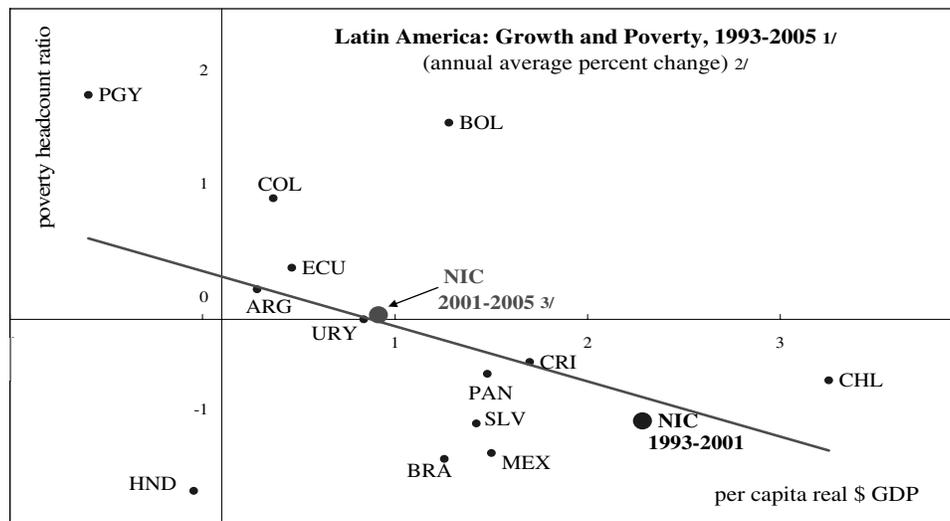
Source: BCN

1.34 But what does this imply for the future? If a significant portion of the employment and income growth of the poor is due to a (temporary) rise in the agricultural terms of trade, what will happen if these terms of trade trends reverse? The answer is likely a new movement of labor out of agriculture, and downward pressure on wages in all sectors, but particularly those affecting the poor with low levels of education. Thus, while the situation may have improved 2001-2005 by more than what would be indicated in the household surveys, it seems urgent that the government adopt a strategy to accelerate poverty reduction.

C. WILL GROWTH REDUCE POVERTY IN NICARAGUA?

1.35 The fastest way to reduce poverty is to accelerate growth. In general, studies show that there is usually a clear and close relationship between growth and poverty reduction.²³ However, individual countries do have variations in performance. Does Nicaragua's slow poverty reduction trend arise from slow growth or from a weak relationship between growth and poverty reduction?

Figure 1.17: Latin America: Growth and Poverty 1993- 2005



Source: World Development Indicators
 1/ Excluding Peru, Dominican Republic and Guatemala which are outliers.
 2/ Nicaragua data for 2001-05 from WDI and the authorities' poverty surveys.
 3/ For headcount ratio, the value measured is the annual average change in the "level" of the headcount ratio.

1.36 Nicaragua, similar to other countries with a per capita GDP growth of roughly one percent from 2001 to 2005, experienced no change in poverty during this recent period (see Figure 1.17). Only higher levels of growth, such as Nicaragua had over the longer period of 1993 to 2001, have resulted in decreasing poverty. The observed relationship between poverty reduction and growth for many countries confirms that unfortunately growth can occur with no declines in poverty, but in contrast, countries have not experienced a drop in poverty rates where economic growth is nil or close to zero. We can quantify the simple relationship between growth and poverty using a poverty-growth elasticity. This is calculated by examining changes between two points in time. It is simply the annual percentage change in the poverty rate divided by the annual growth rate of GDP per capita. Note that in general we expect such elasticities to be negative, as an *increase* in GDP per capita is typically associated with a decrease in poverty rates.

²³ Dollar and Kraay (2002)

Table 1.7: Poverty Headcount Elasticities with Respect to Growth: 1998-2005

Period	General poverty elasticity	Extreme poverty elasticity
<i>Short Term</i>		
1998-2001	-0.5	-1.5
2001-2005	0.2	-0.3
<i>Long Term</i>		
1993-2001	-0.5	-1.3
1998-2005	-0.2	-1.0
1993-2005	-0.4	-1.1

Source: Own analysis of LSMS 1993, 1998, 2001, 2005.

Table 1.8: Poverty Elasticities for Countries in Latin America and the Caribbean

	Moderate poverty	Extreme poverty
Argentina	-1.0	-2.1
Bolivia	-0.5	-
Brazil	-1.7	-2.0
Chile	-1.3	-1.9
Colombia	-0.4	-1.7
Costa Rica	-1.1	-1.5
Ecuador	0.6	-1.6
Honduras	-1.4	-1.7
Jamaica	-1.2	-
Mexico	-0.6	-1.0
Nicaragua	-0.4	-1.2
Panama	-0.1	-1.4
Peru	1.0	0.7
Paraguay	-2.5	0.3
El Salvador	-2.3	-3.1
Uruguay	-2.4	-3.6
Venezuela	-0.9	-1.5
Average	-0.9	-1.5

Source: Own analysis based on SEDLAC database poverty figures and World Development Indicator GDP per capita numbers.

1.37 Elasticities calculated for both general and extreme headcount poverty over various periods are shown in Table 1.7. The most important figure is the elasticity measured over 1993-2005, the longest period for which poverty data is available. Over this period, the general poverty elasticity was -0.4 and the extreme poverty elasticity was -1.1. Given 2005 poverty headcount of 46.2 percent, the general poverty elasticity of -0.4 implies that for each one percentage point of growth of GDP per capita, overall poverty would decline by 0.18 percentage point. Likewise, given the 2005 extreme poverty level of 14.9 percent, the extreme poverty elasticity of -1.1 indicates that for each point of growth of GDP per capita, extreme poverty would drop by 0.16 percentage point. Even though poverty showed little change over the most recent short period (2001-2005) these long-term elasticities indicate that Nicaragua has the potential to substantially reduce poverty over the long term if it could maintain high rates of growth. In fact, Nicaragua will need GDP growth averaging 5.5 percent per year between 2005 and 2015 to reach its extreme poverty MDG at 9.7 percent from the current 14.9 percent.

1.38 How does the effectiveness of growth in reducing poverty in Nicaragua compare with the experience of other countries in the region? Estimates of the poverty-growth elasticities for all countries in the region are shown in Table 1.8 for multiple years of poverty estimates. Note that these estimates employ all available poverty data from household survey²⁴. Nicaragua is below average for the region; for moderate poverty the regional average is -0.9, compared to -0.4 for Nicaragua. For extreme poverty, Nicaragua's is -1.1, compared to a regional -1.5. However, these elasticities are based on the household surveys which may be understating the growth of consumption and the decline in poverty. Nevertheless, Nicaragua needs to do better both in raising overall growth, and increasing the poverty impact of that growth.

1.39 *How can Nicaragua increase the impact of*

²⁴ In the case of some countries, poverty estimates from only two different years are available. Consequently the length of the "long-term" varies by country.

growth on the poor? To understand how to reduce poverty, one must first look at the causes of poverty. Through regression analysis, one can examine the *correlates* of economic welfare, that is, the relationships between per capita consumption and other variables: geographic location, education and demographics of the household head, employment status and sector of household head, household composition, and access to infrastructure. These correlates hint at causation, but do not prove that there is a link.

1.40 Table 1.9 displays results from this analysis. The results show that as a whole, consumption levels of other regions and Managua have moved towards convergence. In other words, the gaps between other regions and Managua have declined. Most strikingly, controlling for other variables, consumption levels in the Rural Atlantic region, which were 30 percent those of Managua in 1998, were equal to those of the capital in 2005.

1.41 Overall, the relationship between consumption and the main explanatory variables has remained remarkably constant over time. In all three years, female-headed households were no poorer than male-headed households, while those with younger household heads (under age 35) were 9-13 percent poorer. Education levels are strongly and consistently associated with higher household consumption. Completion of primary and secondary education for the household head is associated with consumption gains of 17 and 36 percent, respectively, over a household with a head who has not completed primary.

1.42 Household access to services is consistently associated with higher consumption. Households with piped water, electricity, and paved roads are significantly better off. Note that these may not reflect the effects of access to services but rather the fact that better off households are more likely to be able to afford utilities and to be located closer to paved roads. However, the link between consumption levels and paved roads has actually weakened over time. Households with paved roads were on average 22 percent wealthier in 1998 and only 11 percent wealthier in 2005. This probably is due to the massive expansion of paved roads that took place after 2001, which expanded paved roads into areas that are not as well off.

1.43 The results for household composition show that larger households are less well off in general, particularly those that have more children and babies. This is unsurprising, because young children consume household resources but are not productive themselves. However, even households with more seniors and adults—who are both consumers and producers—have lower consumption levels on a per capita basis.

1.44 This analysis stresses the key role of education in raising productivity. Yet Nicaragua has one of the lowest education levels in Latin and Central America. It ranks only below Guatemala, both in terms of education level of its urban and rural population (see Table 1.10). The average years of schooling of the urban population is 6.9, compared to a regional average of 9.0; in rural areas the gap is between 3.1 and 4.9.

1.45 A qualitative survey undertaken for this report interviewed poor people in various localities to identify problems and priorities. It noted severe problems in the education system, including overcrowding and poor facilities and teachers, and the need for young people to work, particularly in rural areas. Schooling seems to be particularly important for generating remittances. While all income groups benefit from remittances, the majority go to families in the upper deciles, rather than the poor. The reason for this is that the people who migrate tend to be those with the most education. In general, Nicaraguans with primary education go to Costa Rica; those with a secondary education go to the United States where returns to migration are much higher. Hence even if education leads to migration, it will raise family income. Thus, it would

seem that a successful poverty reduction strategy will have to combine both growth that produces good employment opportunities and accelerating the progress in educational achievement.

Table 1.9: Correlates of Consumption in Nicaragua: 1998-2005²⁵

	1998	2001	2005
<u>Region</u>			
Urban Pacific	-0.28	-0.19	-0.20
Rural Pacific	-0.27	-0.11	-0.15
Urban Central	-0.22	-0.16	-0.15
Rural Central	-0.33	-0.23	-0.22
Urban Atlantic	-0.03	0.03	0.07
Rural Atlantic	-0.30	-0.04	-0.03
<u>Household head</u>			
Female	-0.03	-0.03	-0.01
Under age 35	-0.13	-0.13	-0.09
Primary education	0.14	0.14	0.17
Secondary education	0.37	0.37	0.36
More than sec. education	0.86	0.82	0.87
Not in labor force	0.07	0.09	0.10
<u>Household head sector</u>			
Agriculture	0.09	0.08	0.06
Mining	0.08	-0.04	-0.08
Manufacturing	0.02	0.04	0.03
Gas, Elec, Water	0.08	0.11	0.10
Construction	0.04	0.01	0.00
Commerce	0.17	0.18	0.18
Transport	0.30	0.27	0.17
Financial Services	0.22	0.24	0.14
Community Services	0.04	0.02	0.00
<u>Household services</u>			
Piped Water	0.17	0.18	0.19
Electricity	0.22	0.23	0.21
Paved Road	0.22	0.19	0.11
<u>Household composition</u>			
# babies (under 5)	-0.17	-0.15	-0.16
# children (5-14)	-0.14	-0.14	-0.14
# adults	-0.05	-0.06	-0.07
# seniors	-0.10	-0.04	-0.06
Constant	9.34	9.10	9.10
Number of observations	3827	4165	6856
R-squared	0.56	0.57	0.55

Source: Own analysis of LSMS 2005

²⁵ Notes: Results shown are coefficient estimates from regressions with log per capita consumption as the dependent variable. Observations are at the household level, and household weights were used for the analysis. Estimates significant at the 5 percent level are shown in bold (robust standard errors were calculated taking into account the two-stage sampling for the surveys.) Omitted dummy categories correspond to a household in the Rural Central region with an unemployed head with no education.

Table 1.10: Average Level of Education of Population 25 to 64

Country	Year	Urban	Rural
Bolivia	2004	8.9	4.9
Brazil	2005	7.8	3.8
Colombia	2005	9.7	...
Costa Rica	2005	9.6	6.8
Dominican Rep.	2005	9.1	6.2
Ecuador	2005	10.4	5.6
El Salvador	2004	8.6	3.8
Guatemala	2004	6.5	2.4
Honduras	2003	7.5	3.5
México a/	2005	9.6	6.0
Nicaragua	2001	6.9	3.1
Panama	2005	11.1	7.0
Peru	2003	10.6	5.3
Uruguay	2005	9.9	...
Venezuela (Nacional total)	2005	8.9	...
Regional Average		9.0	4.9

Source: Nicaragua own estimations based on 2005 survey. Other data: CEPAL

D. PRIORITIES AS IDENTIFIED BY THE POOR

1.46 The level of poverty, and means to reduce it, can often be best seen through the eyes of the poor, themselves. Their priorities for development reflect their needs, and the areas in which they feel they are “poor”. The qualitative analysis referred to earlier used a semi-experimental game²⁶ conducted in 15 communities²⁷. The participants for this instrument are two distinct groups, the first a group of 4-5 leaders in the community and the second, a group of 4-5 ordinary people (constituency) living in the community. Participants are given a hypothetical amount of money totaling C\$1,350,000 (approximately US\$8,000) in two stages, in a structured manner, and asked to assign the funds to anything they believe would contribute to the development of the community (results are summarized in Table 1.11).

Leaders and people agree on the top priority: Potable Water

1.47 This analysis took into account the project requests, as well as the discussion between participants, of 15 out of all 18 studied in the qualitative work. Drinking water alone was requested 19 times out of 198 total requests; people requested a water program (which means from a cured well to a pump) in every region except Atlantic rural. This can be interpreted as an indicator that the inadequacy of water sources is a general problem with a strong likelihood of being true beyond the communities visited. The other water related project (*aguas negra* or sewages, latrines, septic tanks) directly related to hygiene and indirectly linked to the availability of clean drinking water was also among the top 10 priorities where leaders and common people coincided (although not mentioned in Managua).

²⁶ The instrument is considered semi-experimental game because it is intended to be exact everywhere and hypothetical money is distributed to identify patterns of behavior across a group.

²⁷ See Castro, Del Carpio, Premand and Vakis (2007) for more details on the exact methods applied and the background work done.

Table 1.11: Priority Programs as Reported by Leaders and People

MAJOR THEMES	LEADERS	PEOPLE	BOTH
	%	%	%
Water project (drinking and septic)	13.9	14.1	14.0
Construction and repair of street/roads	11.7	13.0	12.5
Productive opportunities	12.9	12.0	12.4
Health center/personnel/goods	11.0	10.0	10.5
House building or improvements (poor or single moms)	6.9	8.3	7.6
School (pre-school, primary and secondary)	7.9	5.0	6.5
Electricity/solar power/street electricity	5.6	4.1	5.1
Vocational school/training	5.8	4.1	5.0
Recreational park/sports for youth	4.9	4.1	4.6
Church	23.0	1.0	2.0
Other	15.8	24.3	19.9

Source: Data derived from the outcomes obtained through Semi-Experimental exercise

Note: Various Categories are aggregated into one for ease of presentation

The construction of roads and repair of existing roads is also listed as a top priority by leaders and people in general

1.48 Roads, whether *adoquinado* (road brick construction) or repair, are mentioned by the leaders in all communities visited as priorities for improving well-being. This theme includes roads inside the community (streets) or roads leading to the urban area; other communication programs mentioned as lacking and affecting progress are bridges. Roads and bridges are key for maintaining access to schools and health centers, particularly in the rainy season when students often have to drop out of school because of flooded roads. The emphasis on roads and water comes despite significant progress and expenditures in these areas in the recent past.

Having limited productive opportunities is a resonant theme nationwide

1.49 The limited availability of productive tools, skills and resources leads both leaders and people to believe that programs such as a locally managed credit fund, agricultural inputs, livestock (cows, chickens and pigs), the creation of a local market and a distributing center are part of the answer to development in their communities. In table 1.11 it can be observed that both leaders and common people (13 percent and 12 percent respectively) place productive opportunities among the highest categories of programs they perceive as important. The 24 percent allocated to the other category under the people column represents various poverty themes in the social dimension; for example food for the poor, help for the disabled, help for street children, single mothers, old folks home and assistance in financing holiday celebrations. Leaders tend to assign resources toward infrastructure and productive projects such as those mentioned in table 1.11, as well as the purchase of land for cultivation.

Health and education, infrastructure and services, are at the top of the list for leaders and for people

1.50 Leaders and people mentioned that the lack of a pre-school, inadequate size primary, a local secondary school and a health center inhibited the development capacities and limited their progress. Both, the services (paying for doctors and nurses and buying books and hiring more

teachers) and infrastructure appear to be equally important; and are priorities for both groups. Scholarships for secondary students and vocational training for carpentry, computers, sewing and other skills were also mentioned as projects with strong potential given the demands for their skills in the market. In terms of health, the chronically ill are identified as a vulnerable group in need of assistance; the short supply of free medicines for this segment of the population is a common concern among leaders and people in the Atlantic and Central regions. In general, education seems to be a lower priority than one would expect. This may reflect a bias against general education, which has long-term benefits to the welfare of the children of the poor, and a bias in favor of programs that directly raise productivity now, such as technical training. It may also reflect the fact that focus groups tended not to include youth, who were at work or at school. Including youth might tip the priorities to a greater emphasis on education (see Box 1.5). But it is consistent with survey results indicating the majority of the population thinks the quality of the present education system is adequate (see Chapter II).

Box 1.5: Youth Priorities: Jobs, education, recreational facilities and family

The findings related to the youth derive from youth aspirations focus groups, for both males and females. In all communities, four priority areas are mentioned: access to job opportunities, ability to continue education, access to sports related infrastructure and having children and a spouse. Males tend to focus on jobs, sports activities (soccer and baseball) and vocational education. Women focus more on regular education with some mention of vocational training, having a husband and children, and having entertainment activities related to church as well as a gathering place to hang-out with other women their age. Most of the young people interviewed believe that education is the solution to escaping poverty; one young lady in the Atlantic urban said “I want to study more to have more, it’s possible if I study, I know I can be better off”. Another important finding that is widely shared among both genders is that they want to have a better job than their parents because their life and their parents’ lives are too hard and they want a better life for their children. One woman in RAAN said “I don’t want to wash clothe and iron for a living like my mother, life is too tough that way”.

Source: “Voices of Nicaragua” May 2007

E. POLICY RECOMMENDATIONS

1.51 Poverty reduction has been slow in Nicaragua, but substantial progress has been made by those in extreme poverty. In addition, there is some reason to believe that the household survey data are understating the level of progress, which is more apparent in other indicators. Still, the decline in extreme poverty and the extreme poverty gap from 1993 to 2005 indicates improvements in the levels of well-being of the very poor. Progress in poverty reduction in Nicaragua can be explained by three fundamental mechanisms:

- First, a reduction of the dependency ratios among the poor, which means that a larger share of family members is working; in manufacturing, mainly *maquila*, agriculture and, to a lesser extent, commerce.
- Second, a considerable increase in migration of people from a different profile than in the past, occurring precisely after 2001 and captured by the 2005 LSMS. These new migrants have Costa Rica as their main destination, are among the poor with less education, and their remittances tend to favor the poor bringing an average of US\$65 per month of additional income, which is about the wage of a rural worker in Nicaragua.

- Third, an improvement in the terms of trade for agriculture with substantial gains for the self-employed and better producer prices for coffee, meat, maize and beans, which are produced by small farmers.

1.52 While progress in poverty reduction in Nicaragua has been made in recent years, prospects for future improvements are rather fragile. Growth in the population of working age, and increasing participation rates, make it more urgent that rapid economic growth provides employment opportunities in the future for a growing labor force. Out-migration will have only a limited effect in reducing this labor force pressure. While recent favorable changes in the terms of trade for agriculture have provided opportunities for expanded employment in this sector, this effect could be reversed in the future, further adding to pressure on employment and wages. Therefore, critical areas for future focus for the Government include:

- Finding ways to accelerate growth, and to spread the effects of growth more equitably among the population;
- Improving basic infrastructure, particularly water supply and rural roads;
- Focusing on programs that directly raise productivity – credit, irrigation, technical training, etc., and
- Further improving basic health and education services in order to improve the productivity of the labor force.

CHAPTER II. OPPORTUNITIES FOR HUMAN DEVELOPMENT

2.1 Human development issues related to education, health, nutrition, access to clean drinking water and sanitation are fundamental indicators for assessing the depth of poverty. Without access to these basic services the vicious circle of poverty persists from one generation to the next.

2.2 This chapter examines the progress Nicaragua has made in achieving the Millennium Development Goals (MDGs) on key issues related to extreme poverty, health indicators (such as infant and maternal poverty), and access to clean drinking water and sanitation. Despite some progress, the country is likely to meet less than half its goals set for 2015 if policies had not been modified and serious gaps exist in maternal and infant health and nutrition indicators. Following the assessment of the MDGs, this chapter provides a detailed evaluation of the progress, challenges, and key policy options for improvement in the areas of education, health, nutrition and water and sanitation.

Key findings of this chapter:

- Expanding the access to and quality of primary education to meet the MDG of universal primary education and reducing illiteracy by half by 2015. The education system in Nicaragua faces significant challenges needing systemic efforts and requiring important investments in key sub-sectors, such as preschool and secondary education. Investments need to focus on increasing access and permanence in schools, and improving the quality of education (reducing drop-out rates, repetition and improving the quality of teaching).
- Eliminating illiteracy among the youth is urgent to take advantage of new jobs. Programs such as primary completion and improved technical skills will be key to respond to the demands of the labor market. Greater investment in secondary is also needed to ensure the youth has opportunities to join the labor market effectively.
- Investments in education infrastructure should be considered with care in order to maximize the use of existing idle schools. Investments should also be devoted to textbooks, supplies, and qualified teachers. Scholarships targeted to the poorest could offset some non-tuition expenses (such as CCTs).
- Increasing access to and quality of healthcare services, especially in rural and remote poor areas. This would include enhancing the integrated healthcare model and accelerating improvement to maternal and child health services, as well as improving the quality of INSS services. Inequality of public healthcare services in Nicaragua is such that even services which are free-of-charge, like immunizations and reproductive health, tend to favor the better-off rather than poor households.
- Addressing inefficiencies in current health spending can markedly improve health outcomes of the poor, including: moving away from historical budgeting of public health resource allocations toward a needs based system; targeting resources on primary and preventative care; using results based budgeting; improving the mix of human resources (doctors and nurses) to reduce costs and improve quality of services.
- In water and sanitation, greater resources will need to be devoted to expanding coverage to rural and remote areas. Achieving this MDGs is a top priority. Lack of clean drinking water, sanitation, and health practices is a large contributor to poor health outcomes. In rural areas, municipalities should be given a larger role in water and sanitation service provision jointly with local participation to ensure service levels can be managed and afforded in the long-run. In urban areas, a cash injection for improving water service quality in the short run will be needed to prevent a virtual collapse of the provision in

some areas. Moreover, a profound structural reform of the urban service provider ENACAL will be required in parallel to prevent investments becoming a de facto consumption subsidy without the consequent improvement to the long-term stability of the service.

- In terms of reducing malnutrition, programs and interventions would be more effective if an integrated approach is used to address more than one of the immediate and underlying problematic factors. It is critical that this multi-sectoral approach focus on prevention and targets the age where most of the losses occur, starting in-utero and continuing through the child's second birthday.

A. PROGRESS AND PROSPECTS IN ATTAINING MDGS

Progress toward meeting PRS long-term Goals and MDGs

2.3 In December 2005, the Nicaraguan government presented a PRS-II, called the National Development Plan (NDP).²⁸ The new government that took office in January 2007 has confirmed its commitment to the broad principles expressed in the NDP, presented a progress report in October 2008, and is in the process of revising the NDP. The Nicaraguan PRS-II includes goals, indicators and targets in the areas of Poverty, Macroeconomic Performance, Economic Infrastructure, Regulatory Framework, Property Rights, Access to Financial Services, Investment Promotion, Food Security, Sustainable Environmental Development, Education, Health, Social Protection, and Water and Sanitation. The goals and targets included in the NDP and linked to MDGs are detailed in Box 2.1 below.

Box 2.1: The Nicaraguan PRS Long-term Goals, Targets, and MDGs	
PRS goals (MDGs)	Targets
Goal 1. Reduce extreme poverty	Target – Halve, between 1995 and 2015, the proportion of people whose income is less than the extreme poverty line. Extreme poverty target is 9.7% by 2015.
Goal 2. Increase access to primary education	Target – Ensure that, by 2015, all boys and girls alike will be able to complete a full course of primary schooling. Net primary enrollment is 100% by 2015.
Goal 3. Reduce infant and under-five mortality	Target – Reduce by two-thirds, between 1994 and 2015, the infant mortality rate and child mortality rate. Under-five mortality is 24 and infant mortality 20 by 2015.
Goal 4. Reduce chronic malnutrition	Target – Reduce chronic malnutrition to 7% by 2015.
Goal 5. Reduce maternal mortality rate	Target – Reduce by three-quarters, between 1994 and 2015, the maternal mortality ratio. Maternal mortality is 22 by 2015.
Goal 6. Increase access to reproductive healthcare services	Target – Increase access to reproductive health services of appropriate age by 2015.
Goal 7. Increase access to water and sanitation	Target – Increase to 90% national water coverage by 2015.
	Target – Increase to 95% national access to sanitation by 2015.
Goal 8. Reduce Illiteracy Rate	Target – Decrease illiteracy rate ²⁹ to 10 % by 2015.

Source: GON (November 2005). PRS-II.

²⁸ See GON (November 2005). PRS-II: *Plan Nacional de Desarrollo* (PND). World Bank (2006). PRS and JSAN. Report No. 34717-NI.

²⁹ Illiteracy rate is reported for people ten years and over.

2.4 Progress in MDGs and PRS goals in Nicaragua has been generally satisfactory, but there are concerns for sustained future performance in relation to several goals. About half of PRS goals were on track in 2005 comparing actual versus targets (table 2.1). PRS targets for 2005 were very modest vis-à-vis MDGs for 2015, and in consequence several have been met (figure 2.1). PRS targets that showed satisfactory performance are: extreme poverty, net primary enrollment, and infant and child mortality. PRS targets that are currently off track and need additional efforts to sustain future improvements are: maternal mortality, access to reproductive healthcare services, chronic malnutrition, access to drinking water and sanitation, and illiteracy.

Table 2.1: Nicaragua: Progress toward Meeting PRS Goals and MDGs

PRSP goals (MDGs)	Data Source	Actual Data				PRS-II Target 2005	On Track?	Target 2015
		1993	1998	2001	2005			
Extreme Poverty (%)	LSMS	19.4	17.3	15.1	14.9	16	Yes	10
Net Primary Enrollment (%)	LSMS	75.6	79.6	83	84.1	83.4	Yes	100
Infant Mortality	DHS	...	40	31	...	32	Yes	20
Under-five Mortality	DHS	...	50	40	...	37	Yes	24
Chronic Malnutrition (%)	LSMS	23.7	19.7	17.8	17	16	No	7
Maternal Mortality	MINSA	98	106	115	95.7 ^b	93	No	22
Access to Reproductive Health	MINSA	...	21 ^a	24.5	12.9	24.8	No	100
Access to Drinking Water (%)	LSMS	68	71.7	70.3	71.5	75.4	No	90
Access to Sanitation (%) ^d	LSMS	44.6	50.3	51.7	55.9	88 ^c	No	95
Illiteracy (%)	LSMS	21.5	18.8	18.7	18.4	16 ^c	No	10

Source: DHS, ENACAL, LSMS, MECD, MINSA, GON PRS-II (December 2005). (a) actual data for 1999, (b) actual data for 2006, (c) target is for 2004, (d) actual data for sanitation excludes untreated latrines.

Box 2.2: Monitoring PRS indicators and MDGs

The process of monitoring the Poverty Reduction Strategy has several advantages: 1) it makes it possible to track progress in achieving PRS goals; 2) it reveals causes of success or failure, allowing effective management of the strategy and identification of needed improvements; 3) it permits mobilization and the generation of consensus for public support of the target; 4) it offers opportunity for greater involvement of civil society in the process; and 5) it acts as a means for improving accountability in the use of resources and increasing transparency.³⁰

General Concepts

- *Goals* – the objectives a country or a society want to achieve
- *Indicators* – the variables used to measure progress toward the goals
- *Targets* – the quantified level of indicators set by a country to be achieved in a timeframe

Types of Indicators

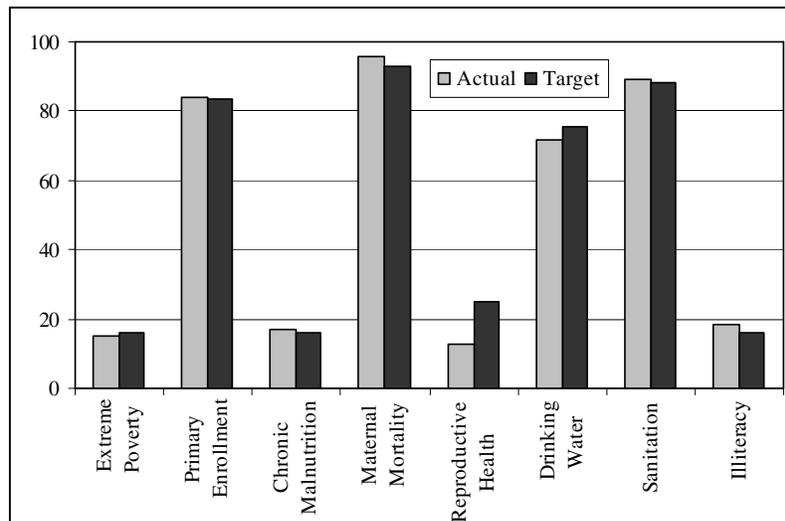
Indicators can be classified in two groups, intermediate indicators and final indicators. The first set can be subclassified into input and output indicators, and the latter into outcome and impact indicators.

- *Intermediate Indicators*
 - Input Indicators – financial and physical indicators of resources used
 - Output Indicators – the intermediate goods and services generated
- *Final Indicators*
 - Outcome Indicators – access to and use of goods and services and beneficiaries satisfaction
 - Impact Indicators – impact on well-being (improvement in living standards)

Source: Pain (2002).

³⁰ Pain (2002)

Figure 2.1: Performance of selected PRS indicators in 2005



Note: Performance of PRS goals vis-a-vis quantitative targets for 2005.

Prospects for attaining PRS long-term Goals and MDGs by 2015

2.5 Forecasts of recent trends in PRS indicators suggest that more than half of the MDG goals for 2015 are unlikely or very unlikely to be achieved, if policies had not been modified. PRS long-term goals and MDGs that are *likely* to be achieved include reductions in extreme poverty, and infant and child mortality (table 2.2 and box 2.3). It is *unlikely* that the targets for universal primary enrollment, declines in chronic malnutrition, access to water and illiteracy will be reached. It is *very unlikely* that reductions in maternal mortality, access to reproductive healthcare services and sanitation will be achieved. The fact that goals in universal primary education, illiteracy, and chronic malnutrition and access to water will not be met is particularly worrisome because of their long-term implications for the well-being of large segments of the population and for building human capital and ability to take advantage of income generation opportunities.

Table 2.2: Nicaragua: Prospects for Attaining Long-Term PRS Goals and MDGs

PRSP goals (MDGs)	PRS-I ^a	PRS-II ^b	Actual 2005	Target PRSP-II 2010	Forecast 2015 ^c	Target PRS-II 2015	Target 2015 will be achieved?
	Base 1993	Base 2001					
Extreme Poverty (%)	19.4	15.1	14.9	11.5	11.0	9.7	Possible
Net Primary Enrollment (%)	...	82.6	84.1	90.5	87.0	100	Unlikely
Infant Mortality (per 1,000 live births)	58	31	...	27	24.1	20	Possible
Under-Five Mortality (per 1,000 live births)	72	40	...	33	31.2	24	Possible
Chronic Malnutrition (%)	19.9	17.8	17	12.8	11.7	7	Unlikely
Maternal Mortality (per 100,000 live births)	160	88.6	95.7 ^d	63	80.3	22	Very unlikely
Access to Reproductive Health Services	...	16.1	12.9	29	21.3	100 ^e	Very unlikely
Access to Water (%)	...	75.8	71.5	83.5	76.4	90	Unlikely
Access to Sanitation (%)	...	87.1	55.9 ^f	90	60.0	95 ^g	Very unlikely
Illiteracy Rate (%)	19	18.7	18.4	15.6	15.3	10	Unlikely

Source: PRS-I, LSMS 2005, PRS-I 1st and 2nd Progress Reports, PRSP-II, and own estimates. (a) MDGs base year is 1990, Nicaragua's PRS-I explains data was not always available, then closest year was used, for most cases 1993 or 1994, except malnutrition and illiteracy 1998; (b) PRS-II base year is 2001 for poverty, infant and child mortality, malnutrition and illiteracy, or 2004; (c) Estimated on the basis of SimSIP elasticities for Nicaragua and LAC, methodology cited in World Bank Technical Paper No.467; (d) 2006; (e) Target for 2010 is 29 from a 16.1 in 2004; (f) Actual 2005 excludes untreated latrines; (g) National target.

Box 2.3: Performance Evaluation Criteria for Attaining MDGs

Results are presented in four performance evaluation criteria: likely, possible, unlikely, and very unlikely. Definitions vary for each target. Percentages are obtained by dividing the forecasted value in 2015 by the base year (1990 or 1993/94 for Nicaragua) and multiplying by 100, except for net primary enrollment, as the objective is to reach universal coverage. Thus, a result around 0 percent means the level of the indicator in 2015 is different from 1990, while a result around 100 percent indicates the value in 2015 is close to 1990.

Target	Likely	Possible	Unlikely	Very unlikely
Reduce extreme poverty by 50 %	0 – 50 %	50 – 60 %	60 – 80 %	> 80 %
Reduce under 5 malnutrition by 50 %				
Reduce illiteracy by 50%*				
Universal primary education	95 – 100 %	90 – 95 %	80 – 90 %	< 80 %
Access to drinking water*				
Access to sanitation *				
Access to reproductive healthcare services*				
Reduce infant mortality by 2/3	0 – 33 %	33 – 50 %	50 – 75 %	> 75 %
Reduce under 5 mortality by 2/3				
Reduce maternal mortality*				
Reduce chronic malnutrition*				

Source: Hicks and Wodon (2002)

* Added to original table.

Box 2.4: Analyzing the Prospects for Attaining Long-Term PRS Goals and MDGs in 2015

Determining if Nicaragua's PRS goals and MDGs would be achieved by 2015 implied estimating forecasts using a combination of approaches and data sources, such as: data from SimSIP (Simulations for Social Indicators and Poverty) goals; updated country-specific data applied to SimSIP goals regressions and recalculations using the Stata statistical package; the POVCAL statistical package to estimate responsiveness of poverty to growth and its predicted values; and SimSIP goals estimated elasticities to growth.

- *POVCAL – A tool to obtain the elasticity of poverty to growth.* POVCAL assists with routine poverty assessment work by using sound and accurate methods for calculating poverty and inequality measures. It requires any of the various types of grouped income distribution data typically available, such as income shares by deciles of households ranked by per capita income. Data requirements are low; essentially what is needed is access to grouped distributional data and the poverty line. The program estimates the Lorenz curve, Gini index, headcount index, poverty gap index, Foster-Greer-Thorbecke index, and the elasticities of these poverty measures with respect to the mean of the distribution. It does all this for two alternative specifications of the Lorenz curve: the General Quadratic (Villasenor and Arnold) and the Beta model (Kakwani).³¹
- *SimSIP Goals – Assessing the Realism of Development Targets.* SimSIP (Simulations for Social Indicators and Poverty) is a set of user-friendly Excel-based simulators that facilitate the analysis of issues related to social indicators and poverty. Many of the indicators correspond to the targets and areas of focus put forward in the MDGs. The simulations/targets for future levels can be based on either historical trends or model-based elasticities. For historical trends, four different ways of fitting a historical trend line across the available data at the country level are considered for each indicator and each country. The best fit is selected. The second alternative is to rely on an econometric model yielding elasticities of the indicators to economic growth, population growth, urbanization, and time. These elasticities have been estimated with two different econometric models using worldwide panel data sets, and they are allowed to vary with a country's level of economic development and urbanization.

³¹ Chen, Datt, and Ravallion (1992)

2.6 Continued progress in Nicaragua's MDGs and PRSP goals is closely linked to the recovery of growth,³² particularly to achieve the target for poverty reduction in 2015. For education, key bottlenecks are related to improvements in internal efficiency of primary education. To this effect, the Education for All Initiative implemented in Nicaragua could have sufficient impact to make it possible to achieve the MDG target of universal primary education. Maternal mortality is associated with births at home and low access to reproductive healthcare services, which in turn increases birth spacing and impacts high fertility. Infant mortality, child mortality and chronic malnutrition raise concerns about future prospects, given minimal progress in diarrhea and acute respiratory diseases, which are also linked to low access to safe water and sanitation services. Access to water has been stagnant; with only one-in-four households having piped water inside their homes. Water becomes contaminated mainly through unsafe practices in storing drinking water, access of domestic animals to the family's drinking water, and lack of chlorination and families' failure to boil water. Access to sanitation seems high; however, however more than half of latrines are untreated, which is equivalent to one-third of all sanitation services in the country. Illiteracy rates in Nicaragua, as in other countries, have proven to be difficult to improve in the medium term; internal efficiency of education and young adult literacy programs will be key.

B. OPPORTUNITIES IN EDUCATION

2.7 Education is a critical aspect of the need to increase productivity mentioned in chapter one. At the macro level, lack of qualified human capital decreases national competitiveness and limits the development of science and innovations that improve productivity. At the micro level, it is still a powerful determinant of the possibilities of people of moving out of poverty and to be less vulnerable against shocks. In this section we quantify returns to investments on education and we analyze inequities in school access by socioeconomic group, area of residence, ethnicity, and gender. We discuss and quantify the main constraints households face to send their children to school and examine inequalities in education quality: quality-outcomes by socio-economic group (such as repetition, attainment, and test scores). A brief set of conclusions and policy recommendations follows. This section dwells on analyzing differences in educational outcomes and opportunities across different dimensions, like socioeconomic background, region and gender. A complementary analysis, that emphasizes on recent evolution, may be found in a companion report, the Public Expenditure Review.

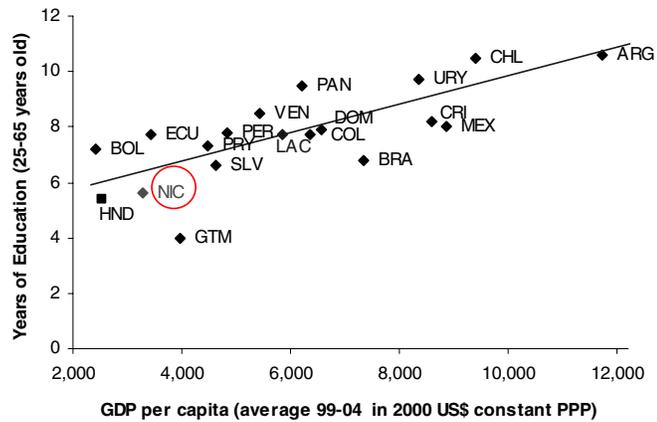
Does education pay in Nicaragua?

2.8 How educated is the labor force in Nicaragua? Does education pay in Nicaragua? The answer to the first question is that level of education of the adult population is low and even among the younger generations educational standards fall well below those of most Latin American countries. The answer to the second question is that education pays, both at the macro level in terms of its effect on growth and productivity ,and at the micro level, allowing people to reduce their chances of being poor and of differentiating themselves in the socioeconomic scale.

³² PRS-II projected GDP growth rates set medium-term targets above 4 percent, as follows: 2007 (4.3 percent), 2008 (4.6 percent), 2009 (4.8 percent), and 2010 (5 percent). After 2010, the long-term GDP real growth rate is projected at 5 percent.

2.9 In fact, Nicaragua is one of the least educated countries in the region. There is an almost linear relationship between the educational level of a country's adult population and its level of development. Figure 2.2 shows that the poorest Latin American countries (Nicaragua, Bolivia and Honduras) are at the same time those countries displaying the lowest education levels among their adult population (5.6, 7.2 and 5.4 years of education), whereas Argentina and Chile display the highest education rates along with the highest per capita incomes in the Latin American region.

Figure 2.2: Mean Years of Education in Nicaragua vs LAC (1999-2004)



Source: International Education Statistics (2007)

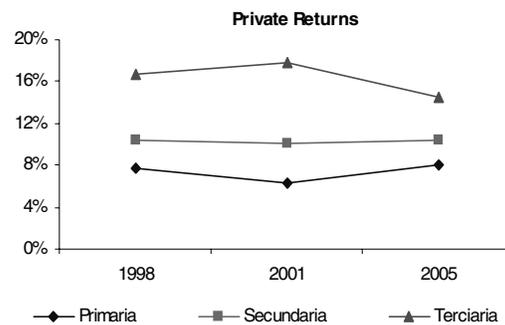
2.10 Even if Nicaraguan education levels are very low, and consequently the average level of productivity is low, education influences productivity levels of each individuals, has a value in the labor market, and consequently allows people to differentiate themselves. In fact, Nicaragua, a worker earns 10 percent higher earnings for each additional year of schooling received. Using data for the period 1998-2005 we found that returns to education have been fairly stable and similar in magnitude across strata and gender groups at approximately 9 to 10 percent per extra year of education. Returns to education, however, are not homogeneous across schooling levels, Returns to higher levels of education are generally higher. However, there is evidence that during this period, returns to primary and secondary education were increasing, while the opposite was observed in the case of tertiary education. This phenomenon may reflect a greater demand for semi-qualified labor, which could be attributed to an increasing demand for labor in the “maquilas”.

Table 2.3: Returns to education by gender and area of residence

	1998	2001	2005
National	11.4	11.2	8.0
Male	9.5	9.5	8.4
Female	11.1	12.2	10.6
Urban	11.1	10.8	8.8
Rural	8.3	7.7	9.7

Source: Angel-Urdinola and Laguna (2007).
Estimates from on mincerian equation corrected for self selection.

Figure 2.3: Rates of return by Educational Level



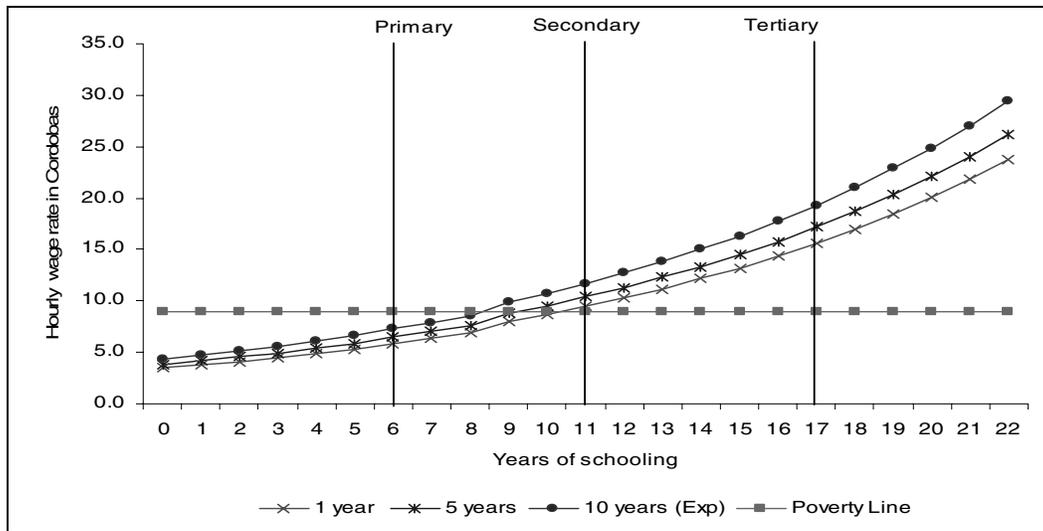
Source: Angel-Urdinola and Laguna (2007).

2.11 Moreover, education outcomes in Nicaragua are closely linked to poverty outcomes. In fact, lack of education constitutes one of the main determinants of poverty in Nicaragua. As shown in Table 2.4, households having a head with tertiary/technical education consume on average 55 to 82 percent more than otherwise similar households having a head with no education. But having a head with technical or tertiary education is a privilege of less than 10 percent of all the households in the population. Living in poverty is almost certain for individuals with less than complete secondary; wages are below the poverty line for individuals with complete primary or incomplete secondary (see Figure 2.4), and this holds even with 1, 5 or 10 years of experience. An extra year of experience produces high returns on wages only for individuals who have attained at least 11 years of education (or about complete secondary).

Table 2.4 – Education and Poverty

	% increase in Consumption vs. households having a head with no education	Population Share (%)
Head with no education	-	30.8
Head attained Primary	16.5%	41.7
Head attained Secondary	32.2%	17.8
Head attained Technical	54.7%	2.9
Head attained Tertiary	81.7%	6.8

Figure 2.4: Wages above the poverty line require at least 11 years of education



2.12 Despite the low level of education, large inequities in to education persist even among younger cohorts. In extremely poor households in Nicaragua, one out of four young people between the ages of 15 and 24 years is illiterate. Literacy rates among young people have raised an average of 8 points during the 1993-2005 period, particularly among extremely poor sectors (see Table 2.5). Nevertheless, it is alarming that while 99 percent of young people from the richest quintile can read and write, only 78 percent from the poorest quintile can do so.

Inequities in Access: Enrollments

2.13 International comparisons indicate that both primary and secondary gross enrollment rates are low in Nicaragua. In the case of secondary, these low rates are consistent with the still low level of GDP per capita of the country. However, in the case of primary, enrollment rates are even

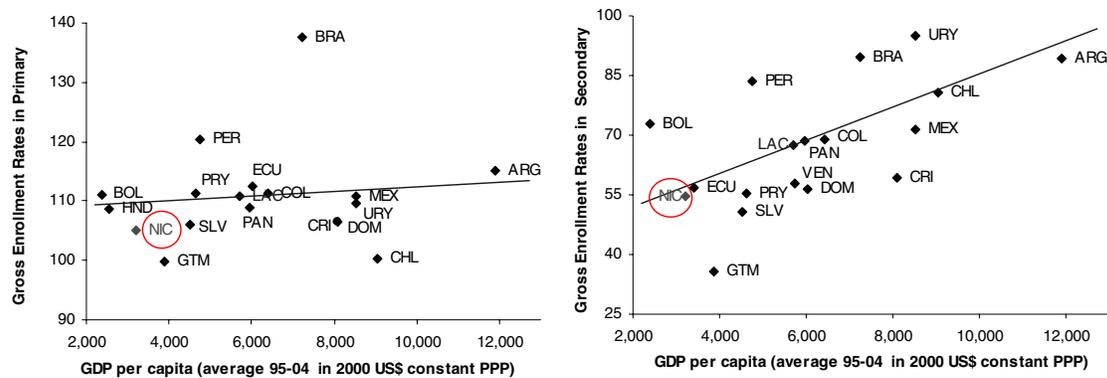
below what could be expected for countries with the same level of development of Nicaragua. (see Figure 2.5)

Table 2.5: Youth from the poorest households and rural areas have the lowest literacy rates.

	1993	1998	2001	2005
All	82.3	85.6	86.4	90.4
Extreme Poor	65.5	65.0	65.6	77.1
Moderately Poor	88.9	89.4	89.8	87.0
Non-poor	93.8	93.7	94.3	95.8
Urban areas	94.3	94.2	93.9	95.8
Extreme Poor	81.6	81.2	74.6	85.6
Moderately Poor	95.2	96.1	94.8	92.9
Non-poor	96.3	97.9	96.0	97.6
Rural areas	70.5	75.4	75.7	83.0
Extreme Poor	60.4	63.9	63.3	74.5
Moderately Poor	75.7	81.7	80.2	82.4
Non-poor	84.5	86.2	88.9	90.6
Socio-economic Quintiles				
Poorest quintile	66.2	68.0	67.2	78.3
Q2	77.1	79.5	81.5	87.3
Q3	88.3	90.5	88.0	92.1
Q4	93.0	90.4	94.7	94.9
Richest quintile	96.8	97.1	98.1	99.0

Source: World Bank using 1993, 1998, 2001 and 2005 LSMS data

Figure 2.5: Gross enrollment rates in Primary [Nicaragua vs. LAC, period 1995-2004]



Source: International Education Statistics (2007)

2.14 Differences in socioeconomic background have a large impact on enrollments for children of all ages. Differences in age specific enrollment rates across the income spectrum are small for those in primary, but still larger than what is observed elsewhere in LAC. But in preschool, secondary, and tertiary education children from richer households are much more likely to be enrolled as compared to poorer ones. Enrollment rates drop rapidly after age 12 (which is the age at which children should complete primary school)³³, especially among the poor (Figure 2.6). As such the gap in enrollment between rich and poor is extremely large in the early tertiary education, and at age 17 enrollment rates for males in richest quintile are 4 times larger than for

³³ By the age of 13, some 44% of boys in the poorest quintile of this age group are working and by age 17 this proportion reaches 85%.

males in the poorest quintiles. Interestingly, among the poor, enrollment rates for girls are higher than those for boys at almost every age group. Across regions, differences between the richest region, Managua, and the poorest, the Atlantic, is of about 20 points (see background paper, Vol.2).

Figure 2.6: Gross Enrollment Rates By Quintile and different dimensions Quintile and Gender

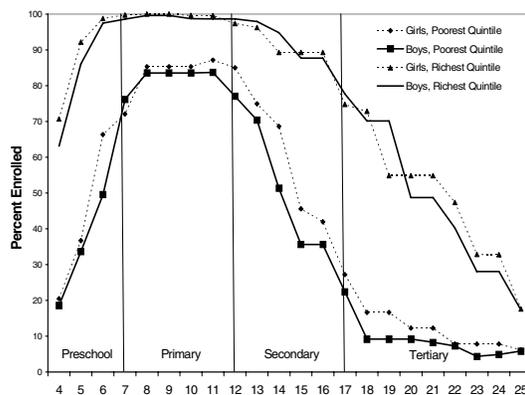
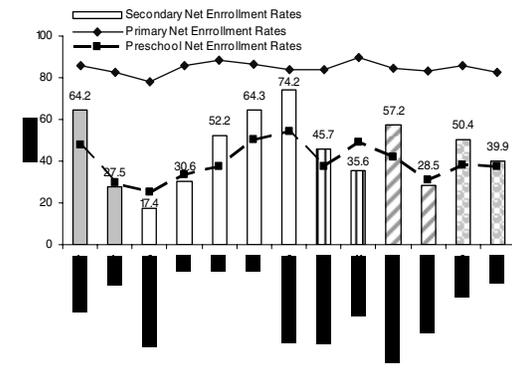


Figure 2.7: Net Preschool, Primary and Secondary Enrollment rates



Source: World Bank using the 2005 Nicaragua EMNV. The curves have been smoothed by eliminating some unexplained enrollment spikes in secondary and tertiary education.

2.15 Poor children, especially indigenous and those living in households engaged in agriculture display much lower preschool and secondary net enrollment rates than average. As illustrated in Figure 2.7, differences in preschool and secondary net enrollment rates – contrary to what happens in primary – show great variation across several dimensions. Half of children in the richest quintile go to preschool, whereas only 1 out of every 4 children from the 20 percent of poorest households attend that education level. Differences are also large between agriculture and non agriculture households. Rates are higher, however, for children from indigenous households. As for secondary, differences across socioeconomic groups are even sharper. Enrollment rates are also lower for boys and for children in agricultural families.

Table 2.6: Enrollment rates in the Atlantic Region fall behind nationally, especially for preschool and secondary school.

	% Children 4 to 6 enrolled in CICO/CDI	Preschool Net Enrollment Rates in %	Primary Net Enrollment Rates in %	Secondary Net Enrollment Rates in %
By Strata				
Rural	3.6	32.9	84.0	28.1
Urban	2.5	42.7	84.3	61.1
By Region				
Managua	3.4	48.1	82.9	66.2
Pacific	0.6	40.2	86.1	51.0
Central	4.6	34.7	84.9	35.9
Atlantic	3.2	28.7	80.8	27.0

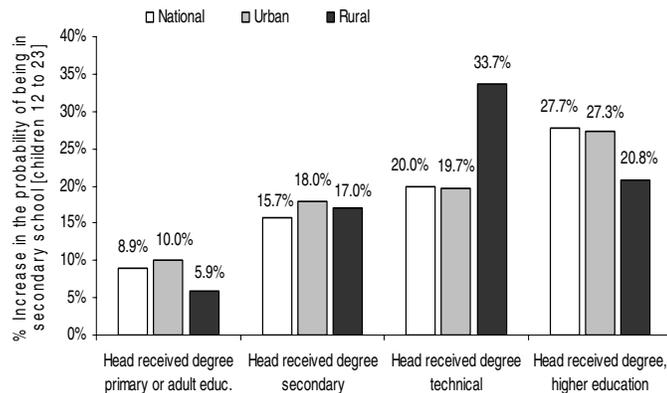
Source: World Bank using the 2005 Nicaragua EMNV.

2.16 Children in rural areas and those living in the Central and Atlantic regions display lower than average net enrollment rates in secondary education. Differences in enrollment across regions in Nicaragua, especially for secondary education are extremely high. As presented in

Table 2.6, net secondary enrollment in rural areas is half of that in urban areas (28.1 vs. 61.1 percent)³⁴. The difference in net enrollment rates between Managua and the Atlantic region is striking (27 vs. 66.2 percent for primary and 28.7 vs. 48.1 percent for secondary). On the contrary, primary net enrollment rates are rather flat across strata and across regions³⁵.

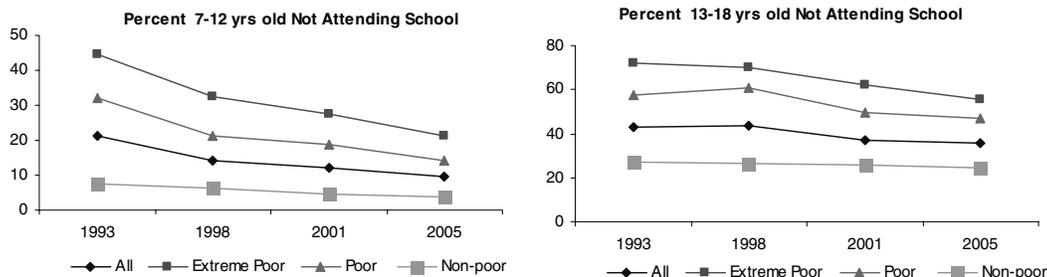
2.17 Further analysis to explore the differences observed in the case of secondary education and post-secondary education, show that job opportunities and parental education are key determinants³⁶. Individuals between 12 and 23 years who have a job are 21 to 24 percent less likely to attend secondary or post-secondary education. The level of education of the household head is a strong determinant of school enrollment after age 12. As displayed in Figure 2.8, children living in a household having a head who attained post secondary are 20 to 34 percent more likely to be enrolled as compared to children living in households having a head with incomplete primary or no education³⁷.

Figure 2.8: The education of the household head and secondary enrollment



Source: World Bank using the 2005 Nicaragua EMNV. [Reference group: children living in households with a head with incomplete primary or no education]

Figure 2.9: Still one -in-five poor children between ages 7 and 12 do not attend school



Source: World Bank using the 2005 Nicaragua EMNV.

2.18 Recent progress have favored mostly the poor. Between 1998 to 2005, net enrollments increased, with marked changes among the poorest quintiles in primary education and changes

³⁴ According to MECD sources, 40% of secondary schools are located in rural areas.

³⁵ *Laguna and Gutiérrez* (2006) indicate that there are significant differences in primary school coverage at the departmental level, because while the RAAN region has a Net Enrollment Rate (NER) of 80.7, the department of Granada has a NER over 100.

³⁶ The following results summarize regression results for the determinants of secondary and post-secondary enrollment in Nicaragua for children between 12 and 23 years or age (see Education Background Paper).

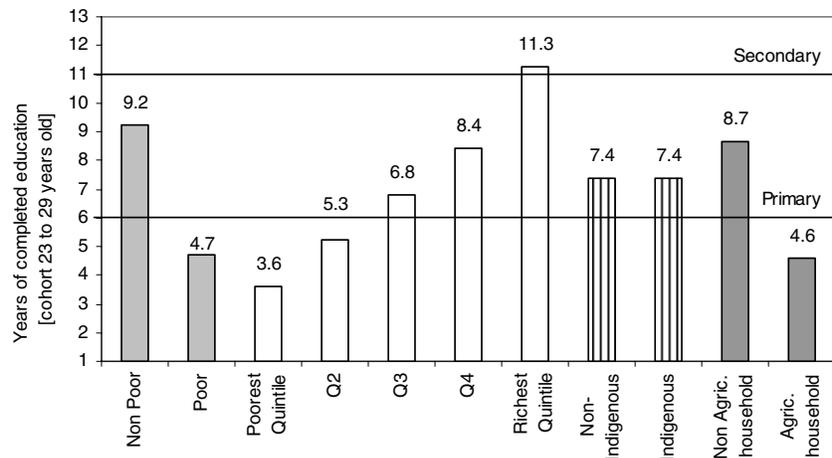
³⁷ In this respect, findings of the Impact Assessment Program on Basic Education for Youths and Adults in Nicaragua, carried out by Handa et al. (2006), reveal that the training received through this program has helped participants to have a more effective participation in their children's education, acquiring greater awareness and interest about their children's access to school.

across the board in secondary. Consistent with this evolution, the percentage of children from household in extreme poverty -the poorest quintile- not attending school has diminished by 25.5 points among the 7 to 12 age group, and by 16.6 percentage points for those between ages 13 and 18. Despite the success to diminish the access gap among the poorest quintiles of income distribution, still twenty percent of 7 to 12 year olds in extreme poor households did not attend school by 2005. Smaller improvements are observed among poor 13 to 18 year olds. (see Figure 2.9)

An analysis of current patterns in educational attainment

2.19 A precise measure of the current patterns of accumulation of human capital is the attainment of the cohort that notionally must have finished its formal education. Among 23 to 29 year olds, schooling attainment is low for Latin American standards and very heterogeneous within the country. Young individuals who are poor and especially those living in households engaged in agriculture attain less than 5 years of education on average. As illustrated in Figure 7, poor young individuals have attained less than 5 years of education on average, (i. e. are on average primary -school dropouts). Individuals living in agriculture producing households on average attain only 4.7 years of education). Non-poor individuals in this age group, as well as those in the upper quintiles, attain on average 9 to 11 years of education, which is lower than the necessary to complete secondary school, but this doubles the attainment of those in the poorest quintile.

Figure 2.10: On average, young individuals between 23 and 29 years old in Nicaragua have attained only primary school

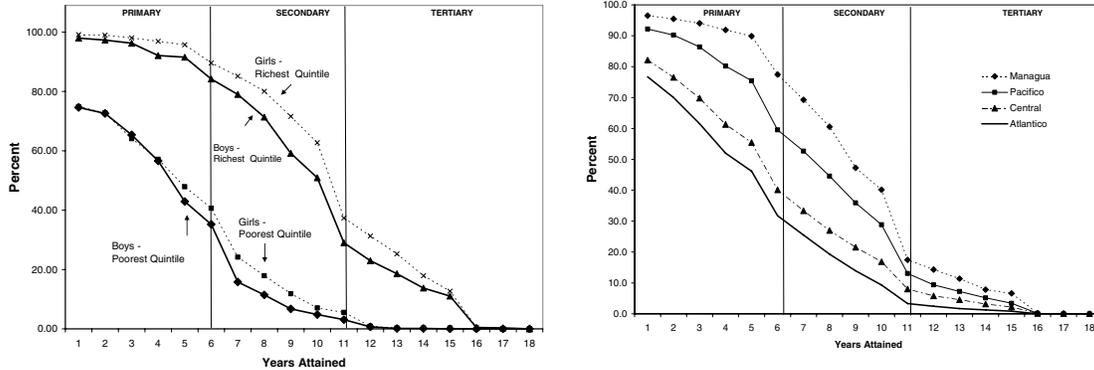


Source: World Bank using the 2005 Nicaragua EMNV

2.20 This low performance is related to the very low capacity of the educational system to retain students. Among the richest, almost all individuals have enrolled in school. However, after 6 years of education attained, drop-out rates accelerate among both boys and girls (averaging 10 percent per year). Among the poorest, still about 25 percent of the youth have never been enrolled in school, a tremendously high rate for Latin American standards. Among those who have had some contact with the educational system, drop out rates are very large. The Figure illustrates that while roughly only 1 out of every 100 girls (or boys) attain 11 years of education in the bottom quintile, 38 (30) out of every 100 girls (boys) do so in the highest quintile. (see Figure 2.11) When this analysis is done comparing geographic regions, it is observed that at

every education level, attainment is much lower in the Atlantic and Central regions than in Managua and in the Pacific regions.

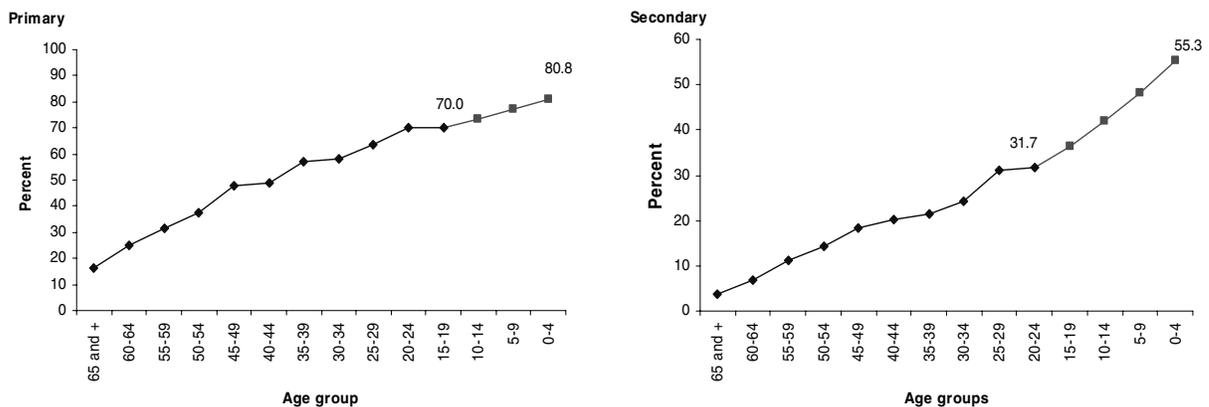
Figure 2.11: Only two-in-ten boys in the poorest quintile attains 6 years of education and only one attains 11



Source: World Bank using the 2005 Nicaragua EMNV. (Sample consist of 6 to 29 years old)

2.21 Despite progress, simple projections show that among current young children, probably among 20 percent will not finish primary and 45 percent will not finish secondary. Figures 2.12 shows representative cohorts that allows to show the improvement observed in the system during the last decades. 70 percent of children between 15 and 19 years old have managed to finish primary school, much higher figure than previous generations. However, only 32 percent of young people between 20 and 24 years old have completed secondary education. If this trend were to continue, we could estimate that almost 81 percent of the population currently between 0 and 4 years of age is expected to finish primary education and only 55 percent secondary education. Despite the progress, these projections reveal that in Nicaragua, access to schooling is still a serious development challenge, even at the primary level, maybe except for the case of Managua, the only region where primary completion is high.

Figure 2.12: Primary and secondary completion rates by five-year age groups.³⁸



Source: World Bank using the 2005 Nicaragua EMNV.

³⁸ In issues related to education, grouping by age helps to observe positive changes over time.

2.22 Moreover, that young cohort will not necessarily have homogenous access to preschool education. In Nicaragua only 4 out every 10 children have the opportunity to attain preschool education before entering first grade. This share is below Latin American given Nicaragua's level of development, and lower than that in other countries with similar levels of income such as Ecuador and Bolivia.

2.23 The last discussion reveals that many of the currently enrolled children and also the current cohorts of youth that have already passed the years of primary and secondary schooling, and are joining the labor force- and will be part of the labor force for the next five decades or so, have accumulated so far very little human capital, which is particularly grave in a situation where global competition require increasing levels of sophistication of the labor force, even in those cases where countries comparative advantage is its abundance of unskilled labor. This implies that despite the recognized larger social returns to invest in basic education, adult education and technical training will continue to be a challenge and a need for Nicaragua.

What are the constraints to access to schooling?

2.24 Supply side issues and lack of financial resources are reasons behind enrollment problems in primary education. There is variation in the reasons why children are not enrolled in school across regions in Nicaragua (Table 2.7). In particular, lack of access to school facilities constitute an important reason explaining why children are not enrolled in primary school in rural areas (and especially in the Atlantic and Central regions) while financial problems are the main reason in urban areas. Family problems are more recurrent in urban areas and particularly in Managua. In should be noted that when comparing 2005 to 2002 data, the importance of the distance to school has diminish greatly, possibly due to the important investment in expanding the number public school, particularly in rural areas.

Table 2.7: Reasons why children ages 7 to 12 are not enrolled (%).

	<i>Rural</i>	<i>Urban</i>	<i>Managua</i>	<i>Pacific</i>	<i>Central</i>	<i>Atlantic</i>
No interest	8.4	15.3	5.6	17.9	11.3	7.1
Had to work	4.7	0.8	0.0	1.9	4.5	4.4
No place/no class/no teacher	6.8	2.2	0.0	2.2	6.9	7.3
School is too far	15.8	0.0	0.0	0.0	9.6	23.6
Family problems	6.0	16.3	31.7	8.0	6.5	4.6
Lack of money	38.9	47.0	40.2	52.6	39.0	38.2
Other	19.4	18.4	22.5	17.6	22.1	14.8

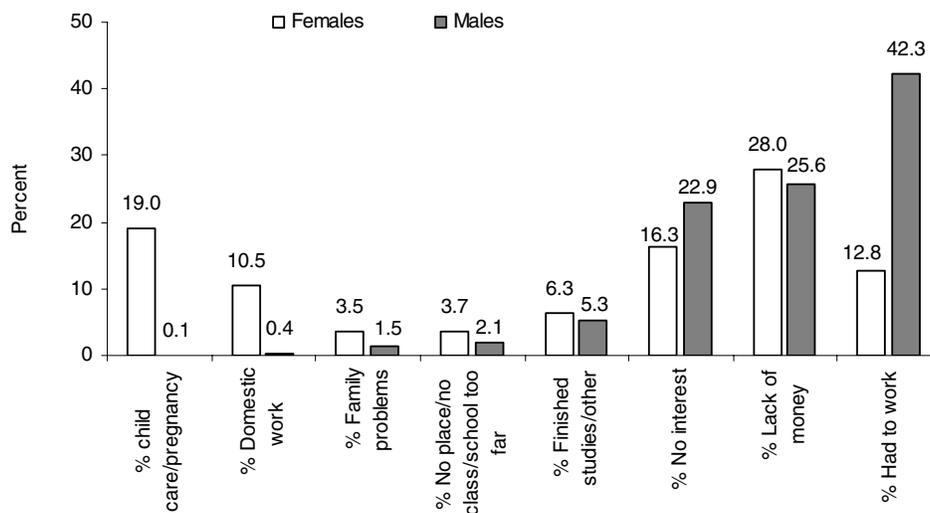
Source: World Bank using the 2005 Nicaragua EMNV.

2.25 Work, lack of money and lack of interest constitute the main reasons why individuals are not enrolled in secondary or post-secondary school. The need to work and lack of money are the main factors behind low secondary enrollment; but a considerable 16 to 20 percent claim that they are not interested to be at school. In this case however, the factors that affect enrollment decision vary significantly between boys and girls. Family problems, child care and pregnancy constitute important reasons why females are not enrolled in secondary or post-secondary school. Figure 2.13 show that family related constraints – pregnancy, child care and domestic work – constitute the main reason why about 34 of every 100 girls are not in school. Lack of financial resources is a constraint, mainly among the poor. For them, the largest share of out of pocket expenditures are transportation cost. Uniforms and supplies are also an important part of their

educational expense, but it unlikely that there are binding constraints as is transportation. For that rich the main expenditure are tuitions.

2.26 For young men, on the contrary, lack of interest and work-related constraints constitute the main two issues keeping them away from school. In fact, while 42 out of every 100 young men claim not to be at school because of work, only 13 out of 100 young ladies claim so. About 23 percent of all young men who are not at school claim that it is due to lack of interest. The same rate is at 16 percent for young ladies.

Figure 2.13: Factors that keep individuals away from secondary and post-secondary school differ significantly by gender.



Exploring Differences in Quality of Instruction

2.27 Late enrollment, high dropouts, and high repetition rates all together are behind the low completion rates. The Nicaraguan schools system starts with 3 years of tuition-free preschool instruction for children between the ages of 3 and 6. Preschool education is not mandatory and children are not allowed to repeat years at this level. Parents are free to put their children in private preschools, generally paying tuitions out-of-pocket. In 2005 only 15.7 percent of all children enrolled in preschool did so in a private institution. The Primary education cycle, targeted to children between 7 and 12 years old, is free and mandatory. The primary cycle lasts 6 years and has four modalities: i) regular primary, ii) multigrado primary (children from different levels attend the same class and are taught by the same teacher), iii) primary for adults, and iv) bilingual intercultural education program (*Programa de Educación Bilingüe Intercultural, PEBI*). Secondary education serves primarily the population between 13 and 17 years old that attained primary education. Secondary education lasts 5 years, is not mandatory, and has four modalities: i) daytime-secondary, ii) nighttime-secondary, and iii) distance secondary education (classes are conducted on Saturdays or Sundays), and iv) secondary education for adults. The education system has a total of 10,721 schools; 85 percent of which are public and 15 percent private with and without a voucher. About 79 percent of all school infrastructure is located in rural areas (92 percent of which is owned by the government). In year 2005, the system served about 1,685,844 students in all modalities of basic, primary, and secondary education. Primary education accounts for 56.1 percent of all students; secondary for 24.6 percent, preschool for 12.7 percent, adult education for 5.5 percent, and all remaining modalities for 1.2 percent .

2.28 More than 70 percent of the primary enrollment is in public school, and 20 percent in autonomous schools. Only a very small fraction is in private schools. In Managua, however, the relative importance of autonomous schools and private schools is much larger, reaching 40 and 14 percent respectively. There is also a much larger fraction of children in private schools among the richest quintiles, reaching 30 percent. As opposed to what happens in other school systems in Latin America, public schools, do cater also the people from the richest quintiles.

Table 2.8: Type of primary school by region and strata

	%	%	%	%	%	%
	Public, not autonomous	Autonomous school/center	Community education facility	Private with voucher	Private without voucher	Multigrado
Rural	84.0	12.4	2.7	0.6	0.3	60.8
Urban	57.0	25.5	0.4	4.7	12.4	5.1
Managua	44.1	35.7	0.3	4.3	15.6	9.0
Pacific	70.7	20.0	0.3	2.5	6.6	21.9
Central	82.1	12.3	1.9	1.7	2.1	51.8
Atlantic	79.0	11.2	4.5	2.3	3.1	46.2
Poorest Quintile	83.0	14.3	2.5	0.0	0.2	54.6
Richest Quintile	30.8	24.9	0.4	11.5	32.5	12.6
Indigenous	80.8	9.6	3.3	3.1	3.2	28.9
Ag. Prod.*	62.1	24.4	0.7	3.9	8.8	14.2
Total	72.0	19.1	1.8	2.2	4.9	35.8

Source: World Bank using the 2005 Nicaragua EMNV.

2.29 In the case secondary the structure of enrollment by type of school is relatively similar, with a larger share of autonomous schools. In most regions, enrollment in these schools reaches almost 50 percent. Only in the case of the indigenous, autonomous schools have a low share of enrollments. The overall share of private schools is about 21 percent. Surprisingly the share of indigenous in private schools is relatively larger, and as expected, the rich are more likely to attend a private school. Private enrollment in urban areas is larger, while public enrollment is smaller.

Table 2.9: Type of Secondary school by socio-economic group

	%	%	%	%
	Public, not autonomous	Autonomous school/center	Private, with voucher	Private, no voucher
Rural	40.24	48.94	7.27	3.54
Urban	26.70	46.16	9.46	17.68
Managua	22.25	52.82	6.94	17.98
Pacific	33.90	45.73	6.84	13.52
Central	33.38	47.22	12.11	7.29
Atlantic	40.18	35.08	10.94	13.80
Poorest Quintile	42.34	49.85	6.85	0.97
Richest Quintile	16.34	38.13	14.55	30.98
Non-Indigenous	30.34	48.28	8.47	12.92
Indigenous	43.99	24.69	14.07	17.26
Non Agricultural producer household	27.71	46.27	9.29	16.73
Agricultural producer household	38.90	48.91	7.51	4.69
Total	31.05	47.05	8.76	13.14

Source: World Bank using the 2005 Nicaragua EMNV.

2.30 Autonomous schools in Nicaragua show an important increase in enrollment. As part of the process of reform to improve efficiency and effectiveness of service delivery in Nicaragua, the so called autonomous schools were introduced in the in the education sector in 1993. Greater participation and decision-making among parents and teachers was regarded as central to this end. The main difference between autonomous and non-autonomous schools is that the former sets a participative management structure whereby parents, teachers, students (only at the secondary level), and school directors participate in decision making on general management and budget allocation. Autonomous schools divide responsibilities among different actors, mainly the MECD, the municipal delegate of the MECD, and School councils (consejos directivos). It is important to note that the data on autonomous schools obtained from household surveys, differ from official data. According to MECD, the number of public autonomous schools has doubled during the last 6 years, together with enrollments. As such, by 2006, 70 percent of public schools were autonomous, covering 83 percent of students in the public system. The discrepancy, might be related that while it is very clear to parents when a child is a private versus public school, within the latter, in many cases they are not aware of the status of the school. Much better statistics will be need to have a clearer picture of the type of student these schools are catering.

Table 2.10: Basic Statistics Autonomous schools

	2001	2002	2003	2004	2005	2006
Number of public “autonomous” schools	2,952	2,978	3,033	4,064	4,108	5,211
Number of students registered in autonomous schools	697,297	748,293	755,425	903,739	926,876	1,012,663
% of public “autonomous” schools	50	49	47	62	61	69
% of students registered in autonomous schools	68	69	68	79	79	83

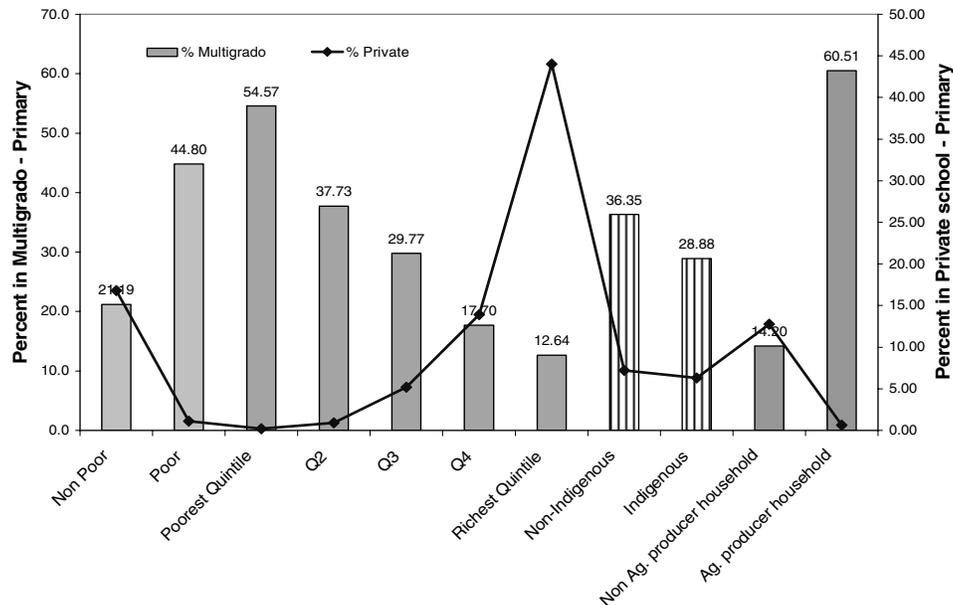
Internal Quality Indicators

2.31 Late enrollment (also known as “over-age”) in first grade is common among children in the poorest quintiles, and especially in rural areas. Children in Nicaragua are supposed to enter the first year of primary education at age 7. First-grade enrollment in Nicaragua (i.e. the share of all children who are 7 years old and enrolled in first grade) is rather low at 20 to 30 percent (the goal is 100 percent). Low first-grade enrollment rates are particularly high among the poor, reaching 56 percent and 47 percent in the two poorest quintiles (vs. 8 percent in the richest quintile), and in the rural areas of the Central and Atlantic region, where it is close to 60 percent (versus 20 percent in Managua).

2.32 Children from the poorest households in rural areas, and especially those living in household engaged in agriculture, display higher than average repetition rates in primary school. Repetition rates for primary education in Nicaragua are on average 12 percent. This level is above the Latin American average, but is what is expected given the countries level of development. Nevertheless, when comparing these results to other countries in the region with equivalent income levels, such as like Ecuador, Honduras, and Bolivia, repetition rates in Nicaragua are in the high-side. Repetition rates in primary are lower for indigenous children vs. non indigenous ones (9 vs. 12 percent) and higher for children living in households engaged in agriculture vs. those living in households not engaged in agriculture (13 vs. 11 percent). The lowest repetition rates are observed in non subsidized private schools. Repetition rates, however, are on the rise. According to MECD official statistics, repetition rates almost doubled between

2000 and 2005. In 2005 the MECD estimated that the annual cost of repetition for primary and secondary education was at approximately US\$12.0 and US\$1.2 million per year respectively. Although some policymakers have pointed out that the rise in grade repetition was due to the elimination of automatic promotion, Castro (2005) indicates that this policy had no effect because of the poor communication strategy used initially, which was meant to empower key actors for the implementation of such policy (the teachers).

Figure 2.14: Six out of every 10 children living in households engaged in agriculture attend a “multigrado” primary school.



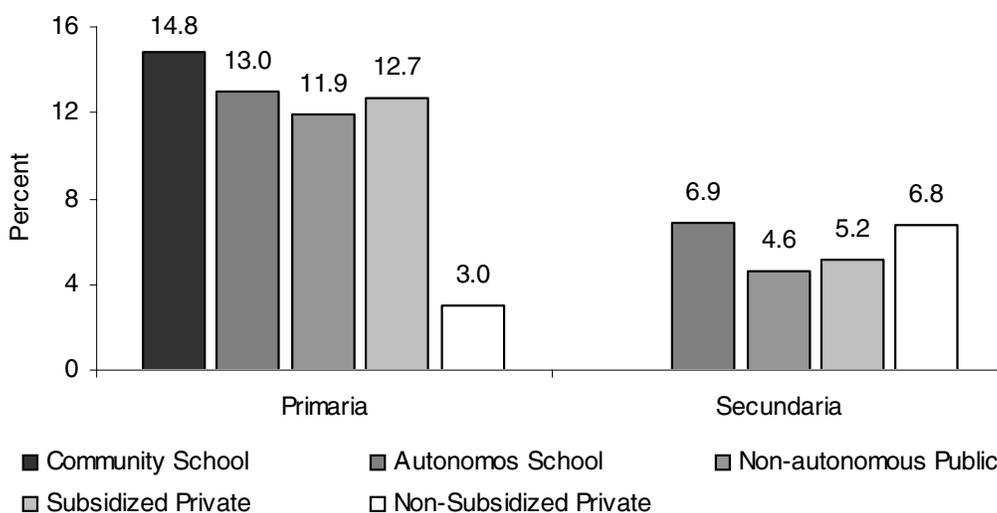
Source: World Bank using the 2005 Nicaragua EMNV.

2.33 Children living in poorer households are more likely to be enrolled in *multigrado* schools. The ministry of education in Nicaragua defines *multigrado* schools as those having fewer teachers and classrooms than the number of grades offered. Generally, *multigrado* schools have high student-teacher ratios, which obligate teachers to spend less time teaching and interacting with students. As a consequence, *multigrado* schools are likely to offer a somewhat lower quality of learning than normal schools do (as lower student/teacher ratios are often associated with better quality).³⁹

2.34 Figure 2.14 shows that about 6 of every 10 children in rural areas are enrolled in a *multigrado* schools and that there is a much higher concentration of this type of schools in the Atlantic and Central regions as compared to Managua and the Pacific. Poor children and especially those living in a household engaged in agriculture, are more likely to be taking classes in *multigrado* schools. On the contrary, children living in richer households are more likely to be enrolled in private primary schools, often associated with better quality of education. Figure 2.15 indicates, for example, that private schools display lower average repetition rates than public schools (3 vs. 13 percent). As expected, children living in households in the upper quintiles and those residing in Managua are more likely to have access to private primary education.

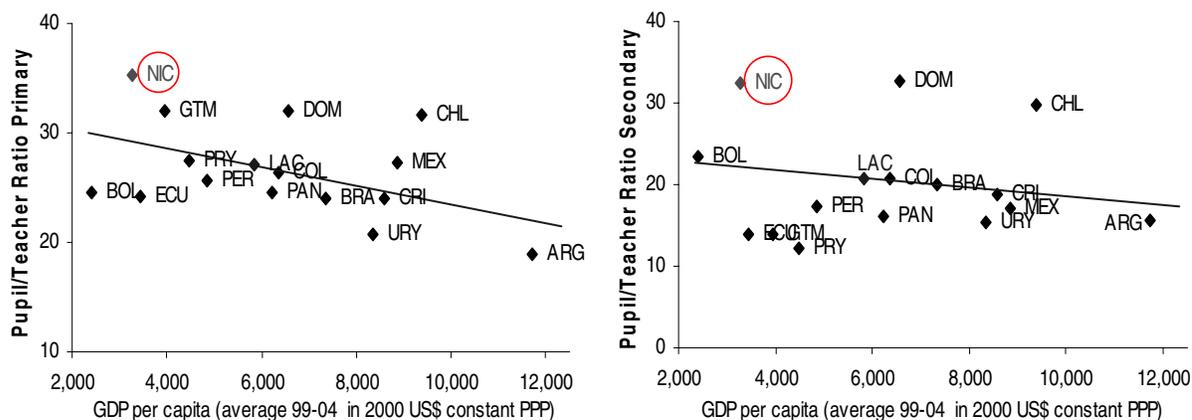
³⁹ Results on test-scores from the 2002 education quality survey conducted by the Ministry of Education do not indicate that Multigrado schools display lower scores than non-multigrado schools. However, results in test scores in Nicaragua did not display much variation as a whole (more on this on section 2.B below).

Figure 2.15: Private primary schools without subsidies and secondary non-autonomous school have lower repetition rates



Source: World Bank using the 2005 Nicaragua EMNV.

Figure 2.16: Pupil/Teacher Ratio Primary and Secondary



Source: International Education Statistics (2007)

2.35 In another indicator of quality, Nicaragua is the Latin American country with the highest pupil-teacher ratio in the region, both in primary and secondary schools (see Figure 2.16). Compared to regional standards, a Nicaraguan primary (secondary) teacher attends, on average 35 (32) students. This is higher than the corresponding regional average of 27 (21) students per teacher. Lower student teacher ratios are generally associated with better quality of education, however Hanushek (1995) finds that the impact of this variable in quality might be low under some circumstances. Given Nicaragua’s scarce resources, and despite the fact that the pupil - teacher ratio is one of the highest in the region, more than expanding the number of teachers, a more urgent challenge for Nicaragua is to invest in training of its current teachers

2.36 The pupil/teacher ratio is clearly lower in primary and secondary for private schools, particularly those that do not receive voucher (Table 2.11). Urban/rural, nor regional differences

are marked. Contrary to what could be expected, the ratios are higher for autonomous schools than for non autonomous. The overall student/teacher ratio has been recently falling at private institutions, reaching 24.7 and 23.1 in primary and secondary. But among public institutions into account, the student-teacher has increased, reaching 36.3 in primary and 39.7 in secondary.

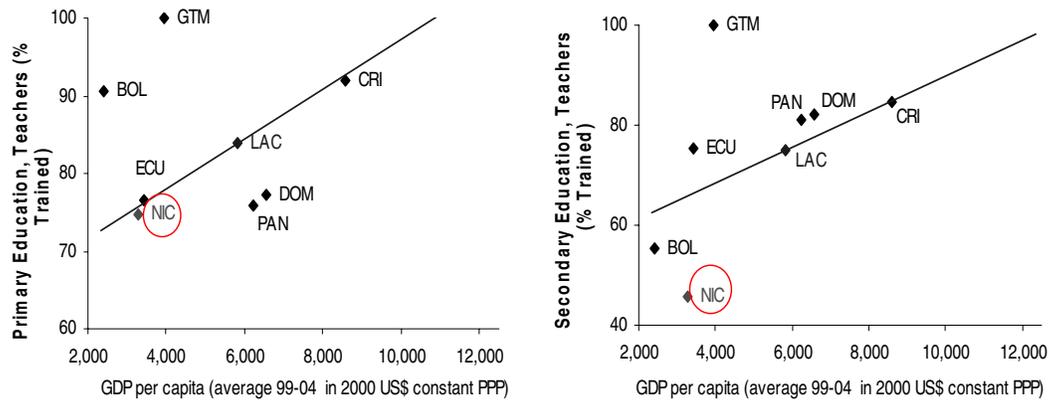
Table 2.11 - Ratio Pupil/Teacher by Region and Area

	Primary					Secondary				
	Autonomous	No Autonomous	Private with subsidy	Private without subsidy	Total	Autonomous	No Autonomous	Private with subsidy	Private without subsidy	Total
National	36.9	34.5	30.2	19.2	33.6	43.3	30.8	27.5	21.4	33.8
Rural	35.8	34.4	33.3	20.7	34.8	37.1	27.1	24.9	22.1	32.1
Urban	38.7	34.7	28.5	19.0	32.0	45.9	33.9	28.1	21.2	34.4
Zone										
Managua	42.9	36.5	29.6	19.1	32.2	47.8	30.4	27.7	19.4	32.9
Pacific	35.3	37.3	24.5	16.5	29.6	37.6	27.6	30.3	21.6	32.4
Central	35.5	33.6	28.5	19.5	33.9	40.7	33.1	24.4	22.8	34.4
Atlantic	37.6	35.6	33.1	22.9	35.5	31.7	29.0	22.4	22.3	26.8

Source: Angel-Urdinola and Laguna (2007)

2.37 Nicaragua's teacher work force is less qualified than expected given the country's level of development. As illustrated in Figures 2.17, Nicaragua has the lowest share of trained teachers in the Latin American region, especially in secondary education. Data suggest that 25 of every 100 of teachers in primary are not properly trained to teach, whereas the same proportion reaches more than 50 percent in secondary. The problem of untrained teachers ('empiricos') is a drag on the quality of the service provided. In the case of primary there as been some recent improvements, and the percentage of untrained teachers declined from 26.3 percent in 2004 to 24.1 percent in 2005, but at the secondary level the share of untrained teachers increased sharply from 37.3 percent in 2002 to 51.3 percent in 2004 (Laguna, 2005). Moreover, there are sharp differences within the system that operate against the poor , the rural and the Costa Atlantica. The percentage of "empiricos" is larger in rural areas. For example, in 2004, 32.5 percent of the primary teachers in rural areas were 'empiricos'. It should be noted that the "empiricos" in Nicaragua are those teachers who are not certified for the educational level she is teaching. In that regard, both a low educated teacher as well as an engineer might be considered "empirico". In that regard, the amount and complexity of training needed to solve the issue varies tremendously. In some cases it is an issue of basic pedagogical training that is needed; in other cases, the amount of pedagogical and content training that is needed might be substantial. Laguna (2005) estimates that in about 30 percent of the cases, only basic pedagogical training is needed, while in the rest, more complex medium and long term training processes are required.

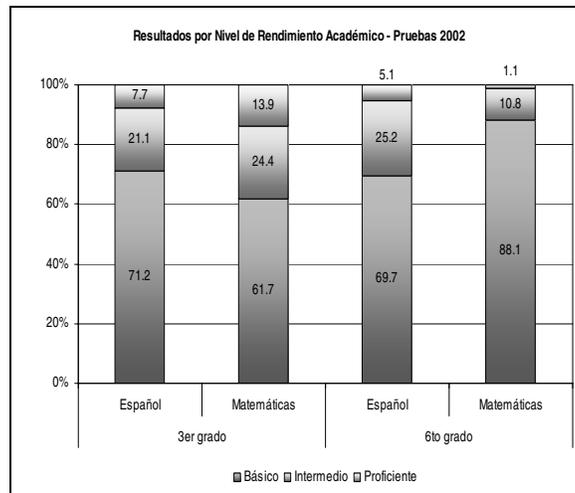
Figure 2.17: Percentage of Primary and Secondary Teachers Trained (1999-2004)



Source: International Education Statistic (2007)

2.38 Low teacher salaries are one factor behind the high staff rotation and the persistence of ‘empiricos’ in spite of the education ministry’s efforts to step up training and reduce their prevalence. The economic incentives to be trained and certified are very small. The earnings differences between an “empirico” and a certified teacher, in secondary, for example is only US\$ 15. Other factors that may be hampering quality of teaching are (i) the postponement of reforms to improve teacher training, (ii) a lack of coordination between the universities that train secondary teachers and the Ministry of Education, (iii) difficulties in applying a policy of assigning the best teachers to the first 3 grades, which are the most crucial years,⁴⁰ and (iv) the absence of professional development programs for teachers, including pedagogical advisory systems (PER, 2007). The “empirismo” increased from 16 percent in 1997 to 34 percent in 2004. The MECD has started in 2006 a certification program to start reducing the incidence of this program.

Figure 2.18: A very small proportion of students in 6th grade are found to be proficient



⁴⁰ It is very revealing that in 2004, 24.6 percent of all first grade teachers were ‘empiricos’, while only 15.4 percent of all sixth grade teachers had this status; Laguna (2005).

2.39 Despite the shortcomings, perceptions about the quality of education is not negative. About 20 to 25 percent of all parents with children in primary school consider that their education is either regular or bad. Figure 2.18 displays perceptions on quality of education gathered from households with children enrolled in primary education. Households in the poorest quintiles are less likely to rate their children's education as excellent as compared to households in the highest quintiles. Indigenous households and those engaged in agriculture are less likely to rate their children's education as excellent and more likely to rate it as regular or bad. However, despite the variance along the socioeconomic scale. In no case more than a fourth of the populations thinks that education is of low quality. This might be part of the problem in Nicaragua, as low expectations and low standards—in part motivated by the low educational levels of the adult population, might reduce the possibility of demanding higher quality of the service and greater effectiveness of the service providers.

Quality and Test Scores⁴¹

2.40 Less than 14 percent of all students in 3rd and 6th grade are found to be proficient in their curriculum. Using results from the education proficiency quality survey conducted by the MECD in year 2002, it is found that between 60 and 90 percent of all students in 3rd and 6th grade have only a basic (or below than expected) knowledge about their curriculum (mathematics and Spanish). Only a minority (10 to 25 percent) of the student population was found to have normal or proficient knowledge on their curriculums. Test scores indicate that proficiency rates were generally higher in Managua and in the Central region with the exception of mathematics among 6th graders (which was roughly similar across regions).

2.41 The lowest levels academic achievement as measured by curriculum proficiency are found in rural areas, in multigrado schools, among girls, among grade repeaters, and among those students who speak a language other than Spanish. Table 2.12 indicates the learning gaps demonstrated in academic performance tests; it should be noted that the lowest percentages of students with levels of knowledge below the minimum level set by the MECD are found among students attending private subsidized schools, and also attending schools in urban areas of the Managua and Central regions, and among students whose parents have attended university or graduate school.

2.42 Results of standardized tests in Spanish and applied mathematics during 2002 were used to analyze internal and external factors associated with academic performance of students in the 3rd and 6th grades in Nicaragua. Arcia, Porta and Laguna (2004) report that main findings show that the most important factors associated with improvements in academic performance are: the principal's pedagogic leadership, teacher motivation, high education levels among teachers, safe school facilities, as well as student and family motivation and parental education. In contrast, aspects such as grade repetition, child labor, school absenteeism and speaking a language other than Spanish have a negative impact on the academic performance of Nicaraguan children. With respect to school administration, it appears that private subsidized schools have shown the best results, regardless of the good student effect (self selection), and the student's socio-economic background. Public autonomous schools fare slightly better than public non autonomous schools in 3rd grade.

⁴¹ We are especially grateful to the MECD's Division on the Evaluation of Policies, Programs and Projects for their valuable collaboration.

Table 2.12: Students with knowledge levels lower than Minimum Level (%)

	3rd level (grado)		6th level	
	Spanish	Mathematics	Spanish	Mathematics
National	71.2	61.7	69.7	88.1
Geographic area				
Urban	66.4	62.2	64.3	86.4
Rural	75.5	61.2	77.4	90.6
Region				
Managua	66.9	63.6	63.8	87.1
Managua Urban	62.7	59.0	60.5	85.4
Managua Rural	79.5	77.4	74.8	93.1
Pacific	72.3	69.2	71.5	89.6
Pacific Urban	70.9	67.6	68.4	88.8
Pacific Rural	73.5	70.5	75.2	90.5
Central	71.1	53.3	70.7	86.4
Central Urban	63.8	58.6	61.8	83.4
Central Rural	75.4	50.2	79.3	89.4
Atlantic	77.9	61.6	81.1	91.8
Atlantic Urban	77.7	69.7	75.7	92.7
Atlantic Rural	77.8	58.7	86.1	91.3
Type of school				
Public non-autonomous	77.6	64.6	74.0	89.7
Private with subsidy	57.7	55.3	53.3	75.5
Private with subsidy	59.6	55.1	50.4	84.5
Public autonomous	71.7	62.0	74.0	90.1
Mode (Modalidad)				
Regular	69.6	63.7	67.0	87.7
<i>Multigrado</i>	76.1	55.5	84.3	90.5
Shift (Turno)				
Morning	71.2	60.5	74.6	87.7
Afternoon	71.4	65.0	65.3	88.6
Student's gender (sexo)				
Male	73.4	60.3	68.8	87.0
Female	69.0	63.1	71.3	90.2
Speaks another language than Spanish				
Another language	79.0	67.2	74.8	88.3
Spanish	70.7	61.4	69.4	88.1
Repeater (Repitente)				
Repeater	78.5	70.0	76.6	91.3
Non Repeater	69.7	60.0	69.3	88.0
Over-age				
Over-age	73.4	59.8	79.0	91.9
Normal	69.1	63.6	62.0	85.1
Parent's education level				
No studies (sin estudios)	71.6	60.3	68.9	88.5
Adults education	74.7	61.0	77.9	89.6
Primary	74.0	62.7	74.2	89.7
Secondary	68.1	63.8	66.5	87.5
University	51.1	49.7	53.2	80.9
Postgraduate	50.0	37.5	54.8	70.0

Source: MECD (2004)

The challenges in education

2.43 Nicaragua still falls behind in Latin America in primary and secondary education service delivery (both in relation to access and quality). And the average educational level in Nicaragua is among the lowest in the region. Education outcomes in Nicaragua have significant links with poverty and investing in education is very profitable for individuals. Indeed, estimates indicate that a Nicaraguan is expected to earn 10 percent higher wages for each additional year of schooling attained. However, despite all the advantages that education has to offer, 72 percent of the population does not attain complete secondary education and consequently earns wages below the poverty line.

2.44 Nicaragua's education system faces significant challenges needing systemic efforts and requiring important investments in key sub-sectors, such as preschool and secondary education. Investments need to focus on increasing access and permanence in schools, and improving the quality of education (reducing drop-out rates, repetition and improving the quality of teaching). A more comprehensive approach from pre-school to primary and to secondary is needed to build a sustainable education system in the medium and long run.

2.45 There are substantial inequities in access and quality of preschool, secondary and post secondary education between richer and poorer households, between urban and rural areas, and between regions. Smaller difference in the case of primary. Late enrollment, high dropouts, and high repetition rates altogether are preventing children, and especially those from poor families of completing primary and secondary education. Young individuals who are poor, indigenous, and who live in households engaged in agriculture attain less than 5 years of education on average. Still 20 percent of poor children do not enroll in school at all. It is critical to implement geographically focused policies, such as allocating and attracting more and better teachers, and providing training to the existing ones in rural areas and in poorer regions.

2.46 Investments in education infrastructure should be considered with care in order to maximize the use of existing idle schools. Investments should also be devoted to textbooks, supplies, and qualified teachers. Scholarships targeted to the poorest could offset some non-tuition expenses (such as CCTs).. Primary school fees, levies, and contributions should be minimized and preferably fully abolished.

2.47 Eliminating illiteracy among the youth is urgent to take advantage of new jobs. Programs such as primary completion and improved technical skills will be key to respond to the demands of the labor market. Greater investment in secondary is also needed to ensure the youth has opportunities to join the labor market effectively.

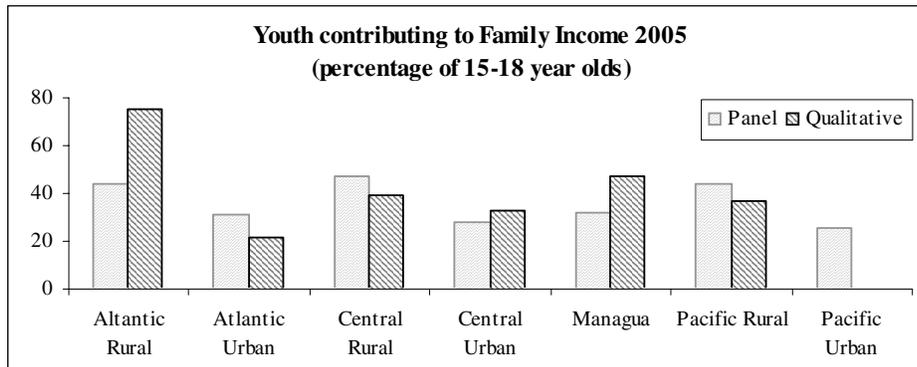
2.48 Despite progress, simple projections show that among current young children, probably among 20 percent will not finish primary and 45 percent will not finish secondary. Many of the currently enrolled children and also the current cohorts of youth that have already passed the years of primary and secondary schooling, and are joining the labor force- and will be part of the labor force for the next five decades or so, have accumulated so far very little human capital. So despite the recognized larger social returns to invest in basic education, adult education and technical training will continue to be a challenge and a need for Nicaragua. If there is no investment in the coming decade to improve the quality of education and increase access to schools, then half the population will be destined to remain in poverty.

Box 2.5: Key factors identified by beneficiaries deterring children from attending school

The Voices of Nicaragua work revealed that unequal access and low quality of education are problems that need to be addressed to encourage parents to send their children to school, particularly girls and young children. People generally agreed that the poor in rural areas are the most disadvantaged. Families in poverty tend to send their children to school less, keeping them at home to work. Distance and rain affect people living far away from schools. Parents tend to avoid sending their daughters to school in rural communities in the Atlantic because it is risky for girls to travel far away to schools. In the Center, people say that young children are unable to enter school at the appropriate age because they are too young to walk the required distance. In addition, associated costs make basic education inaccessible to the poorest. In various communities, children do not attend school because parents cannot afford the costs of getting them ready for school. In a community in the Pacific, parents report that they had to spend C\$1,000 Cordobas in shoes, uniforms, notebooks, etc.

Moreover, single female-headed and/or socially excluded households are the most affected in lacking education opportunities. According to interviewed people, these children drop out of school most often. Social exclusion may also lead a family to avoid sending children to school. In a community in the Pacific, parents were not interested in educating their children and decided not to send them to school because they were labelled as “the outcasts.”

Nevertheless, demand for schooling is frequently said to exceed the supply of classrooms, teachers and educational materials. In many communities, people say there are far too many children beyond what the school infrastructure can accommodate and teachers are often multi-grade or even teach the whole primary. The mismatch of supply and demand is a problem because it lowers quality. In a semi-urban community in Managua, a leader stated that the instituto or secondary school is insufficient and it is overcrowded because it is a feeder school for 13 other nearby communities. In another area of Managua, there are 55 students per teacher in 6th grade; well above the national average. In a community in the Pacific, parents reported that primary school teachers lacked the appropriate teaching credentials. A school in the Atlantic rural had no teachers and children were unable to attend classes despite the infrastructure being in place.



The qualitative study also revealed that work is a key factor deterring children from participating in school. Abandoning school was reported to be high, up to 20 percent in one community during the harvest season. The combination of work and school negatively affect attendance as well as performance for secondary students. Parents regularly assign work-related tasks to their children when they arrive from school. Almost 40 percent of young adults 15 to 18 years of age, contribute income to family income, as shown from panel data and the 18 qualitative communities sampled (see Figure). The combination of school and work is reported to lessen achievement among teens, particularly in rural areas.

Source: Del Carpio (2007) Voices of Nicaragua. Background paper to Nicaragua Poverty Report

2.49 Both supply side limitations that hamper access to school as well as affordability constraint access to school. While lack of access to facilities and financial constraints constitute important reasons why poor children do not attend primary school (especially in the Central and Atlantic regions), lack of interest and family problems have risen in importance as factors explaining school non-attendance among urban children. Work, lack of money, and lack of interest are the main reasons for boys not to be enrolled in secondary/post-secondary school; family problems, child care, and pregnancy are the main reasons for girls not to be enrolled. For the two lowest quintiles it is not the fact that school is not free, but rather out-of-pocket expenses related to sending children to school, mainly transportation, that may be precluding attendance.

2.50 Regarding education quality, Nicaragua is the Latin American country with the highest pupil-teacher ratio in the region and both in primary and secondary schools, and its teacher work force is one of the least qualified in the region. Improving the quality of teaching is a priority for generating better results in education. Therefore, the emphasis in teacher training, training and in improving incentives is critical to both improve the quality of teaching and for keeping the best teachers within the educational system. Improving access and quality of early education programs should be a key priority to lower primary repetition rates and to improve education quality. The government should strengthen the first three grades of the primary education cycle by (i) harmonizing the curriculum in these three grades to emphasize reading, writing, and mathematics logic and comprehension, (ii) assigning the most experienced teachers to the first three grades, and (iv) ensuring an adequate supply of classroom and learning materials.

2.51 Across the system, differences in quality of inputs seem to generally favor private vis-à-vis public schools; within the public system the difference is not clear cut. Quality deficiencies are also reflected in the fact that less than 14 percent of all students in 3rd and 6th grade are found to be proficient in their curriculum. Again in this case private schools fare better than public, although within public school, autonomous ones seem to have an advantage. The inequities in the system are reflected in lower performance among rural students, and those living in poorer regions. The positive effect of the family environment and the importance of parental education in student curriculum proficiency point to a system where inequities might grow larger if access to a quality of education does not improve dramatically among the poor.

C. OPPORTUNITIES IN PREVENTIVE HEALTH

2.52 Among health-related MDGs the most worrisome are maternal mortality, which is very unlikely to be met by 2015, and improvements in child malnutrition, which is unlikely to be met. Infant and child mortality have better possibilities to be achieved by 2015. Health status in Nicaragua shows gradual but steady improvements over the last decade as depicted by improvements in life expectancy; infant and child mortality, immunization rates, and child malnutrition. However and despite these achievements, there are still large inequities in access and quality of health services across socio-economic groups and regions. The public sector is geared towards curative health, which is inconsistent with the massive need for preventive health. Per capita allocation of public resources is concentrated in richer regions such as Managua and the Pacific. The public health sector maintains a large stock of doctors, hospitals, and clinics to provide low-cost consultations, while the cost of other non-consultation items, such as medicines and lab tests are essentially paid out-of-pocket. The poor in rural areas (especially in the Center and Atlantic), the indigenous, and those engaged in agriculture have less access to health care than average and face deficient quality. Access to risk mitigation mechanisms is extremely low, such as insurance and social security, causing families to spend a significant share of the income in out-of-pocket health expenditures, particularly for medicines and other non-consultation items.

such as lab tests. Access and affordability constraints, such as large distances, lack of medicines, high cost, discrimination and other demand-side factors (such as self-prescription) constitute the main limitations pressing the poor to seek informal care when ill or to not seek care at all. During the Voices study an informant in an indigenous community in RAAN stated that as a poor person she is discriminated against by health providers, “the service in the health center is not equally administered to all people, they help the people with higher economic opportunities first and then the poor ones, they leaves us for last, she said, and they deny us the best medicines.”

Box 2.6: The Costs of Domestic Violence⁴²

Domestic violence in Nicaragua should be seen as a public health problem with significant associated economic costs for the family as well as society at large. The growing number of cases of domestic violence being reported every day in hospital emergency rooms makes these collection of incidents an issue for public health, placing even more pressure on the weak health care system. The economic costs of domestic violence have an impact on the family, as well as on the society at large; among the apparent consequences are: labor absences, loss of opportunities for better jobs, and school absenteeism together with low academic performance among children living in households where domestic violence takes place.

In recent years, there has been an increase in violence and demands of violations of women’s personal integrity. The Police Division on Women and Children (“*Comisarías*”) serviced 10 thousand more people in 2006 than in 2005; 40 thousand versus 30 thousand, respectively. Of these, one-third filed formal complaints; 82 percent for domestic violence and 17 percent for sex crimes.

Ineffective penal procedures related to domestic and sexual violence prevail, weakening the use of punishment and prevention as justice tools against these incidents. Despite progress made in promulgating women’s laws, Nicaraguan women still have limited access to justice and face significant constraints. The justice system is one of the weakest of institutions in Nicaragua because the Judicial Branch of state is directly influenced by powerful political, economic and religious sectors.⁴³ This situation is reflected in: a failure to incorporate the mandates of international treaties into Nicaraguan legislation;⁴⁴ discriminatory elements contained in several laws and the lack of mechanisms by the National Assembly to incorporate a gender perspective into legislative actions; high cost of legal procedures in relation to women’s monetary incomes; lack of coverage and limited presence of legal-administrative institutions in rural areas; arbitrary interpretations of the text of the laws; delays in justice for cases of violence against women; and, the population’s general lack of knowledge about human rights, especially women.

2.53 In 2004 the Ministry of Health (MOH) established a ten-year national health plan to promote decentralization of health service delivery. This plan has been supported by different donors and financing has been modified to a sector wide approach with a increasing level of donor alignment, harmonization, and strategic support to key interventions. Concurrently, new legislation has empowered local health providers with decision-making authority, especially for

⁴² Box prepared by Ivonne Siu for this 2007 Nicaragua Poverty Assessment.

⁴³ CENIDH. Informe sobre Derechos Humanos en Nicaragua. 2004 -2005.

⁴⁴ Ramos, Alba Luz (2006) “Comprehensive Protection for Women in the Face of Gender Violence: A Legal Approach.”

resource management and allocation. The Prospects are positive under the MOH's new plan, which key five-year goal is to improve access to health care services among the poor and most vulnerable sectors of the population, especially in the areas of maternal and child health care.

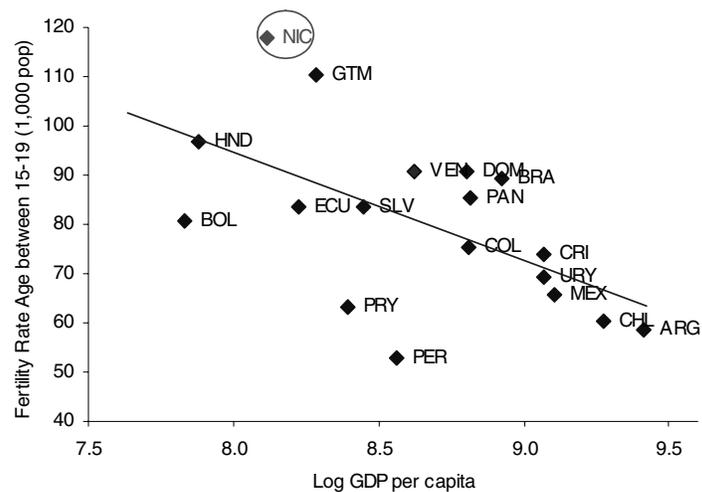
Health Status

2.54 Health status in Nicaragua has shown gradual but steady improvements over the past ten years, similarly to other Central American countries. In the past three decades, life expectancy at birth has increased by more than ten years in Nicaragua. This improvement in life expectancy is similar to that achieved in its neighboring countries. In addition, fertility rates (proxied by the average number of children women had during their life-cycle) declined by almost 50 percent in the past two decades in Nicaragua; fertility rates dropped noticeably from 6 in 1985 to 3.1 in 2004. In all these countries, the desired total fertility rate is lower than the observed fertility rate, which indicates that women are not meeting their reproductive needs. This is confirmed by the difference between the desired and the actual number of children. Women in Nicaragua reproductive preferences indicate that roughly one-in-three children born is not planned; a rate which is high in contrast to other Latin American countries.

Maternal Health

2.55 Nicaragua has the highest share of young women (15 to 19 years old) with children in Latin America (Figure 2.19). Teen pregnancy is closely linked to social issues, among others child poverty and educational levels. Needless to say, teen mothers are less likely to complete primary or secondary education, critical to qualify for better employment opportunities.

Figure 2.19: Nicaragua has the highest share of young women between 15 to 19 years old with at least one child in Latin America

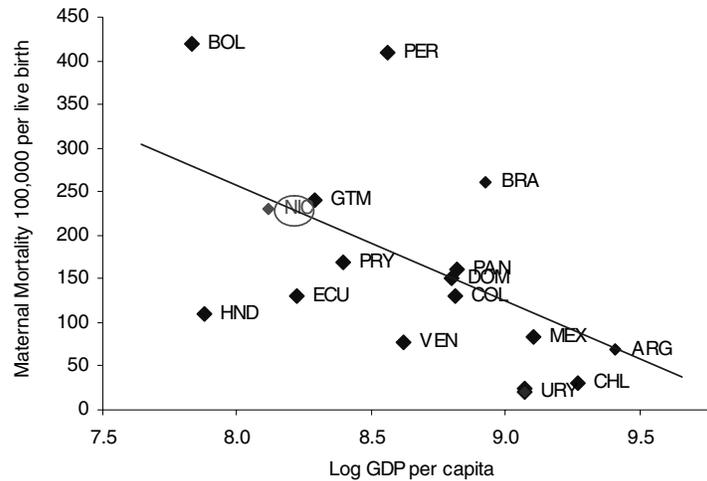


Source: Authors using WHO, PAHO Core Health Data System 2007

2.56 Maternal mortality rates in Nicaragua are among the highest for Latin American countries. The maternal mortality ratio (per 100,000 live births) in Nicaragua was at 230 in year 2000. Nevertheless, given its level of development (Figure 2.20), Nicaragua is not exceptionally high in contrast to Bolivia. Noteworthy however, and according to the Ministry of Health, of total maternal deaths in 2004, 11 percent were deaths not related to delivery, with almost three-in-four

of these due to the mother's suicide, mainly among adolescents. Both physical and sexual violence against young mothers is having serious consequences for the physical and mental health of both mothers and children in Nicaragua and thereby has become a major public health issue in Nicaragua. A recent study in the city of Leon in Nicaragua indicates that physical and sexual aggression against mothers (either before or during pregnancy) increases substantially the risk mortality of their children all the way to age five.⁴⁵

Figure 2.20: Maternal mortality rates are among the highest in Nicaragua (per 100,000 live births)



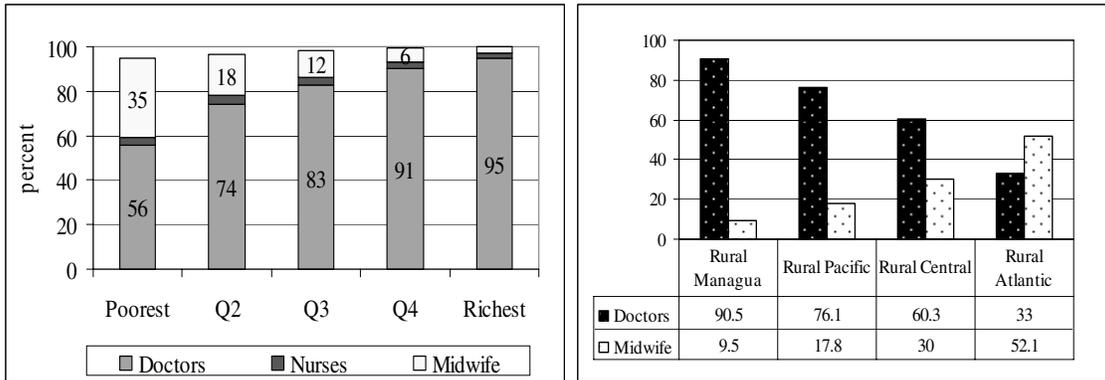
Source: Authors using WHO Core Health Indicators 2007

2.57 Advances in maternal health policy Nicaragua needs to be put in practice to improve outcomes. The updated National Health Policy (2004 to 2015) pays special attention to the promotion of healthy mothers and children. However, interventions need effective cross-sectoral coordination between different initiatives, such as social programs for families and communities, education-for-all, access to basic health care and reproductive health services, skilled attendance during childbirth, improved neonatal and child health care, and substantial reductions in domestic violence. As such, the country has developed laws in relation to childhood and adolescence health promotion, breast-feeding, delivery and pre-post natal care, as well as other regulations preventing nontraditional professionals to participate in delivery care and protecting relations between parents and children.

2.58 Deliveries attended by trained personnel in Nicaragua are among the lowest in Latin America, and there are large disparities across socio-economic groups and regions. Almost all deliveries in the richest quintile are attended by a trained doctor, about half of poor women in the poorest quintile are attended by midwives). Similarly, almost all births in Managua are attended by a doctor, while it is less than half in the rural Atlantic region (Figure 2.21).

⁴⁵ Asling-Monemi, Pena, Ellsberg and Persson, 2003.

Figure 2.21: Births attended by trained personnel by quintile and region



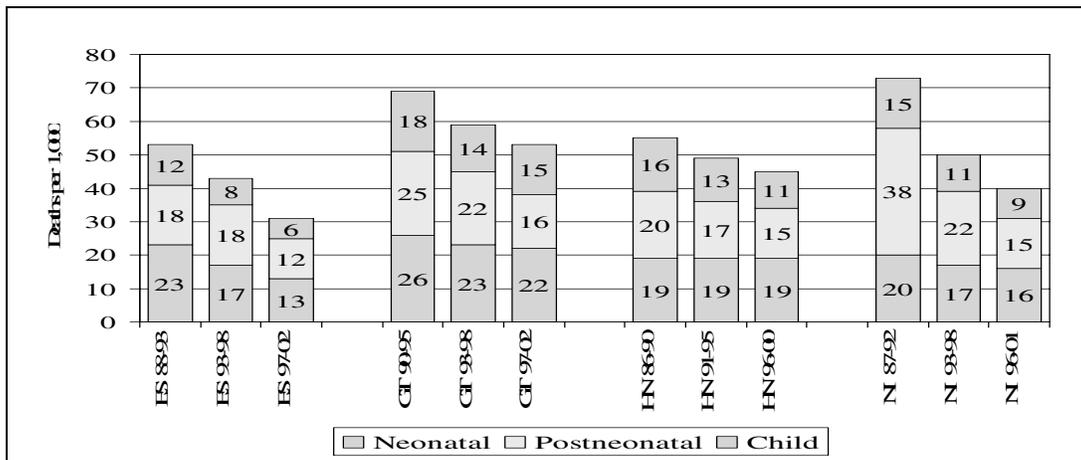
Source: LSMS 2005

Child Health

2.59 Under-five mortality rates have also fallen steeply, similar to other Central American countries. Nevertheless, and despite this progress in the couple of decades, child mortality under age one is 31 per 1000 births, half of them are neonatal or die within the first 28 days of life (Figure 2.22). The vast majority of child deaths could be prevented by a combination of access to good care, nutrition, and medical treatment. Estimates indicate that infant and child mortality in Nicaragua have declined since the 1980s mainly due to important progress in post-neonatal mortality (death between the 28th day of life and the 1st birthday), while neonatal mortality has declined only slightly in the same period.

2.60 Immunization coverage is generally high (close to 90 percent coverage), however it has dropped since 2004. Childhood immunization tends to offset at least some of the detrimental effects of poverty and low education. Hence, promoting immunization coverage is an indispensable strategic component of poverty reduction for Nicaragua. Immunization rates of polio, measles, diphtheria, pertussis and tetanus, and tuberculosis dropped from an average of 90 percent in the late 1990s to an average of about 85 percent in 2004.

Figure 2.22: Trends in under-five mortality show stubbornly high neo-natal deaths before the 28th day of life

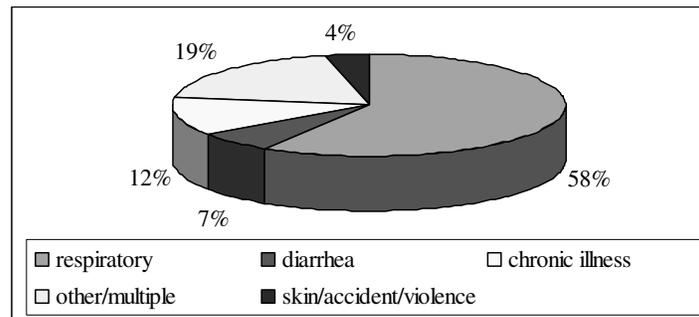


Source: Stupp et al. 2005

Morbidity

2.61 Overall, respiratory illnesses are the most frequent disease in Nicaragua followed by chronic illnesses and diarrhea (Figure 2.23). More than half of all individuals that fell ill during the month prior to the survey report suffering from respiratory illnesses. Diarrhea accounts for seven percent, and chronic and other multiple illness are about one-third. While respiratory diseases are relatively more common among individuals in the poorest quintiles, chronic illnesses are more common among individuals in the richest quintile. Not surprisingly, indigenous people and individuals living in agricultural households are more vulnerable to suffer from diarrhea and other multiple illnesses.

Figure 2.23: Morbidity in Nicaragua 2005



Source: LSMS 2005

2.62 Respiratory infections and diarrhea are the primary causes of infant and child morbidity and mortality in Nicaragua, especially in rural areas. Prevalence rates are highest among children aged 12 to 23 months, which has a severe impact on infant malnutrition. Children in the Atlantic are the most prone to diarrhea, reporting one-in-three in the past month. However, less than half of all mothers with a child suffering diarrhea consulted a medical professional. Not surprisingly, urban mothers were more likely to seek consultation than rural mothers.

2.63 Anemia is rampant in Nicaragua, affecting one-in-three children between 12 and 59 months old. Iron-deficiency in children is associated with impaired cognitive performance, motor development, coordination, language development and scholastic achievement. Anemia increases morbidity from infectious diseases because it adversely affects several immune mechanisms. Among factors causing anemia, nutritional deficiency, due to lack of dietary iron, is a major cause. If anemia remains undiagnosed, it can lead to infertility in women of childbearing age and premature delivery among pregnant women. The prevalence of anemia is higher in rural areas than in urban areas. Surprisingly, anemia prevalence in Nicaragua does not vary substantially among income quintiles. Both age of the child and mother's education level seems to be negatively correlated with the percentage of children with anemia; as the age of the child and mother's education increase, the prevalence of anemia decreases.⁴⁶

2.64 Nicaragua has the lowest rate HIV prevalence in Central America of the estimated 200 thousand people infected, at 0.2 percent of the population, in contrast to 0.6 percent in El Salvador and Costa Rica, 1 percent in Guatemala, and 1.5 and 1.6 percent in Panama and Honduras, respectively. In an effort to prioritize promotion and prevention of the disease, Nicaragua has implemented campaigns to promote the use of condoms, to avoid early sexual

⁴⁶ World Bank (2006b: p33)

relations, and to identify the symptoms of AIDS in both urban and rural areas. In spite of these efforts, there are still important challenges to face, such as information dissemination and knowledge about this infectious disease, especially among women, and within the rural and indigenous population. Nevertheless, similarly to what occurs in the Caribbean and South America, the HIV prevalence in Nicaragua is mostly concentrated in the urban areas and transmission is primarily due to heterosexual contact.

Healthcare Utilization

2.65 The Nicaraguan Ministry of Health (MOH) provides health care through a network of about 1,000 facilities, including 33 hospitals, 177 health centers, and 872 health posts. The MOH administers the system through 18 departmental offices (SILAIS). The Nicaraguan Social Security Institute (INSS) is the second most important health care provider, with almost one-in-five persons 20 to 39 years old going to INSS for consultation. INSS purchases a defined package of services from 48 health provider organizations called *Empresas Medicas Previsionales (EMPS)* (see PAHO, 2002). Among MOH facilities, health centers are the most visited with 43 percent of the population, followed by private clinics (16 percent), public and private hospitals (13 percent), INSS (11 percent), health posts (9 percent), and other facilities (8 percent).

2.66 Healthcare utilization vary substantially across socio-economic groups; among the richest quintile is almost 60 percent while among the poorest quintile is about 39 percent (Table 2.13). Utilization rates are higher among women than among men (52 and 47 percent, respectively). Not surprisingly utilization rates are higher among infants under one year of age and elders (at 81 and 56 percent, respectively) and lower among the youth (at 33 to 42 percent, respectively for 13 to 19 and 20 to 29 years old).

Table 2.13: Poor households tend to use health centers (percent of those being ill last month)

	Health post	Health center	Public or private hospital	INSS	Private clinic	Other
Socioeconomic group						
Non Poor	4.3	33.7	15.7	14.7	23.9	7.7
Poor	15.7	55.5	10.2	4.0	5.5	9.1
Poorest Quintile	19.8	56.2	8.3	0.7	3.5	11.5
Q2	14.0	55.0	10.9	6.6	6.3	7.2
Q3	7.5	50.5	14.6	7.8	12.2	7.4
Q4	5.4	34.1	16.1	16.5	20.3	7.7
Richest Quintile	1.9	24.0	15.6	16.5	34.0	8.1
Vulnerable group						
Indigenous	27.6	26.8	18.9	6.0	11.6	9.1
Agric. household	16.9	47.1	10.5	1.8	13.7	9.9
Strata						
Rural	16.8	47.9	10.3	3.0	12.3	9.7
Urban	3.1	38.1	15.9	15.9	20.0	7.2
Managua	3.6	29.8	14.8	23.8	20.3	7.7
Pacific	2.9	47.9	13.7	9.8	17.4	8.2
Central	10.4	51.3	12.2	3.4	15.6	7.0
Atlantic	27.8	31.9	13.8	2.7	11.6	12.3

Source: LSMS 2005

2.67 Health centers and health posts are used most frequently by the poor in Nicaragua; about 55 and 20 percent, respectively, by the poorest quintile (Table 2.13). Health posts are more commonly used in rural areas, and in the Center and the Atlantic, and they are not well equipped even to provide basic services. Private clinics, usually associated with better quality of service delivery, and INSS are used more by patients in urban areas and, therefore, in Managua and the Pacific.

2.68 Insurance and socio-economic status are the most important factors associated with healthcare utilization in Nicaragua, followed by level of education and with the region being less important.⁴⁷ Individuals with health insurance are 56 percent more likely to get medical treatment when ill, individuals whose incomes are in the fifth, fourth, third, and second quintiles, have a 32, 23, 20 and 11 percent, respectively, higher probability to receive treatment with respect to individuals in the poorest quintile. Education is also an important associated factor, individuals living in households with a head/spouse who has secondary and completed primary, are 9 and 6 percent, respectively, more likely to receive medical treatment when ill. Individuals in the Pacific and Center region display a 5 and 3 percent, respectively, higher probability to receive medical consultations in contrast to those living in the Atlantic.

Table 2.14: Poor individuals in rural areas are the least likely to receive care from doctors, even in emergency cases, when ill

	Ordinary consultation by doctors	Ordinary consultation by nurses	Emergency consultation by doctors	Emergency consultation by nurses
Socioeconomic group				
Poor	77.7	14.9	90.0	7.5
Non Poor	91.7	3.8	97.9	1.7
Poorest Quintile	67.9	22.1	88.5	5.9
Q3	82.9	11.6	88.6	11.4
Richest Quintile	87.7	6.8	92.5	7.2
Vulnerable group				
Indigenous	67.1	24.5	82.4	10.0
Agric. household	74.9	16.8	89.7	6.9
Strata				
Urban	93.4	2.7	97.9	2.0
Rural	76.2	15.7	91.3	5.9
Managua	95.1	1.0	97.6	2.4
Pacific	92.0	3.4	97.1	1.8
Central	81.0	13.6	95.1	3.7
Atlantic	69.0	19.2	85.5	9.5

Source: LSMS 2005

Preventive Healthcare

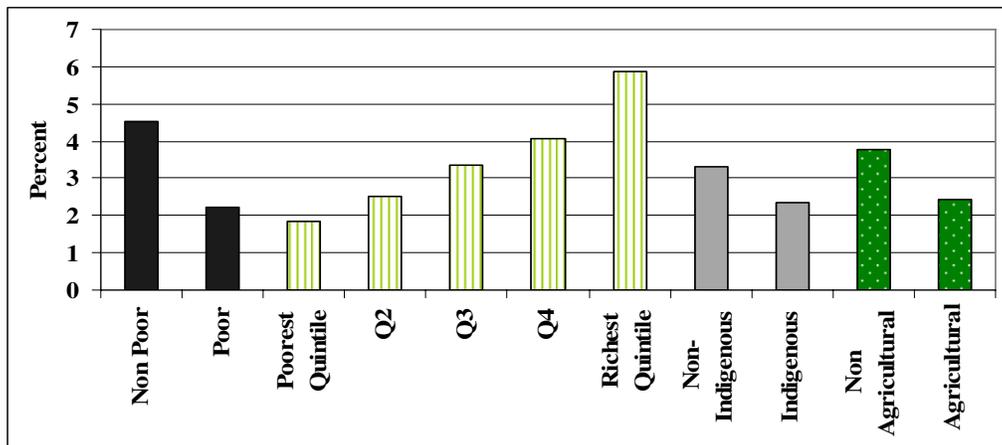
2.69 Less than one-in-every-twenty individuals older than 35 years old sought preventive health care in Nicaragua (see Figure 2.24). As expected, urban households and those in the highest quintile use more preventive care services. In Nicaragua, many diseases can be prevented,

⁴⁷ Regression results (probit model) using the 2005 LSMS quantify main associated factors to healthcare utilization conditional on a set of individual and households characteristics. See NI PA Health Background Paper for full regression results.

yet the current healthcare system is geared towards curative services,⁴⁸ and in addition, access to basic water services has not grown over the last decade with coverage even decreasing slightly among poor and extremely poor in recent years (see next section on water). Given that many conditions are preventable in Nicaragua, this is a challenge faced by the country’s healthcare system, and supports the need for every healthcare interaction to include prevention support. Providing systematic information to the population at large reduces health risks, and reinforces healthy behaviors. Moreover, this can dramatically reduce the long-term burden and healthcare demands of chronic conditions.

2.70 Preventive care utilization is most influenced by region of residence and education of the spouse, which is markedly different from healthcare utilization (see paragraph 2.24), followed by socioeconomic status and education of the head of household.⁴⁹ Individuals in the Pacific, Managua, and the Center regions, respectively, are 36, 30 and 12 percent more likely to use preventive medical care in contrast to those in the Atlantic region. Education of the spouse is a key factor associated with seeking preventive care, individuals in households with a spouse with tertiary, secondary and completed primary, have a 23, 16, and 12 percent, respectively, higher probability in contrast to individuals having a spouse with no education. Socioeconomic status is also relevant for preventive care, individuals whose incomes are in the fifth, fourth and third quintiles, have a 19, 16 and 17 percent, respectively, higher probability to use preventive than individuals in the poorest quintile. Education of the head of household is somewhat less important associated factor, individuals living in homes with a head of household who has secondary are 8 more likely to seek preventive care (only 2 percent more likely for just completing primary education). Finally, estimates indicate that the female population is 6.2 percent more likely to seek preventive medical care than male individuals.

Figure 2.24: Preventive care for the highest quintile is three times higher than the poorest



Source: Authors using the 2005 Nicaragua EMNV.

⁴⁸ According to WHO, current healthcare systems worldwide are based on responding to acute problems. Testing, diagnosing, relieving symptoms, and expecting a cure are hallmarks of contemporary healthcare. While these instruments are appropriate for acute and episodic health problems, a notable inability to improve health status occurs when applying this model of care to developing countries with a morbidity pattern mostly related to preventable diseases.

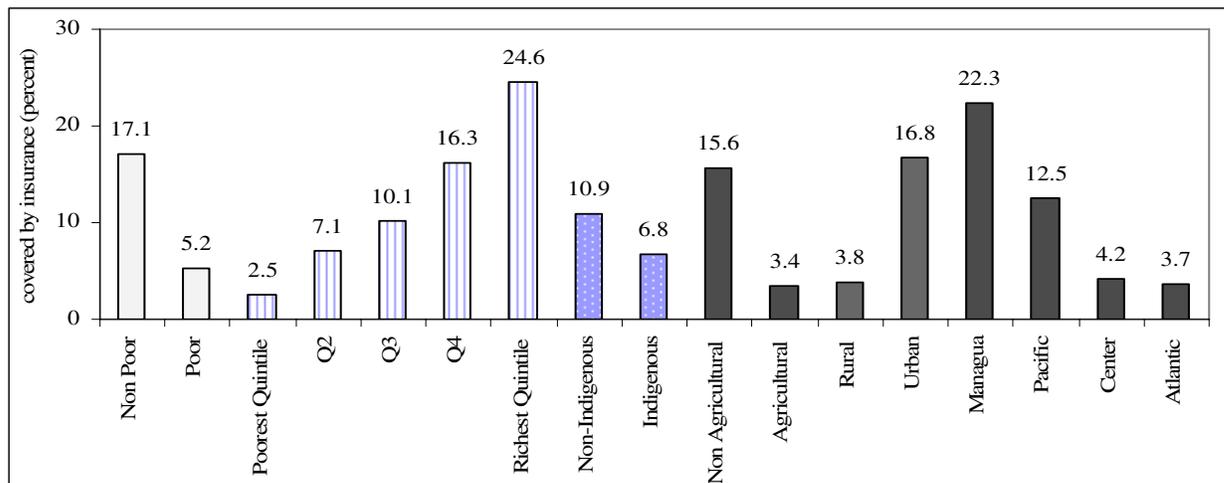
⁴⁹ See NI PA Health Background Paper for full regression results (probit model).

Social Security

2.71 Access to health insurance in Nicaragua is low by international standards, especially in rural areas, and compared to El Salvador and Guatemala. Being covered by health insurance reduces the probability that individuals spend more than they can afford when facing health shocks and enhances higher service utilization. The social security system in Nicaragua is the primary source of health insurance in the country.

2.72 The majority of individuals with access to health insurance live in non-poor urban households. While 24 and 13 percent of the population in Managua and the Pacific have health insurance, respectively, coverage is only 4 percent in the Center and the Atlantic (Figure 2.25), only 3.4 percent in rural areas and as little as 2.5 percent for the poorest quintile. The current low coverage and inequitable situation of health insurance characterizes the social security system as an inadequate financial protection provider for health shocks for the Nicaraguan population. The major factors preventing the expansion of social security coverage in Nicaragua are: (i) lack of institutional presence in rural areas where vulnerable populations such as seasonal workers or agricultural producers and indigenous people live; (ii) lack of knowledge of social security benefits among low income workers, as well as a negative image of the social security that is associated with high costs but little expected benefits; and (iii) lack of political will to improve the system and expand the coverage, in particular to deal with the informal labor force.

Figure 2.25: Access to health insurance is concentrated among the urban non-poor in Managua and the Pacific

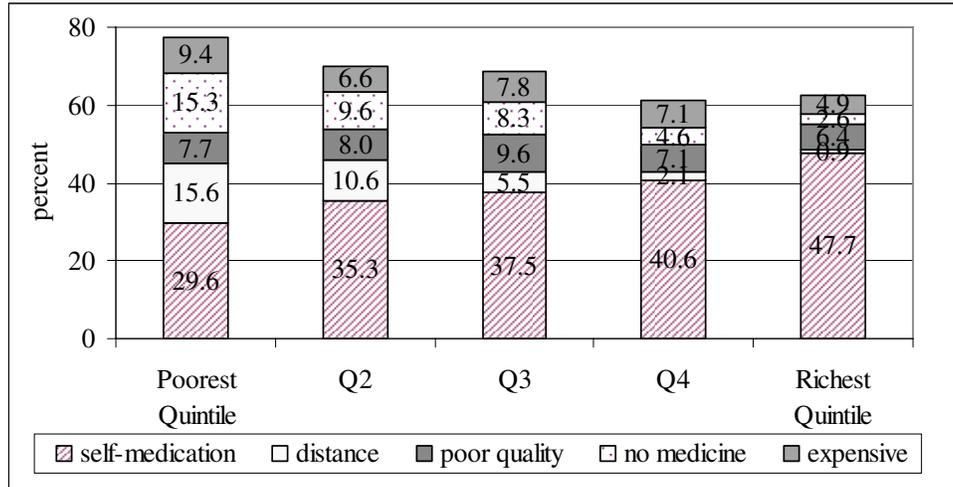


Source: LSMS 2005

Healthcare Constraints

2.73 Low quality of health facilities (including lack of medication) concomitant to self-medication and high cost are the main reasons why Nicaraguans not seek medical care when ill (Figure 2.26). Overall, two-thirds of Nicaraguans do not seek healthcare when ill, and of them, regrettably, one-fourth do not consult because of low quality (including no medicine) and distance (facility is too far), almost one-half due to self-medication, and, interestingly, less than one-tenth do not use healthcare because of cost. Among the poorest, self-medication is still high but lower than average (one-third), but poor quality is much higher (almost one-half), and high cost is only about one-tenth.

Figure 2.26: Reasons for not seeking healthcare when ill by quintile



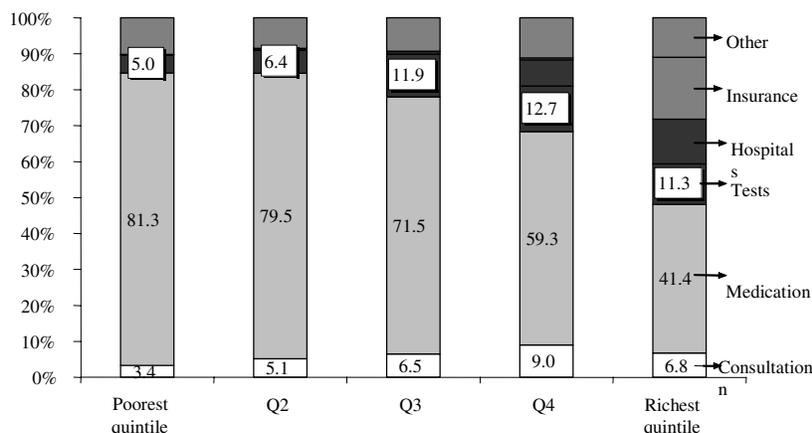
Source: LSMS 2005

2.74 Health private expenditures are significantly higher in Nicaragua, accounting for 18 percent of overall non-food consumption or about 7 percent of total income, compared with other Central American countries.⁵⁰ Non-poor households spend more of their income on health than the poor as a share of total income (10 percent for the highest in contrast to 4 percent for the lowest quintile), the share of non-food consumption allocated on health is relatively similar (19 percent for the highest in comparison to 16 percent for the lowest quintile).

2.75 Medicines are the most important health expense for all households, but particularly for the poor; 14 percent of non-food consumption is allocated to this purpose for the poorest quintile in contrast to 8 percent for the richest. Overall average monthly per capita expenses in health indicate that medicines are 55 percent of the total (the highest among all other expenses), almost 20 percent are consultations and medical tests, while hospitalization expenses and insurance are only significant for the non-poor. Although medicines are on average the main expense on health, poor households spend relatively much more, 80 percent for the poorest quintile in contrast to 40 percent for the highest quintile (Figure 2.27). Consultations account for a small share of overall health expenses for all income groups (between 3 and 7 percent); which is not surprising given that medical consultations are heavily subsidized in Nicaragua. Evidently, users from non-poor households spend more on better quality services, such as insurance, tests, and hospitalization. Insurance expenses are only significant, about 17 percent, for households in the highest quintile.

⁵⁰ Expenses on health are lower in Guatemala, Honduras and El Salvador, in comparison with Nicaragua, which has the highest share of non-food consumption of all. World Bank (2006a)

Figure 2.27: Expenditures on medicines are the most significant fraction of household health spending among the poor



Source: LSMS 2005

Health Policy Recommendations

2.76 Given concerns about reaching the MDGs for health by 2015, the delivery of the Integrated Health Care Model (*Modelo de Atencion de Salud, MAIS*) should make every effort to accelerate the pace of maternal and child healthcare, including nutrition, under an integrated approach. Inequity in public healthcare services in Nicaragua is such, that even services which are free-of-charge, like immunizations and reproductive health, tend to favor the better-off rather than poor households. Access, utilization and financing of essential healthcare services has been explicitly expressed as a priority of the new administration and it needs to be incorporated into the PRS. Most health expenses are covered by people themselves, and even the poor, who are typically seen as the target of publicly financed actions, often opt to pay a substantial proportion of health consultations, diagnostic services and medicines. Out-of-pocket healthcare expenditures represent up to 16 percent of non-food expenditures for the poorest quintile. Ninety percent of Nicaraguans are completely uninsured, but particularly poor families are vulnerable to health shocks that either keep them or take them into poverty. INSS has to play a key role in improving healthcare equity given that it receives a public subsidy for social insurance arrangements which tends to benefit mostly the non-poor. Thus, the PRS needs to increase access to healthcare services, especially in rural and remote poor areas.

2.77 Nicaragua's healthcare system faces major challenges to improve the health status of the population: (i) inefficiencies in allocation and use of public resources, (ii) low level of financial protection for health shocks, (iii) high out-of-pocket health expenses, particularly for self-medication among the poor, (iv) constraints in quality, access and, thus, low utilization of healthcare services, (v) unregulated private sector, and (vi) limited capacity of MINSa to perform its stewardship role to ensure pro-poor strategies and an efficient health system. Efforts to face these challenges should be made within and targeted framework, mostly because the poor and indigenous populations obtain very little benefits. Current health disparities in Nicaragua will grow wider unless action is taken to address the needs of the most disadvantaged and vulnerable sectors of the population. Access, utilization, and financing essential health services should be expressed explicitly as a policy objective of the national Poverty Reduction Strategy.

2.78 Specifically, an integrated healthcare model can use the following mechanisms:

- Promote child, and maternal healthcare preventive services, with focus in earlier (first trimester) and more frequent prenatal visits (at least five), as well as broader coverage of postpartum care for women. Neonatal and maternal mortality are linked in Nicaragua to the same effective measures, and thus, the delivery of an integrated healthcare service package with a multi-sectoral approach will be doubly beneficial.
- Expand access for professionally assisted births, because the share of women delivering under professional supervision is still low for poor and rural women (especially in the Atlantic region). This will require demand-side and supply-side interventions. Nicaragua's strategy of establishing Casas Maternas has shown promising results as an effective mechanism for reducing maternal and neonatal mortality.
- Avoid discontinuities in immunization coverage in CA4, particularly last doses of DPT and measles vaccine.
- Integrate key interventions into basic packages that are managed and financed by the Ministry of Health (MOH). At present, most key health interventions have been partially supported by donors outside the MOH, e.g. family planning services. It is essential that Nicaragua integrates these key interventions within the MOH budget to ensure sustainability.

2.79 Addressing inefficiencies in current health spending can markedly improve health outcomes of the poor, including: (a) Moving away from historical budgeting of public health resource allocation towards a healthcare needs based system, and focus on attending vulnerable populations while reducing concentration of resources to Managua and wealthier regions, (b) Targeting public healthcare resources need to primary care, prevention, and health promotion interventions, (c) Using a results-based budgeting to strengthen improvements in quality and a reversal in the allocation process which has favored metropolitan areas and hospital care, (d) Moving away from historical patterns of deployment of human resources, which has meant few health workers for poor rural areas; alternatives are deployment of healthcare workers based on assessing each region's healthcare risks, which is already used for social workers, and also redistribution of health personnel through a centralized agency using healthcare needs criteria, has produced promising results in other countries in the region, (e) Reducing human resource imbalances by decreasing over-reliance on physicians and resolving scarcity of nurses and auxiliary personnel, especially focused on primary healthcare; this will entail revising the current medical education system, which emphasizes physician curative training and places less value on preventive healthcare and nursing, and generating incentives for nurses to enter the profession by improving educational stipends and performance incentives.

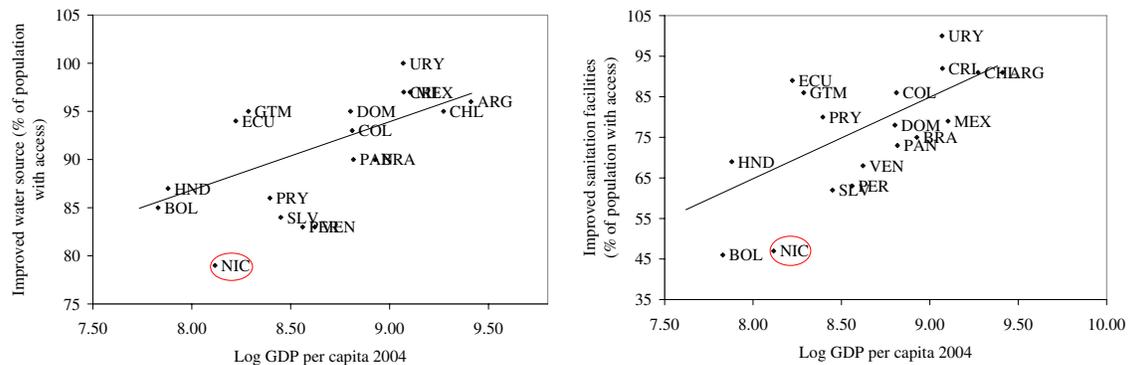
2.80 Addressing all these issues will require coordinated actions on both the demand and supply side. Measures are required to increase quality and supply, especially in poor and underserved rural areas. Alternative models of services delivery in order to improve access for the most vulnerable populations could be publicly financed and regulated by the public sector. These modalities can include different options with different comparative advantages such as: purchasing subcontracting to non-governmental organizations, strengthening MOH healthcare centers, deploying MOH mobile teams, improving drug management, and implementing decentralized community management models. Nicaragua urgently needs to design its own strategy to reinforce supply and improve access to healthcare and nutritional services in the poorest and remote areas based on successful local experiences. Experiences of PROCOSAM, Casas Maternas, and NGO's contracting in family planning and reproductive health services are valuable. Demand side strategies could also be implemented to help achieving the objectives of the National Health Plan. For instance, conditional cash transfers (CCTs) could be implemented

to overcome some financial and cultural barriers that prevent full access to services as part of the extension service coverage strategy. Existing CCTs could be used as a complementary tool to target public subsidies towards the most vulnerable populations and as an opportunity to improve simultaneously access to nutrition and primary health services. This intervention also requires an appropriate exit strategy and an effective health and nutrition counseling component which promotes long-term healthy behaviors.

D. OPPORTUNITIES IN WATER AND SANITATION

2.81 Water and sanitation access rates are among the lowest for Latin American countries (Figure 2.28). The analysis of prospects for MDGs finds that it is unlikely that Nicaragua will reach the 2015 target for water, unless existing investment levels and patterns are altered and management practices improved. The target for sanitation is very unlikely to be achieved by 2015, because, as it will be explained in this section, most past progress has been made in latrines with little follow up, so more than half of them remain untreated, while almost no advances have been made in terms of connections to the public sewage system. Access to safe drinking water and basic sanitation is a key basic service with direct implications for human and economic development.

Figure 2.28: Access to water and sanitation in Latin America



2.82 In Nicaragua, access to basic water and sanitation services is closely associated to poverty,⁵¹ moreover, inequity in access to safe drinking water is as unequal as consumption. Given that the poor are mostly excluded from these basic public services, they tend to make their own inadequate arrangements or pay excessively high prices to water vendors for meager water supplies. By not having access to water, poverty is further aggravated and productivity constrained. Important productive sectors in Nicaragua, such as tourism and agriculture, not only depend heavily on water and sanitation services but also on a healthy environment. Nowadays, poor sanitation infrastructure and the lack of waste-water treatment is a serious threat to Nicaragua's ecosystems.

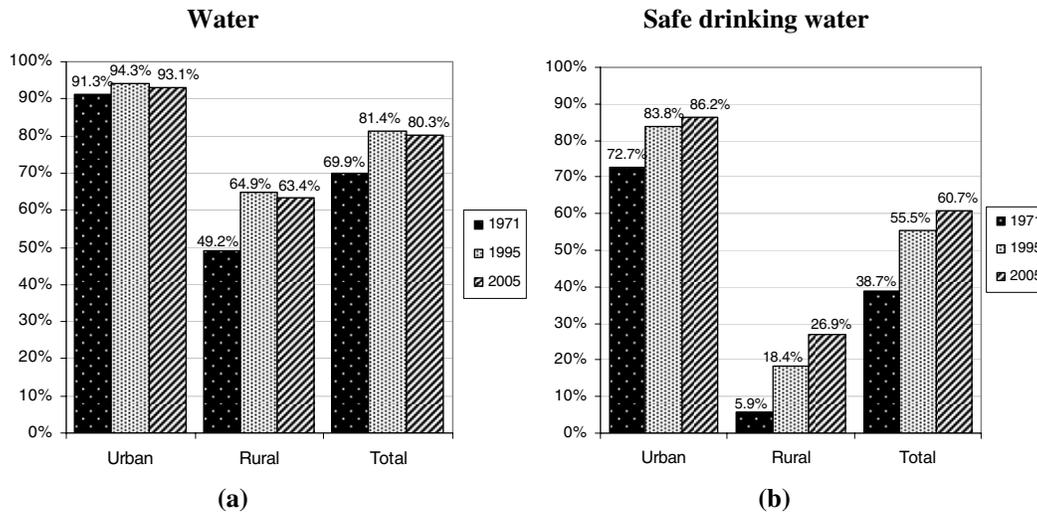
Water

2.83 Access to basic water services in Nicaragua has been flat over the last decade. Access to water shows improvement between the seventies and nineties, but progress came to a halt over

⁵¹ Jarman, J. (1997)

the last decade.⁵² Water coverage in Nicaragua is around 80 percent in 2005, declining slightly from 81 percent in 1995 and about 70 percent in 1971 (Figure 2.29a). Major increases were achieved between the seventies and nineties, while latter, investments merely kept up with population growth; but were insufficient to expand coverage nationwide. Moreover, recent investments in water tended to be allocated to improved water service but not coverage. Whereas the overall water coverage remained unchanged, access through piped systems (pipes inside or outside the house, but within the yard) has seen an expansion in both rural and urban areas over the last thirty years (Figure 2.29b). Water through piped systems reached about 61 percent of the population in 2005, from 56 percent in 1995 and close to 40 percent in 1971.

Figure 2.29: Access to water and safe drinking water (through piped system)



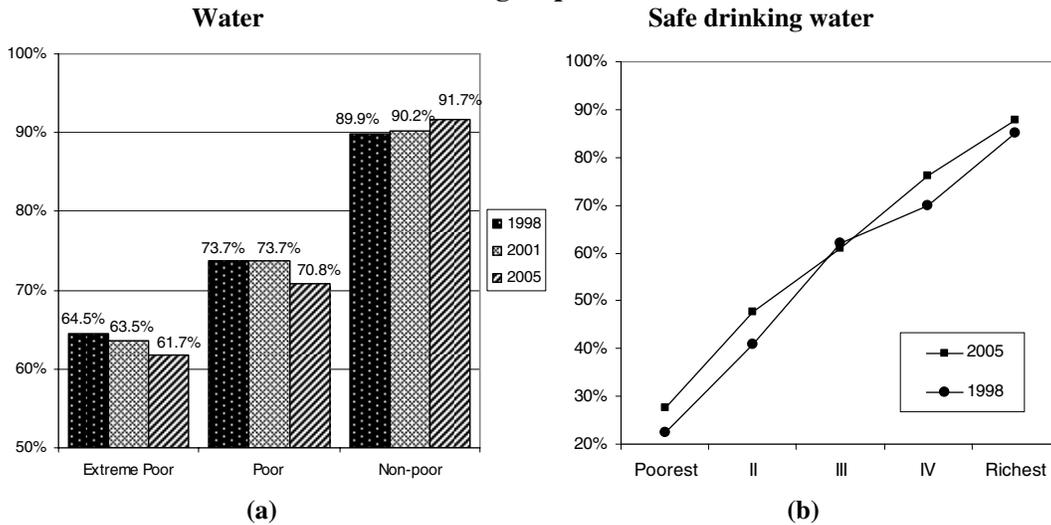
Source: Population Census 1971, 1995, 2005

2.84 Substantial disparities in water coverage persist between the poor and non-poor in Nicaragua, moreover, water coverage decreased slightly among the poor and extremely poor in recent years. Among the extremely poor, only two-thirds have access to water, while the poor have 71 percent, in contrast to 92 percent of the non-poor (Figure 2.30a). This decline may be attributed to insufficient capital investments in new water systems in order to keep up with the relatively high population growth among the poor. The distributional impact of public spending indicates that the top two quintiles benefited most from capital investments in water.⁵³ Inequities in access to safe drinking water, show that in 2005 88 percent of families top quintile had water, but only 28 percent in the poorest quintile (Figure 2.30b).

⁵² Access to water includes: i) pipes inside the house, ii) pipes outside (in the yard), iii) public standpipe, iv) private well, and iv) public well. The category “private well” includes improved and unprotected self-dug family wells. According to the Joint Monitoring Program (JMP) of the United Nations (www.wssinfo.org), unprotected wells are not considered a safe drinking water source and hence do not count towards the MDGs. In this analysis, access to safe drinking water includes only: i) pipes inside the house, and ii) pipes outside (in the yard), but not “public standpipe” nor “another house/neighbor/company.” The national water authority, CONAPAS, publishes official coverage using the assumption that half of “private wells” may be counted as a safe drinking water source; these figures for 2005 are 76.7 percent nationwide, 95.5 percent urban, and 52.8 percent rural (www.conapas.com.ni).

⁵³ See Chapter 4 based on the Background paper by Gasparini et al. (2007)

Figure 2.30: Access to water and safe drinking water (through piped systems) by poverty group



Source: LSMS 1998, 2001, 2005

2.85 Disparities in water coverage not only prevail between the poor and non-poor, but also across regions and between urban and rural areas within regions (Table 2.15). While in Managua 95 percent of all households enjoyed access to water in 2005, close to 90 percent did so in the Pacific region, but 74 percent in the Center, and only 56 percent in the Atlantic. Similarly to the figures at the national level, rural areas are generally poorly endowed with access to safe drinking water. The lack of access to a safe water source is particularly marked in rural areas in the Center and the Atlantic, with only 61 and 42 percent, respectively. This together with the slow progress in the last decade, highlight the lack of interest and expense of expanding coverage in areas with currently low water coverage. Whether implicitly or explicitly, water authorities, donors, and NGOs alike seem to have chosen better and more accessible locations to build or finance water systems. Given current geographical coverage, marginal costs of expanding coverage to less accessible areas would likely increase.

2.86 The Voices of Nicaragua work highlights how limited access to water negatively affects the quality of life. Most communities visited mentioned having an inadequate water source. Water in rural areas is most frequently available from holes in the ground or *vertientes*, but these are often dried up or contain contaminated water. Even urban families are not better-off because although they report having a water pipe going into their house, the pump in their communities works only occasionally. People spend a substantial portion of their day gathering water and in some cases children miss school to fulfill this basic requirement. In the Center, a leader of a community said that “water is an essential service for the quality of life; the community has always relied on water holes to drink, we have to walk 10 to 30 minutes depending on which source we choose but most of them are undrinkable.”

Table 2.15: Access to water across regions in Nicaragua in 2005 (in % of total households).

Main water source:	Managua	Pacific ^a			Center ^b			Atlantic ^c		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
1. Pipes inside the house	65.2	65.8	16.5	45.7	59.9	8.2	29.5	30.0	5.9	14.2
2. Pipes outside	25.7	23.9	21.5	22.9	25.6	15.7	19.8	10.8	5.7	7.5
3. Public source	0.8	0.6	3.5	1.8	3.1	8.7	6.4	5.1	1.9	3.0
4. Public or private well	3.5	4.6	37.8	18.1	3.4	28.5	18.1	37.9	28.4	31.6
5. Spring	0.3	0.1	2.8	1.2	0.5	24.2	14.4	1.4	35.3	23.7
6. River/stream/lake	0.4	0.0	2.5	1.0	0.5	8.7	5.3	0.9	19.0	12.8
7. Truck/oxcart	0.7	0.2	1.8	0.8	0.7	0.2	0.4	0.3	0.0	0.1
8. From another house	2.8	4.3	12.5	7.7	5.7	5.1	5.4	12.7	3.3	6.5
9. Other	0.5	0.4	1.2	0.7	0.7	0.7	0.7	0.8	0.5	0.6
Access to water	95.2	94.9	79.3	88.5	91.9	61.1	73.8	83.8	41.9	56.2

Source: LSMS 2005. (a) Includes the departments of Chinandega, León, Managua, Masaya, Granada, Carazo, Rivas; (b) Includes the departments of Nueva Segovia, Jinotega, Madriz, Estelí, Matagalpa, Boaco, Chontales; (c) Includes the departments of Río San Juan, R.A.A.S, R.A.A.N.

Water Quality

2.87 Water service quality (continuity of water supply) has been deteriorating appreciably in recent years. Only about two-thirds of Managua's population have constant water supply, slightly more in the Pacific and the Center, and only 50 percent in the Atlantic (Table 2.16). In Managua, which accounts for a quarter of Nicaragua's population, but also in smaller cities such as Juigalpa or Jinotepe, extended water shortages are now common, especially but not only during the dry season. Water quality is not significantly better among the non-poor and while these neighborhoods are not spared by water supply cuts, the poor are disproportionately affected. The non-poor commonly have water tanks to bridge over water cuts, while the poor are forced to make their own inadequate arrangements. Estimated price per cubic meter for water delivered in barrels indicate that this source can be up to five times as high as the official water tariff (LSMS, 2005). The average barrel price is C\$11.2 Cordobas (approximately US\$0.66, containing 0.155 cubic meters), whereas the official water tariff oscillated between C\$2.1 and C\$6.5 Corbobas per cubic meter depending on the residence area and the total consumption. The precarious water situation in the urban areas is to a large extent the result of the deteriorating state of the water and sanitation public company, ENACAL.

Table 2.16: Continuity of Water Supply

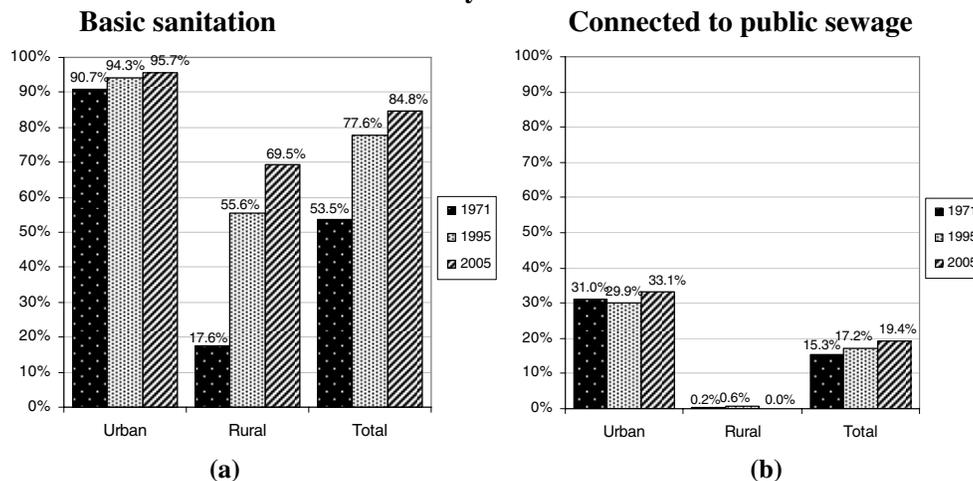
Water Supply	Regions				Income Quintiles				
	Managua	Pacific	Central	Atlantic	I	II	III	IV	V
Permanent (% Of Househ.)	67.1	77.5	74.1	49.4	68.2	74.9	69.3	70.0	72.2
Partial (%)	33.0	22.5	25.9	50.6	31.8	25.1	30.7	30.0	27.8
Days / Week	6.0	5.2	4.3	5.0	4.9	4.9	5.4	5.4	5.5
Hours / Day	9.2	11.0	10.6	8.6	10.7	10.2	9.9	9.6	9.8

Source: LSMS 2005

Sanitation

2.88 Although progress has been made in access to basic sanitation infrastructure, similarly to water, a slowdown has occurred over the last decade, and little has been achieved in terms of new connections to the public sewage system. Most small towns remain without sewage systems and waste water treatment. In 2005, about 85 percent of all households had access to basic sanitation infrastructure (Figure 2.31a), but the use of latrines in rural areas is widespread shown by the difference between basic sanitation and connection to sewage. Many latrine projects have been implemented in the past decade by cooperation agencies, NGOs and municipalities alike, but little follow up is made to ensure they continue to be treated, so more than half the latrines are untreated.

Figure 2.31: Access to basic sanitation infrastructure and connected to public sewage system



Source: Population Census 1971, 1995, 2005

2.89 In terms of connections to the public sewage system, almost no progress has been made (Figure 2.31b). Sewage systems almost exclusively exist in urban areas. Both capital investments and operation spending in sanitation tend to be non-poor, because richer households are more likely to have a connection to a sewage system. In Nicaragua, 80 percent of the benefits generated through public spending in sanitation are captured by the two top quintiles.⁵⁴ According to the Nicaraguan Water and Sanitation Sector Analysis,⁵⁵ only 29 urban locations including Managua count with public sewage systems, and in 20 of them waste-water gets treatment.⁵⁶ In an estimated 160 localities with between 2,000 and 50,000 inhabitants, the waste-water from households and local industry enters rivers and lakes untreated or infiltrates directly into the soil, with far-reaching consequences to Nicaragua's ecosystems and groundwaters.

Water Constraints

2.90 ENACAL's steady deterioration over recent years is a mix of mismanagement and structural factors such as low labor productivity, low micro metering rates, leakages and hence high percentage of unaccounted-for water losses, as well as water tariffs far below production

⁵⁴ Ibidem.

⁵⁵ GON with WHO support (2004). Análisis Sectorial de Agua Potable y Saneamiento de Nicaragua.

⁵⁶ In Managua, a waste water treatment plant is currently built with funds from the German KfW.

cost level due to a politically motivated tariff freeze since 2001.⁵⁷ In several larger cities including Managua however, the water supply problems are also due to rapid population growth. New urbanizations and settlements were connected to the existing system without the necessary increases in water production, due to a lack of resources. On the income side, the unaccounted-for water losses surpassed the 50 percent threshold in 2006.⁵⁸ As a result, ENACAL has been in deficit and a loss making public enterprise, finding itself today at the verge of illiquidity.⁸ Maintenance costs were reduced by skipping ordinary maintenance tasks, detrimental to the infrastructure's lifespan. The tariff freeze was initially meant to help the poorest, yet today the poor and extremely poor suffer the most from the company's inability to provide a minimum service level. The increasing unrest and the poverty dimension of the problem have pushed the problem up in the political agenda. The new administration has called water its top priority after energy. In the long run, ENACAL's is in need of structural and tariff reforms, including explicit policies to subsidize water services for the poor. In any scenario, a significant cash injection will be required for visible improvements in service quality in the very short-run.

Box 2.7: Water and Sanitation Sector Institutional Framework

The water and sanitation public sector comprises of three major state institutions:⁵⁹ i) the national urban water utility (ENACAL), which operates water and sanitation systems in urban areas;⁶⁰ ii) the water regulator (INAA), which is responsible for the regulation, including surveillance of service quality and tariff adjustments; and iii) the Social Investment Fund (FISE), which is in charge of the promotion of water and sanitation systems in rural areas. NGOs play an important role mainly in rural areas.⁶¹ The National Water and Sanitation Commission (CONAPAS) is the sector's policy body. Its board comprises members from seven state institutions.⁶² This sectoral architecture, however, in particular the status of CONAPAS and FISE, remains on unstable grounds as it is based on presidential decrees rather than on a solid legal basis, which hampers the long-term sustainability of the entire sector. Moreover, the sector's efficiency and effectiveness also suffers from insufficient institutional capacities and continuous discretionary political interference on regulatory and operational matters. In particular INAA, the regulatory authority responsible for tariff setting, is often the object of political interference. CONAPAS has initiated a sector information system that gathers information from the existing information systems of some of its member institutions. Despite this recent initiative, the quality (and quantity) of the sector information remains modest as it is a constrained by the process of policy decision making. Notwithstanding its weak legal legitimacy, CONAPAS has recently taken a strong leadership in sector policy setting and sector governance.

⁵⁷ Water tariffs have been frozen in nominal Cordoba terms in 2003 by the national water regulator (INAA). The tariffs are estimated now to be between 30 to 72 percent below production cost levels, due to the steady decline of the tariff's purchasing power in real terms and also due to a dramatic increase in the company's energy bill.

⁵⁸ ENACAL, 2007. Statement made and figures and presented by Ruth Herrera Selma at the National Water Day, Las Piedrecitas, Managua, March 22, 2007.

⁵⁹ RASNIC (Water and Sanitation Network of Nicaragua or Red de Agua y Saneamiento de Nicaragua, RASNIC) is the sector's think tank, joined by state institutions, cooperation agencies and NGOs alike.

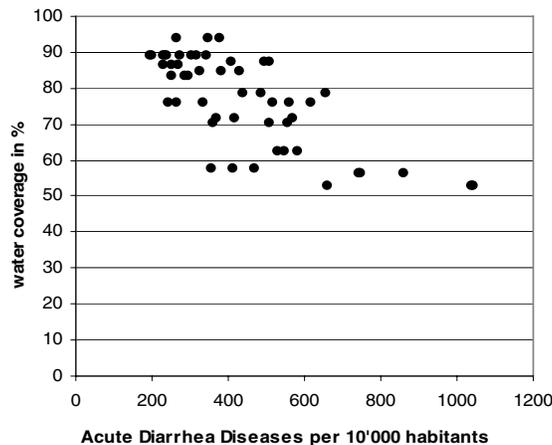
⁶⁰ In Matagalpa and Jinotega water and sanitation services are provided by AMAT and EMAJIN, two local state-run service providers.

⁶¹ A WSP study to be published in early 2007 examines the role and importance of NGOs in the water and sanitation sector ("Contribución y capacidades de las ONGs y otros actores de la sociedad civil, en el sector agua y saneamiento de Nicaragua")

⁶² Including the Presidential Secretariat (SETEC), the Health Ministry (MINSAs), the Ministry of Natural Resources and the Environment (MARENA), the Institute for Terrestrial Studies (INETER), as well as members of ENACAL, INAA, and FISE

2.91 In rural areas, water systems often lack long-term sustainability. Insufficient water quality is a widespread problem. In addition, a lot of systems are vulnerable to natural disasters. Under the former government, Nicaragua's social investment fund (FISE) was assigned the responsibility of the promotion of water and sanitation in rural areas. In the new decentralization framework, FISE has collaborated with municipalities for its social investments in water and sanitation infrastructure in rural areas. However, although the new municipal law, in contradiction to the sector laws, does assign some responsibilities to the municipalities, their involvement has been limited so far. FISE has focused mainly on infrastructure investments rather than on sustainability of the systems. The operation and maintenance is delegated to communal water committees (CAP),⁶³ after they receive some ad hoc training in operating the system during the construction period. After that, the CAPs do not receive support on a more continuous basis. Widespread problems with water quality due to bacterial contamination and an unacceptably high rate of water system failures are largely the result of the lack of technical assistance and monitoring in rural areas.⁶⁴ The institutional incapacity to deliver a minimum level of attendance in rural areas, which includes FISE and the municipalities, is particularly relevant for the poor as the problems are aggravated for the more marginal and poorer communities. Rural infrastructure, especially in water and sanitation, remains highly vulnerable to natural disasters such as floods, hurricanes and earthquakes. Risk mitigation measures are seldom taken into account when constructing new water systems.

Figure 2.32: Access to water and prevalence of Acute Diarrhea Diseases in 15 departments of Nicaragua⁶⁵



2.92 Acute diarrhea diseases (ADD) are largely caused by the consumption of unsafe drinking water and poor hygiene practices, such as not washing hands.⁶⁶ Although the prevalence of ADD does not exclusively depend on access to safe drinking water, but the relationship is strong and if accompanied by improvements in hygiene practices, access to water can deploy a significant and positive impact on health outcomes. In Nicaragua, data from fifteen departments for 2001, 2003

⁶³ Comité de Agua Potable (CAP)

⁶⁴ GON with WHO support (2004: 222)

⁶⁵ Acute Diarrhea Disease figures from 2001, 2003, 2005 in 15 departments regressed with census water coverage figures. Sources: National Epidemiological Surveillance System (Sistema Nicaragüense de Vigilancia Epidemiológica Nacional SISNIVEN), National Census 2005.

⁶⁶ Curtis and Cairncross (2003)

and 2005 show a clear negative correlation between water coverage and the prevalence of ADD, thus the lower the water coverage the higher ADD prevalence (Figure 2.32). Moreover, departments with the highest prevalence of ADD are also the ones with the highest share of poor and extremely poor. Improvement of hygiene practices in Nicaragua have received little attention in the past and hence relatively little sector funding has been allocated to the promotion of better hygiene practices. An integrated approach to health, water, sanitation and hygiene would be required in future to attain MDGs.

2.93 Poor hygiene practices remain a serious problem mainly among the poor in peri-urban and rural areas. Together with the poor water quality, inadequate practices contribute to the poor sector related health outcomes. Water-borne infectious diseases are a main determinant for health-related MDGs, such as infant and child mortality, and malnutrition. Diarrhea is amongst the three top causes of child mortality worldwide.⁶⁷ In Nicaragua, although infant and child mortality have steadily declined in recent decades, rates are relatively high as compared to other countries in the region.

Water Policy Recommendations

2.94 The relatively poor overall performance of the water and sanitation sector is predominantly due to: a) political and institutional shortcomings of the sector, and b) insufficient public budgetary resources.⁶⁸ The sector's relative inefficiency and ineffectiveness is largely related to slow increases in coverage which is concomitant to its current lack of sustainability. A serious commitment at the political level is inevitable if the sector performance is to be improved significantly. In October 2005, CONAPAS elaborated and approved a coherent sector strategy in line with the National Development Plan. The sector strategy also gave rise to the sector round table as a coordination forum between government and the donor community.⁶⁹ In October 2006, the government and the donors agreed on a roadmap to complete a Sector Wide Approach (SWAP). In addition, a Code of Conduct on alignment and harmonization was signed. The general roadmap of the SWAP outlines several work lines that intend to address the mayor legal, institutional, and coordination challenges the sector is confronted with. The principal objective of the SWAP is to make the sector more coherent, effective and efficient. So far the Ortega government has not decided whether it will continue with this strategy nor about the future sectoral architecture.

2.95 The Voices of Nicaragua work highlights how limited access to water negatively affects the quality of life. Most communities visited mentioned having an inadequate water source. Water in rural areas is most frequently available from holes in the ground or *vertientes*, but these are often dried up or contain contaminated water. Even urban families are not better-off because although they report having a water pipe going into their house, the pump in their communities works only occasionally. People spend a substantial portion of their day gathering water and in some cases children miss school to fulfill this basic requirement. In the Center, a leader of a community said that "water is an essential service for the quality of life; the community has always relied on water holes to drink, we have to walk 10 to 30 minutes depending on which source we choose but most of them are undrinkable."

⁶⁷ WHO (2000: 164)

⁶⁸ Further analysis of Public Spending is contained in the Nicaragua 2006 Public Expenditure Review.

⁶⁹ Including IDB, WSP-World Bank, SDC, UNICEF, PHO, CIDA, EU, JICA, Netherlands/SNV, and the German Cooperation KfW which currently heads the forum.

- **Rural areas:** Achieving the MDGs in water and sanitation is the sector's top priority, and it is particularly a challenge in rural areas. Taking into account increasing marginal costs, substantial social infrastructure investments will be required in rural areas, where the vast majority of the poor lives without access to water and sanitation, especially in the Atlantic and Central/Northern region. Poor and extremely poor population groups would benefit the most from such investments. Appropriate co-financing and local participation policies will be necessary to ensure adequate technology and service levels that can be managed and afforded by the community in the long run. Infrastructure investments need to be accompanied with effective decentralization and capacity building strategies to strengthen local capacities, in particular at the municipal level, in order to provide technical and organizational assistance to CAPs and communities. The municipalities should be given a more determinate role in water and sanitation service provision.
- **Urban areas (Managua and larger cities):** One of the most urgent tasks in urban areas is to secure water provision and restore clients' confidence. A cash injection for service quality improvements in the short run will likely be inevitable to prevent a virtual collapse of the water provision in some areas. However, a profound structural reform of the urban service provider ENACAL needs to be initiated in parallel to prevent that investments turn into de facto consumption subsidies. Once visible service improvements have been achieved, a plan for a gradual adjustment of tariffs has to be elaborated, including a targeting scheme for water services to poor. Any tariff adjustment needs to maintain a pro-poor orientation for poor urban dwellers. Eventual loans and grants to ENACAL should be linked to measurable outcomes in service improvements, key management and technical efficiency figures. An output based modality for grants and subsidies delivery is imperative. Additional funds will be required for expanding the urban sewage system in particular in peri urban areas and waste water treatment infrastructure in larger cities.
- **Urban areas (small towns):** Small towns need special attention because of their specific context and problem setting. The regulative and normative framework should be adjusted to allow for more autonomy and local public and private participation among water and sanitation service providers in small towns, including public-private-partnerships and micro enterprises. They also need specific investment plans appropriate to their size. The unsolved waste water pollution problem in these localities demands for laying more emphasis on public sewage systems and waste water treatment solutions in these localities.
- **Sanitation and hygiene:** In order for water coverage to impact on health-related MDGs, sanitation and hygiene promotion deserves considerably more attention than it has received in the past. A more integrated approach is imperative. Sector resources should not only be allocated to sanitation infrastructure (hardware) but also to the promotion of better hygiene behavior (software) as hygiene practices, such as making sure all latrines are treated. Hygiene habits are as much a determinant of health outcomes as access to water and sanitation infrastructure. These habits may be improved through a set of different approaches such as health education in schools, media campaigns, house to house visits, etc.
- **Sector sustainability:** Sustainability remains a key challenge and is highly relevant to poverty in the long run. Both the sector as a whole and the water and sanitation infrastructure in rural and urban areas widely lack the desirable sustainability in aspects related to governance, management, organization (including participation), long term financial stability, environment, technology, and risk prevention. Although sustainability is the outcome of many different factors, the following must be named as the most urgent and most important ones. Major adjustments to the legal framework will be required not only for the sector institutions to become more efficient and effective but also to lay a more robust basis for the current sectoral architecture, in particular to strengthen the role of the sector's

governing body (CONAPAS or other). The sector as a whole depends on a more sustainable financial basis, provided for with sufficient fiscal resources in order to become more independent from fluctuating donor funds, especially for investments in rural areas. Apart from previously mentioned profound structural reforms, the three major sector institutions, ENACAL, INAA, and FISE, need significant capacity building in several of the aspects mentioned. In rural areas, FISE (or another institution) requires to be strengthened in its activities to promote sustainability and reduce the vulnerability of water and sanitation systems. Water quality must be guaranteed permanently and countrywide through a mechanism that not only monitors the quality but provides the means and methods.

- **Sector information:** The sector information system needs to be strengthened. Adequate policy making, sector management and monitoring of sector advances are seriously hampered by the current lack of reliably and actualized information. The sector information system may need a special legal and institutional basis in order to ensure its financial and operational sustainability.
- **Sector coordination:** An effective coordination mechanism between the donor community and the government will be inevitable. The process should be led by the sector's policy body (CONAPAS or other). A certain consensus on sector policies and outcomes will have to be established to facilitate sector coordination. Although the previous roadmap may be changed under the new government, a SWAP approach should be aspired in order to increase the efficiency and efficacy of the sector resources. The roadmap needs further elaboration on the strategies to achieve the MDGs.

E. OPPORTUNITIES IN REDUCING MALNUTRITION⁷⁰

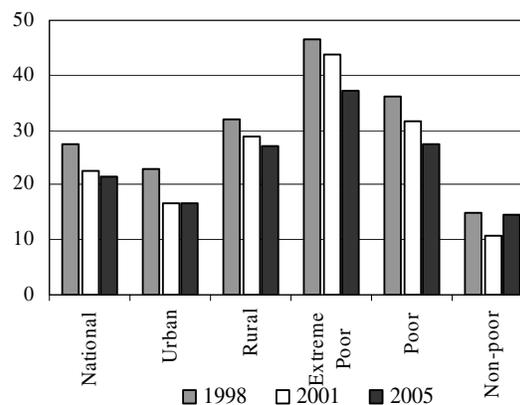
2.96 Malnutrition is associated with several causes occurring at child/family, community and macro level. The direct causes of malnutrition are numerous, including not only food security at the household level, but also inadequate maternal and child caring practices, often due to inadequate or inappropriate knowledge/education, as well as the broader health status and incidence of diseases related to water/sanitation and access to adequate healthcare services.

Table 2.17: Stunting national, urban, rural and by poverty, 1998, 2001 and 2005

	1998	2001	2005	Change 98-05
National	27.4	22.5	21.5	-5.9
Gender				
Male	28.7	24.1	22.0	-6.7
Female	26.0	20.8	20.9	-5.1
Area				
Urban	22.8	16.6	16.5	-6.3
Rural	31.8	28.9	27.0	-4.8
Poverty				
Extreme Poor	46.4	43.8	37.2	-9.2
Poor	36.2	31.5	27.4	-8.8
Non-poor	14.8	10.7	14.6	-0.2

Source: Picado et. al. (2007)

Figure 2.33: Stunting national, urban, rural and by poverty, 1998, 2001 and 2005



⁷⁰ See Picado et. al. (2007) for more details.

2.97 All three factors work synergistically, as illustrated by the prevalence of malnutrition in many food-secure households. Indeed, children might not receive an appropriate food intake either because there is insufficient food or because of inadequate caring practices, which can fail to translate food into good child growth and development, leading to imbalances in terms of macro- and micro-nutrients or impairing the child's ability to take full advantage of her food intake. In addition, a malnourished child is more susceptible to illness, and illness in turn increases nutrient loss and suppresses appetite. Malnutrition in early childhood can also lead to developmental problems that have long-lasting effects into adulthood. Children lacking access to adequate water/sanitation and healthcare services tend to be ill for longer periods and eat poorly, triggering a spiraling cycle of malnutrition and deterioration of health status. Addressing malnutrition requires coordinated improvements on all three fronts to break the vicious cycle.

2.98 An indicator of children chronic nutrition status is stunting, measured by the ratio of height for age. A high ratio indicates a delay in growth, revealing long-term, chronic, malnutrition. Although the prevalence of stunting in Nicaragua for children under 5 years old declined from 27.4 to 21.5 percent from 1998 to 2005, malnutrition continues to be high in Nicaragua with more than one-in-five children suffering from growth retardation. The prevalence of stunting is much higher in the rural areas than urban areas, where more than one child in four suffers from chronic malnutrition. Regionally, the highest levels of stunting are found in the Central region,⁷¹ with a prevalence of 19.1 percent in the urban areas of the Central region and 32.2 percent in its rural areas. The Atlantic region follows closely behind, with a total prevalence of stunting of 24.5 percent. The prevalence in the urban areas of Managua are also found to be unexpectedly high, with an incidence of 17.5 percent, i.e. more than one child in six.

Table 2.18: Stunting national and by regions, 1998, 2001 and 2005

	1998	2001	2005	Change 98-05
National	27.4	22.5	21.5	-5.9
Managua	14.9	9.7	16.9	+2.0
Urban	16.4	10.1	17.5	1.1
Rural	6.7	4.8	9.5	2.9
Pacific	27.7	17.7	16.5	-11.2
Urban	25.3	16.6	15.1	-10.2
Rural	30.1	18.8	18.3	-11.8
Central	35.1	33.3	27.7	-7.4
Urban	29.7	26.0	19.1	-10.6
Rural	37.2	37.5	32.3	-4.8
Atlantic	28.5	25.1	24.5	-4.0
Urban	25.5	18.1	10.2	-15.4
Rural	31.0	29.9	29.3	-1.7

Source: Picado et. al. (2007)

2.99 Stunting is strongly associated with poverty. Stunting is 2.5 times higher for children living in extreme poverty than for children living in non-poor households, 37.2 versus 14.6 percent, respectively (Table 2.17 and Figure 2.33). In the Central Region, home to many of the poorest and most remote municipalities, stunting prevalence was over 45 percent among extremely poor families, the highest level in the country. The Atlantic rural areas rank second, with 36.9 percent prevalence of stunting among children of extremely poor households. It is

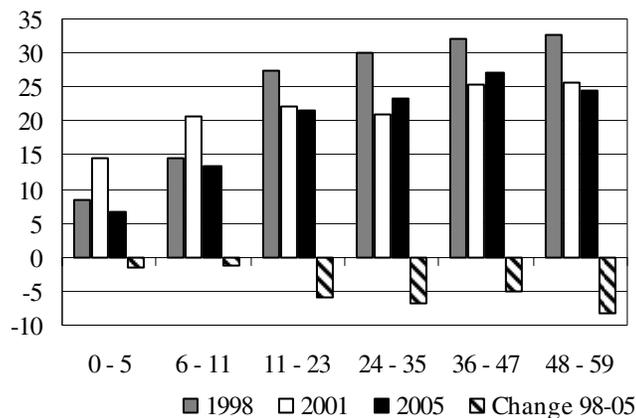
⁷¹ The Central region of Nicaragua includes the departments of Madriz, Estelí, Nueva Segovia, Matagalpa, Jinotega, Boaco and Chontales

important to note that, despite this correlation prevalence of malnutrition is still unacceptably high among non-poor households, where, on average, 14.6 percent of children show delays in growth.

2.100 When looking at the patterns of change over time, most of the reduction in malnutrition observed between 1998 and 2005 actually took place between 1998 and 2001 (the prevalence decreased from 27.4 percent in 1998 to 22.5 percent in 2001, to 21.5 percent in 2005). Between 2001 and 2005, the prevalence of stunting was only reduced by one percentage point (Table 2.18). Within this overall pattern, only the Central region shows larger declines in the latter period (2001-2005) than in the earlier period (1998-2001). Between 2001 and 2005, the Central region observed a decline in both urban and rural stunting, by 6.9 and 5.3 percentage points respectively. In the earlier period, between 1998 and 2001, stunting had declined in all regions, except in the Central rural region, which suffered the most damage from Hurricane Mitch and the shock resulting from coffee price changes.

2.101 The prevalence of growth retardation increases with the age of the child, as the effects of malnutrition accumulate. In Nicaragua, prevalence starts around 9 percent at birth⁷², which indicates that the process begins early, during the pregnancy, with intra-uterine growth retardation. Prevalence of growth delays then increase dramatically during the first two years of life, doubling between 0-5 and 6-11 months, and continuing this increase until it flattens at rates between 20 and 25 percent (Figure 2.34). The first two years of life, as well as the pregnancy period, hence appear as the key period during which the delays are accumulated. In that period, malnutrition results in physical and mental development delays which can never be recovered later in life. Hence, the future capacity of around 20 percent of Nicaragua's children will be limited by malnutrition during early childhood.

Figure 2.34: Stunting by age groups, 1998, 2001 and 2005



Source: Picado et. al. (2007)

2.102 Programs and interventions which aim at addressing the issue of malnutrition tend to be more effective in the short-term if they use integrated approaches to address more than one of the immediate and underlying factors associated with malnutrition. In addition, it is critical that this multi-sectoral approach focus on prevention and target the age where most of the losses occur, starting in-utero and continuing through the child's 2nd birthday. The coordinated approach to malnutrition needs to focus on several direct causes including lack of food at the household level,

⁷² <http://MINSA.gob.ni>

inadequate maternal and child caring practices, and limited water/sanitation and inadequate healthcare services⁷³.

2.103 At present, there are two nutrition programs with documented success in reducing malnutrition. One is the Ministry of Health's National Micronutrient Program with two components: supplementation (vitamin A and iron) and fortification (salt with iodine; sugar with vitamin A and flour with iron and folic acid). The second program is the Red de Protección Social (RPS), a conditional cash transfer program implemented from 2000-06. The RPS was targeted to some of the poorest municipalities of the country. The impact evaluation of the first two years of the program (2000-02) showed a decline in stunting among children 0-59 mo. of 5 percentage points. Additionally, The *Programa Comunitario de Salud y Nutrición (PROCOSAN)* is MINSA's community-based growth promotion program (CBGP). *PROCOSAN* is a preventive health and nutrition program that actively engages families of children under two and their communities in maintaining the adequate growth of young children. For sick children under five years old, the program extends its treatment and referral services. *PROCOSAN* is a program with a high potential to be effective.

2.104 Nicaragua has the knowledge and experience to reduce malnutrition in the short term, but the government must treat in practice the reduction of malnutrition as a true priority. Programmatic priorities are: 1) an adequate combination of highly effective programs (such as *PROCOSAN*, RPS and other MINSA interventions), and 2) institutional strengthening to increase capacity required to bring programs to scale. In all prioritized municipalities with a high poverty, universal coverage must be achieved and maintained for the vulnerable population. Stunting can be reduced through specific actions. However, Nicaragua will never develop to its full potential with a largely stunted population; therefore, stunting must be reduced in the short-term.

Malnutrition Policy Recommendations

2.105 The best approach to reduce stunting is to prevent stunting from occurring. Programs should focus on mothers and children under two years old to prevent stunting. This is the so-called "window of opportunity" to intervene. Interventions targeted to children in other age groups, may have other benefits, but they will not reduce stunting.

2.106 Targeting the poor is critical, and Central rural and Atlantic rural regions should continue to be prioritized for prevention of malnutrition and the goal should be to reach universal coverage of vulnerable populations. In other regions of the country, municipalities with highest levels of poverty should be prioritized. Interventions need to be sustained among poor populations as long as overall conditions are improved (i.e. poverty is reduced).

2.107 Long term solutions to malnutrition include the improvement of maternal education, improving incomes among the poor, improved water and sanitation. These interventions are necessary and complementary and should not be sacrificed for short term approaches. Both are necessary and there should be a balance. Interventions that increase school enrollment and retention of young girls is a long term step in helping to reduce malnutrition.

2.108 Increased coverage of nutrition programs should go hand in hand with increased coverage of the basic integrated health care package, including family planning services. Breastfeeding is one of the most important interventions to prevent stunting during the first two

⁷³ UNICEF (1998)

years of life. More investment is needed to promote exclusive breastfeeding for six months and continue breastfeeding up to two years as an effective way to reduce stunting.

2.109 Current programs need to be reviewed in light of their effectiveness to reduce malnutrition. Budget allocations should be based on effectiveness criteria and goals for the reduction of malnutrition. Goals should be set to increase coverage of programs to gradually close the gap among the vulnerable population and levels of coverage should be sustained.

2.110 The maternal basic health care package should be revised and updated especially with regards to nutrition and other services needed to prevent intra-uterine growth retardation.

CHAPTER III. OPPORTUNITIES FOR INCOME GENERATION

3.1 Opportunities for income generation are associated to several critical factors, among the most important are: access to roads, electricity, telecommunications, credit, titling, and networks and organizations. These factors play a crucial role in providing an environment with opportunities for households to generate income and also for individuals, entrepreneurs and business to contribute to the growth and productivity of the larger economy. As such, an understanding of inequity in their provision is important for designing effective policies to encourage sustainable development.

3.2 This chapter analyzes inequality of opportunities for income generation by addressing the following questions: (i) what are the existing inequities in access to productive services and infrastructure nationally, between income groups, across rural and urban areas, and across geographical regions? (ii) what are the existing inequities in intangible assets such as access to networks and titling? (iii) how are income generation outcomes, measured by productivity, related to inequality of opportunities in Nicaragua? (i.e. inequalities in access to productive services, capital, labor, and intangible assets).

3.3 This chapter puts especial emphasis in inequities and determinants of agricultural production. The rationale behind this choice is that agricultural production is a direct function of access and quality of productive assets (or so called factor of production); namely capital, labor, and land. Indeed, as will be explained in detail below, access to factors of production in Nicaragua (especially to capital and land) displays large inequities across regions and large concentration among the urban non-poor. Furthermore, agricultural productivity is key engine of growth in the agriculture sector. Previous studies for Nicaragua⁷⁴ indicate that poverty reduction in Nicaragua is highly responsive to growth in agriculture. This occurs because the agricultural sector represents about one fifth of Nicaragua's total output and one third of Nicaragua's total employment.⁷⁵ There are several channels through which agricultural productivity (and growth in the agricultural sector) can affect poverty: higher agricultural productivity can translate into higher income for producers, more employment, production of cheaper food, and higher tax revenue from agricultural activity, among others.⁷⁶

A. PRODUCTIVE SERVICES AND INFRASTRUCTURE

3.4 This section analyses access to and the quality of income-generating infrastructure services concentrating on roads, electricity, telecommunications and credit using the 2005 LSMS. The analysis highlights differences within regions and socio economic strata as well as disadvantages in access and quality of infrastructure among vulnerable groups such as poor, indigenous, and agricultural-producer households. The section also compares infrastructure-related indicators in Nicaragua to indicators in other countries in Latin America.

3.5 Economies with better and broader access to roads, electricity, transportation, credit, and telecommunications are associated with higher growth rates and lower income inequality and poverty (de la Fuente and Estache, 2004).⁷⁷ The mechanisms through which infrastructure

⁷⁴ World Bank (2002), Krueger (2000), Nadim (2002)

⁷⁵ Gutierrez and Ranzanni (2007)

⁷⁶ Haggblade et al (1989), Haggblade et al (1991), Hazell and Ramasany (1991) and Delgado et al (1994) among others.

⁷⁷ Fuente and Estache (2004) find that 53 percent of all studies in the sample support a positive impact of infrastructure investment on productivity or growth. The authors also find a positive impact of investments in infrastructure on growth. The elasticities estimated for Latin America region in the 1990s suggest that a 10 percent increase in

impacts on “development” are found both in households and in enterprises (see Prud’homme, 2004). For households, infrastructure-related services improve welfare by improving quality of life. A significant share of the poor in developing countries, and especially those in rural areas, lack good and reliable infrastructure services. As a consequence of low supply, they generally pay high prices for low-quality services. From the perspective of enterprises access to infrastructure-related services results in lower costs for key inputs thereby allowing them to produce at lower prices and increase their competitiveness.

3.6 There has been improvement between 2001 and 2005 in the household infrastructure and quality of life of Nicaraguan households in recent years Results in Table 3.1 indicate that for instance, the share of households with access to piped water, fixed telephone, cellular telephone, and trash collection services increased by 5 percent, 40 percent, 696 percent, and 26 percent respectively in this period. Other housing related variables related to the quality of dwellings, such as the share of dwellings with access to an inside toilet, a good-quality floor, and a good-quality walls grew by 29 percent, 6 percent, and 2 percent respectively.

Table 3.1: Descriptive Statistics on Household Infrastructure

<i>Share of households having access to:</i>	<i>1998</i> %	<i>2001</i> %	<i>2005</i> %	<i>% change</i> <i>2001-2005</i>
Infrastructure Variables				
Paved road	22.3	42.2	52.2	23.7
Electricity	68.7	72.2	73.8	2.2
Fixed telephone line	9.7	10.1	14.2	40.6
Cell phone	n.a.	2.9	23.1	696.6
Piped water	60.8	61.5	64.6	5.0
Trash collection services	31.1	33.7	42.5	26.1
Housing Variables				
Toilet in dwelling	22.5	22.9	29.4	28.7
Good quality walls*	55.3	60.7	61.7	1.6
Good quality floors**	51.5	56.6	60.0	6.0
House with kitchen	62.0	65.6	71.9	9.6
room				
Own house ***	77.8	76.9	76.4	-0.7

Source: World Bank using the 2005 Nicaragua EMNV. * Walls made from cement, stone, or concrete. ** Floors made of concrete, tile, stone, or brick. *** With or without a title.

Roads

3.7 Compared to international standards, the share of paved roads as a percentage of total roads is low in Nicaragua, even given its level of development. Regression analysis using regional data for 2004 suggests that given its GDP per-capita, Nicaragua should have 20 percent of all its roads paved (this is the case in countries like El Salvador, Honduras, and Ecuador). However, this share was only at 10 percent (the second lowest share in the region, slightly surpassing that of Bolivia). The mechanisms through which investment in transportation generates higher growth and lower poverty are numerous and to a certain extent rest upon the kind of transportation investment being made. For example, Gannon and Liu (1997) argue that investments in transport reduce the cost of assembling intermediate inputs for production. This in turn, reduces production costs and thereby

infrastructure stocks increase output (GNP) by 1.4 to 1.6 percent (for every percentage point increase in per capita income the authors find that the share of people living in poverty by 0.5 of a percentage point).

prices. A fall in prices promotes regional and international trade, making it possible for agriculture to commercialize, for industry to specialize, and for production and employment to expand by exploiting economies of scale. Rural roads also contribute to poverty reduction through improved access to education and health, and expansion of markets for agricultural products. Using data describing the improvement in rural roads in El Salvador over the 1999–2001 period Yepes (2004) found that the impact on poverty of these improvements are remarkable. In cantons where roads improved poverty fell by 5 percent more than in cantons where roads did not improve. Estache and Fay (1995) find that improved access to roads and sanitation has been a key determinant of reduction of inequality and poverty for the poorest regions both in Argentina and Brazil

3.8 Though there have been significant improvements in recent years there remains inequity in the provision of quality roads between urban and rural localities and different regions. Access to good roads in Nicaragua is limited in rural areas, particularly in the Atlantic and Central regions compared to access in Managua and other urban centers. As presented in Table 3.2, about half of all households in Nicaragua have access to a paved road from their residence. In Managua and in the Pacific region, 60 to 80 percent of all households have access to a paved road. In the Central and Atlantic regions this proportion is considerably lower at 40 and 10 percent respectively. In the Atlantic and Central regions, about 70 and 60 percent of all households access their dwellings by using unpaved roads and *trochas*, which are usually poorly maintained informal roads difficult to access by regular vehicles. Furthermore, in the Atlantic region, about 18.5 percent of all households claim that the main way to access their dwelling is by river or sea. The Central and Atlantic regions clearly fall behind in terms of access to quality roads and connectivity with the rest of the country, this is likely to be hindering commerce, tourism, and flows of investments between them and other regions. .

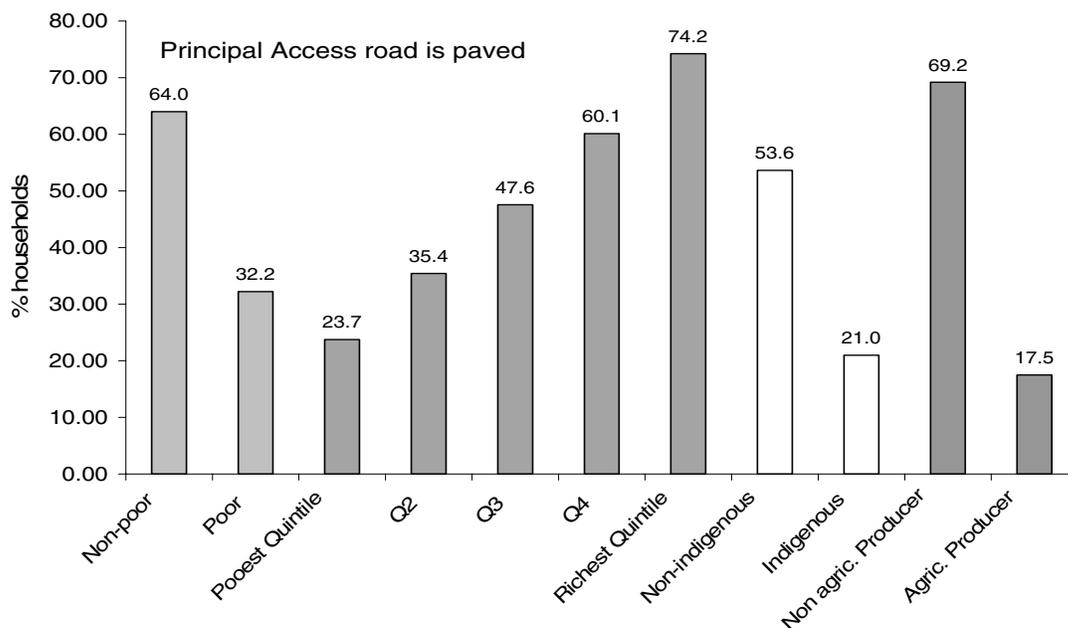
Table 3.2: In rural areas, only 26 out of every 100 households have access to a paved road.

<i>Main way to access dwelling</i>	<i>% Paved road</i>	<i>% Unpaved road</i>	<i>% Trocha</i>	<i>% River, Sea, Lake or Other</i>
Total	52.19	31.29	12.56	3.96
Area				
Urban	75.99	21.49	0.89	1.63
Rural	18.97	44.97	28.86	7.21
Region				
Managua	78.62	20.31	1.06	0.00
Pacific	60.42	27.40	8.96	3.23
Central	39.58	37.62	20.66	2.14
Atlantic	9.94	47.17	24.39	18.50

Source: World Bank using the 2005 Nicaragua EMNV.

3.9 Vulnerable groups such as poor households, indigenous households, and households engaged in agriculture have limited access to paved roads in Nicaragua. While 64 out every 100 non-poor households have access to a paved road from their dwelling, only 32 out of every 100 poor households do so. Access to paved roads is particularly low among households in the lowest quintiles, among indigenous households, and among households engaged in agricultural production (18 to 21 percent).

Figure 3.1: Indigenous households and households engaged in agricultural production are the ones with the lowest access rates to paved roads.



Source: World Bank using the 2005 Nicaragua EMNV.

3.10 Lack of access to roads hinders access to markets and better economic opportunities, especially among households engaged in agriculture. Lack of good roads makes it difficult for households engaged in agriculture to commercialize their farm production, which leaves them in the hands of intermediaries who often buy their produce at lower than market prices (due to high transportation costs). Table 3.3 displays the type of buyer of agricultural produce according to the region of residency. Note that the share of sales purchased by direct consumers by region is related to their connectivity in terms of roads. In particular, while 28 percent of all producers in Managua sell their agricultural output directly to the consumers, the same proportion is at 5 percent for farmers in the Central and Atlantic regions. Indeed, the majority of the producers in less accessible regions rely on local or outside merchants to purchase their agricultural produce. While the average distance between farmers and the closest “commercial road” is at 0.53 Km in Managua, it reaches 18 and 136 km in the central and Atlantic regions.

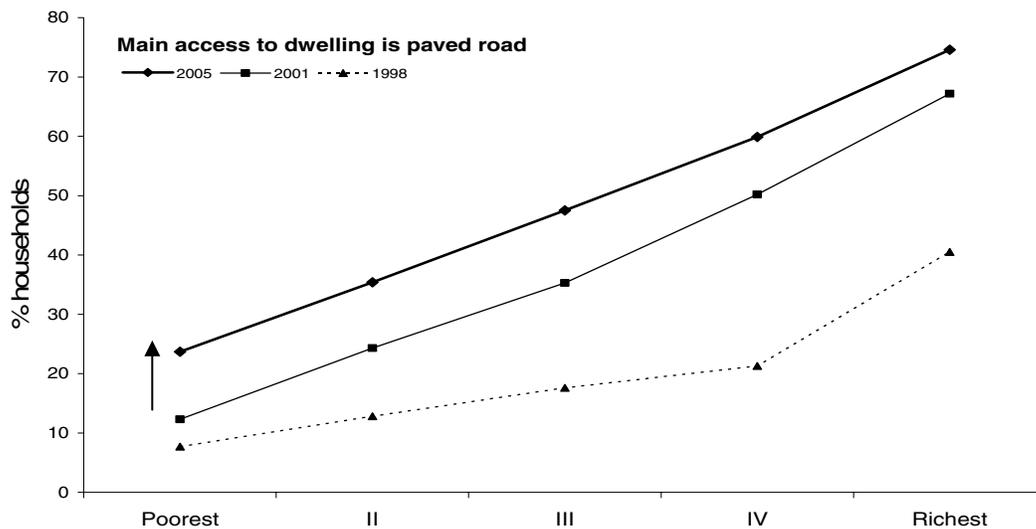
Table 3.3: Farmers living in less accessible regions rely on merchants to purchase their agricultural production

Main Buyer of agricultural produce	Managua	Pacific	Central	Atlantic	Total
% Direct consumer	28.09	14.30	5.22	5.53	7.68
% Local merchant	28.76	27.15	31.08	40.28	32.36
% Outside merchant	43.15	56.85	61.21	53.41	58.17
% other	0.00	1.70	2.49	0.77	1.80
Total	100.0	100.0	100.0	100.0	100.00

Source: World Bank using the 2005 Nicaragua EMNV. Sample: households engaged in agriculture who sale their production for profit.

3.11 Although households in Nicaragua still have limited access to paved roads, significant progress has been achieved on this front since 1998. As illustrated in Figure 3.2, household access to paved roads from their homes has improved significantly since 1998, especially among the poor. In 1998 only about 8 of every 100 households in the bottom quintile had access to a paved road from their dwelling of residency, by 2005 this share had increased to 24 percent. Similar progress was achieved at all quintiles. Data suggests that about 25 percent of all households benefited from a roads-program in the year prior to the EMNV 2005. Of this share 33 percent were indigenous households. Programs such as these should be continued.

Figure 3.2: Access to paved roads has roughly doubled since 1998 for households in all socio-economic groups.



Source: World Bank using the 1998, 2001, and 2005 Nicaragua EMNV.

Box 3.1: IDA Involvement on Roads in Nicaragua

Long-term IDA involvement has helped increase the share of the road network that is in working condition by almost 20% between 1999 and 2006 (from 17% to 20% of all roads).⁷⁸ IDA-financed projects restored over 3,000 km of secondary roads destroyed by Hurricane Mitch, rehabilitated the Pan American highway between Managua and San Benito – bringing back on line a key trade link with the rest of Central America – and more recently, improved 240 km of rural roads, linking the poor to markets, health centers and schools. Throughout, it has employed a contingent of local micro-enterprises in road maintenance ventures – giving very poor people stable, productive work – and built analytical, fiduciary, and maintenance capacity at ministerial and local levels. IDA’s support helped leverage additional funds for the establishment and operation of a national Road Maintenance Fund in 2005, which will help ensure long-term viability of road investments.

Source: Nicaragua IDA impact country story. World Bank (2007)

⁷⁸ IDA technical assistance and funds from Danida up-graded the systems and capacity in the Ministry to monitor road quality, as such post-1998 data is much more reliable.

Energy

3.12 Access to electricity is restricted in Nicaragua among the poor, and especially among indigenous households and among those engaged in agriculture. Lower access to electricity hinders welfare, especially for households working in agriculture and who deal with perishable products, such as milk and milk derivatives. Lack of access to electricity also lowers the capacity of households to run small businesses and may negatively influence their children's education. Table 3.4 shows that poor households, especially in rural areas and in the Atlantic region, are less likely to have access to electricity at home than non-poor and urban households. Vulnerable groups such as indigenous households and households engaged in agriculture display electricity access rates below 50 percent. Kerosene constitutes, after electricity, the second main source of lighting in Nicaragua. Between 40 and 43 percent of all households in rural areas (and mainly in the Central and Atlantic regions) use kerosene as the main source of lighting. In the Pacific region and in Managua, non electricity sources of light are used less. Candles and other very inefficient sources of light such as firewood are still being used by 26 of every 100 households in the Atlantic region.

Table 3.4: Statistics on main source of lighting by socio-economic group

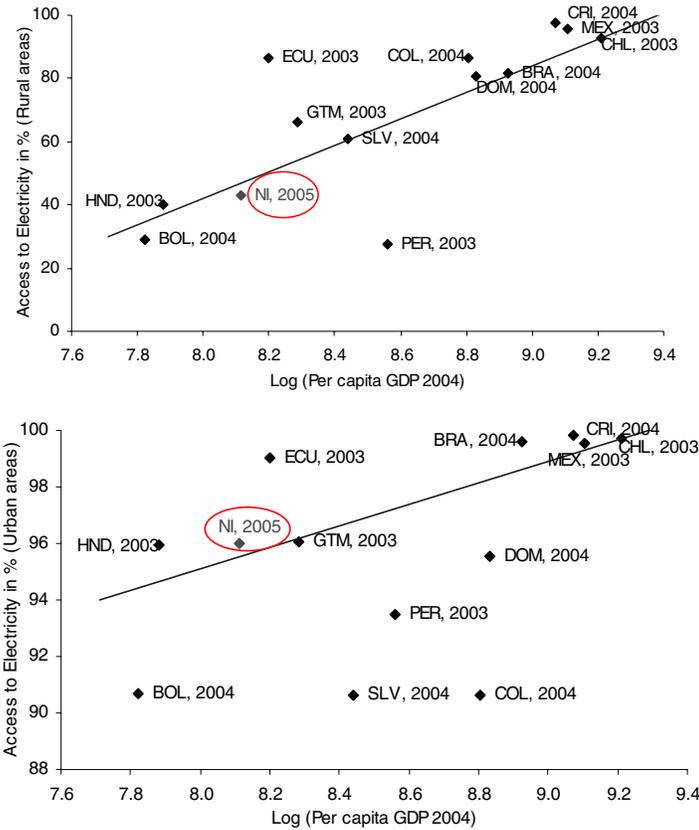
Socio-economic group	<i>Main source of light at home</i>		
	Electricity	Kerosene-Gas	Candles and other
Poorest quintile	33.89	48.77	17.35
Quintile 3	74.46	17.18	8.36
Richest quintile	93.91	3.79	2.30
Vulnerable group			
Indigenous	46.53	18.74	34.72
Agricultural Producer	38.13	47.47	14.40

Source: World Bank using the 2005 Nicaragua EMNV.

3.13 Differences in access to electricity are large across regions. Data suggest that access to networks among households in urban areas (96 percent) is significantly larger than that in rural areas (about 43 percent). While in Managua almost all households have access to electricity at home, in the Central and Atlantic regions only 57 and 34 percent of all households have access to electricity respectively (see Angel-Urdinola et. al., 2007). As Figure 3.3 illustrates, access to electricity in urban areas surpasses regional standards given Nicaragua's level of development. However, this is not the case in rural areas where access to electricity is below regional standards.

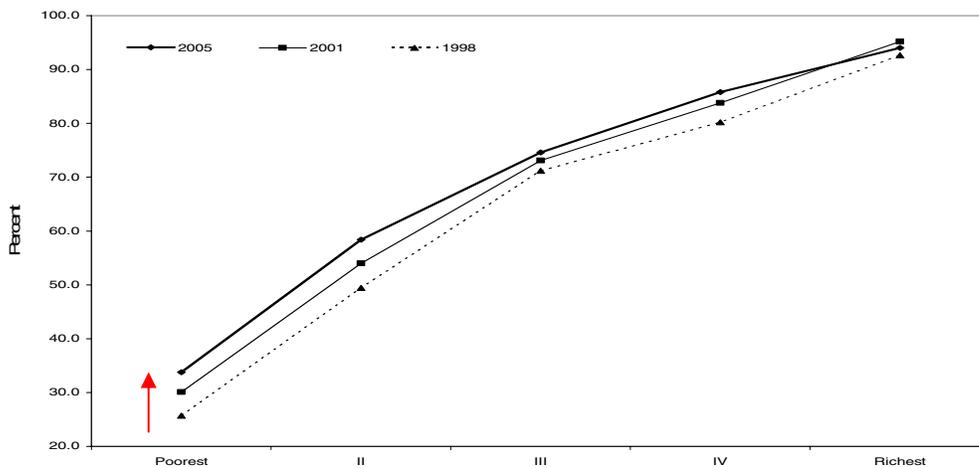
3.14 Access to electricity for households in the lowest two income quintiles, albeit low, has increased by 32 and 15 percent respectively since 1998. Figure 3.4 displays household access rates to electricity at home by quintile for years 1998, 2001, and 2005. Results indicate, as mentioned before, that access rates among richer household are much higher than among poorer ones. Nevertheless, improvements in access over time have been greater for the poor, and especially among households in bottom quintiles. Between years 1998 and 2005 access rates increased from 26 to 34 percent among households in the first quintile and from 50 to 58 percent among households in the second quintile. Improvements for those in upper quintiles, on the contrary, were modest, especially among households in the third and fifth quintiles. Other evidence shows that about 16.5 percent of all households benefited from a "utilities" program usually associated to the expansion networks in the year prior to EMNV 2005, and that beneficiaries were concentrated among vulnerable groups. 21 percent of all households in rural areas, 22.4 percent in the poorest quintiles, 23.4 percent among agricultural producers and 20 percent among indigenous households.

Figure 3.3: Access to electricity in Nicaragua in urban areas is above regional standards given its level of development; however it is below regional standards for rural areas.



Source: WDI dataset.

Figure 3.4: There has been significant progress in household access to electricity between years 1998 and 2005, especially among the poor.



Source: World Bank using the 1998, 2001, and 2005 Nicaragua EMNV.

3.15 Relative to household income, household electricity consumption is more expensive for households living in the Atlantic Region. Energy consumption is also more expensive relative to

income level in urban areas, among non-poor households, and among households living in the Atlantic and Managua regions. In particular, while energy consumption per month accounts for 2.7 percent of monthly income for households in the Central region, it accounts for 4.4 percent of monthly income for households in the Atlantic region (that is, 63 percent increase; perhaps due to low economies of scale and high marginal costs of expanding networks in this region). In the LAC context, electricity consumption among households in Nicaragua is normal relative to their income. On average, households in Latin America use between 3 and 5 percent of their monthly income to pay for electricity services (Komives et. al, 2006). In Nicaragua this share is at 2.4 and 3.5 percent for rural and urban areas respectively. Control of electricity prices in Nicaragua will be an increasingly difficult task if international oil prices remain high given that the country has the highest rate of electricity production from oil sources in the region (at 75 percent vs. 30 to 40 percent in other Central American countries). Keeping oil prices down in recent years has only been achieved by rationing energy supply, which in turn has deteriorated the quality of service.

Box 3.2: Property titles are required to access electricity services

Having a house is important but having property rights to a house or land can also influence economic well-being, objectively and subjectively. People throughout the qualitative field work shared various opinions about not having formal title to their property; some felt threatened by the possibility of their property being taken away and even cried during the interview while others felt secure and showed no concern about not having a formal title. In one example in urban Bluefields, where the data shows that all panel households and 82% of households in the municipality have access to electricity, the community leader stated that “there is a whole sector of the community where poor people living around the bay could not access electricity because the electric company required property titles to install the service and none of them had titles”. This problem is common place throughout other parts of the country; in a rural community in Managua a group of low quality houses in a sector of the community were all connected illegally to the public electric source through makeshift wires. The houses were all located in a property owned by a large cement company and could not formalize their ownership which meant that the electric company could not provide the service to them, even if they wanted to pay for it. In terms of credit, having a title is very beneficial, one person in an urban community of the central region said that “he knows what it implies to have title to a property, it means having access to loans something that could be a great help for those who have titles and a great hindrance for those who don’t”. Figures 3 and 4 show that overall rates of access to electricity have improved over the last 8 years for all panel households but the bottom 40 percent of the population improved at lower rates; in other words expansion favored the wealthier households.

Source: Del Carpio (2007) Voices of Nicaragua. Background paper to Nicaragua Poverty Report

3.16 Between 15 and 20 percent of all households with access to electricity do not pay for the service. Table 5 provides some statistics on payments from households with access to electricity. Electricity theft is common in Nicaragua, especially among the poor. In particular, results suggest that 20 to 25 out of every 100 users of electricity in the poorest quintile do not pay for the service (i.e. they are connected to the network illegally). High rates of electricity theft constitute a burden to energy suppliers. High rates of energy theft and high oil prices force suppliers to cut the service periodically in order to save costs. Furthermore, results indicate that electricity consumption for richer households is more likely to be metered than that of poor households (83 percent in the richest quintile vs. 51 percent in the poorest quintile). Lack of metering usually forces utility companies to guess household consumption based on average patterns of the population and not based on actual consumption which tends to lead to lower revenues for the company.

Table 3.5: Electricity theft is common in Nicaragua, especially among the poor.

	<i>If the household has access to electricity at home</i>		
	<i>% Pays, with meter</i>	<i>% Pays, no meter</i>	<i>% Does not pay</i>
Socio-economic group			
Poorest quintile	51.70	22.64	25.67
Quintile 2	66.20	13.74	20.06
Quintile 3	66.89	14.63	18.49
Quintile 4	76.41	8.73	14.87
Richest quintile	83.51	7.76	8.72
Vulnerable group			
Non indigenous	74.08	10.94	14.98
Indigenous	74.27	17.64	8.09
Non-Ag. Producer	75.60	10.23	14.18
Agricultural Producer	66.68	15.52	17.79

Source: World Bank using the 2005 Nicaragua EMNV.

Telecommunications

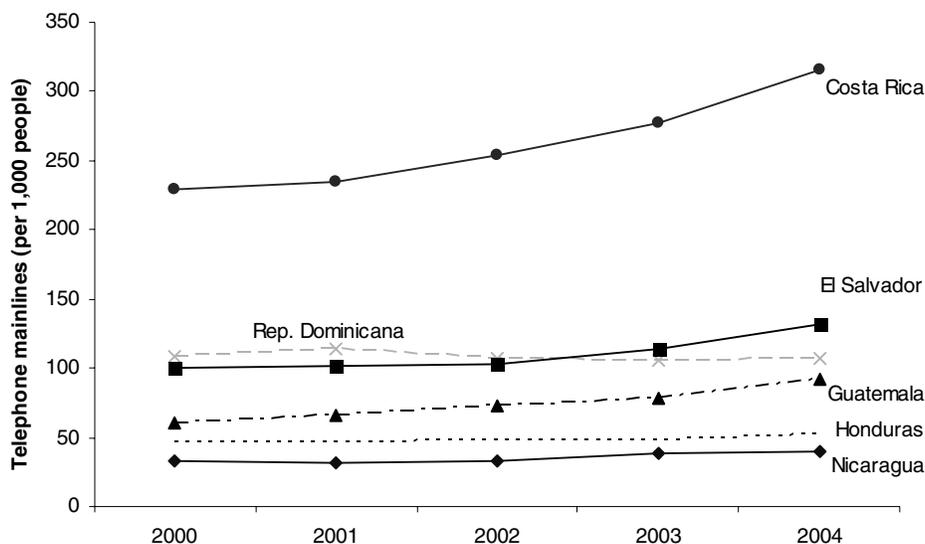
3.17 Cellular phones have superseded mainlines in Nicaragua and are providing a good alternative to communities without access to mainlines. Nicaragua has the lowest number of telephone mainlines per 1,000 people in Central America (see Angel-Urdinola et. al., 2007). Moreover, not much progress in expanding telephone mainlines has been achieved in recent years as compared to that achieved by some of Nicaragua's CAFTA competitors such as Guatemala, Costa Rica, and El Salvador (Figure 3.5). This is in contrast to the growth of mobile telephone usage. Telecommunications services and the ease of communication are important to individuals, households and firms. The benefits of access to telecommunications networks are vast and varied. For example, cellular phones are used by small agricultural producers to establish market prices for their produce. Telephone lines enable job seekers to communicate with employers and vice versa, this facilitates a better allocation of resources. Investing on telecommunications is important for economic growth. Calderón and Servén (2004) indicate that a higher stock of telecommunications (proxied by number of main telephone lines per 1,000 workers) and better communications infrastructure (measured by waiting time for telephone main lines, in years) is associated with higher economic growth and lower income inequality. Telecommunication services allow households to communicate with family networks which can be essential for receiving informal loans for productive investments, information about employment and general well being.

Table 3.6: Telecommunications through cellular technology has become the leading way to access to phone services in Nicaragua.

	<i>% with Fixed telephone</i>	<i>% with Cell phone</i>	<i>% with Both</i>
Urban	12.3	23.5	11.9
Rural	0.3	5.8	0.1
Managua	15.2	24.3	15.6
Pacific	5.5	19.8	5.5
Central	4.5	8.9	3.3
Atlantic	2.1	8.8	1.6

Source: World Bank using the 2005 Nicaragua EMNV

Figure 3.5: Among all potential members of the CAFTA, Nicaragua is the country with the lowest telephone mainlines per 1,000 people.



Source: WDI dataset.

3.18 There are large gaps in access to telecommunications between poor and non-poor households. Households in the richer quintiles have access rates to fixed and cellular phone that oscillate between 10 and 30 percent while access rates among households in the bottom quintiles oscillate between 2 and 15 percent. Access to cellular telephones is larger than access to fixed telephones at all socio-economic quintiles. Indeed, access to cellular telephones is significantly larger than that to fixed telephones for groups living in more isolated areas, such as indigenous households (19 vs. 3 percent) and households engaged in agriculture (6 vs. 1 percent). Cellular phones are also more accessible to households in the poorest quintiles. While household access rates to fixed phones among households in the first and second quintiles are lower than 1 percent, access rates to cellular phones are at 1 and 6 percent respectively.

3.19 Less than 1 out of every 100 households in rural areas has access to a fixed telephone at home. Results from the 2005 EMNV indicate that access rates to a fixed telephone are very low in rural areas and in the Central and Atlantic regions (averaging 2 to 4 percent). Access rates to fixed phone in urban areas and in Managua oscillate between 12 and 15 percent. Interestingly, household access to cellular phones is larger than that to fixed phones at every region and strata and especially in rural areas (6 vs. 1 percent) and in the Atlantic region (9 vs. 2 percent). This suggests that cellular technology has become the main mechanism to access telecommunications services in the more isolated regions.

Credit Services

3.20 In Nicaragua, approximately a quarter of the population received a loan during 2004, however a little less than one third of these loans were administered by informal lenders. Informal lenders are often associated with higher interest rates and hence may reduce the income generation that these investments could provide. There is ample evidence that good financial intermediary development is positively associated with higher economic growth and lower inequality (Levine, Loayza, and Beck, 2000). The mechanism through which financial development may reduce poverty through higher growth is by improving the allocation of capital. Poor households who are led to become entrepreneurs due to involuntary unemployment have no collateral, credit history, or connections. These capital market imperfections may prevent the

allocation of capital to poor entrepreneurs with high-return projects. By promoting financial development and access to credit markets for these projects the government and could encourage the reduction of poverty and inequality.⁷⁹

Box 3.3: IDA Involvement on Telecommunications in Nicaragua

With IDA's support, national coverage of fixed and mobile phones increased sevenfold from 194,000 in 1999 to more than 1.3 million in 2005, and mobile coverage in provincial capitals increased from 50 percent in 1999 to 100 percent in 2003. Prior to 2000, insufficient competition left Nicaragua with one of the lowest telephone connection rates in Latin America. IDA investment lending helped privatize the state monopoly, and created a regulatory agency. IDA's budget operations supported passage of competition laws needed to level the playing field, and facilitated the creation of a Telecom Investment Fund to extend services in rural areas. By putting this fund to work, an IDA financed project helped half a million citizens living in 365 small towns benefit from public payphone access. Now, some of Nicaragua's poorest can connect to doctors and relatives and obtain market data on their crops, putting them one step closer to modernity and economic opportunity.

Source: Nicaragua IDA impact country story. World Bank (2007)

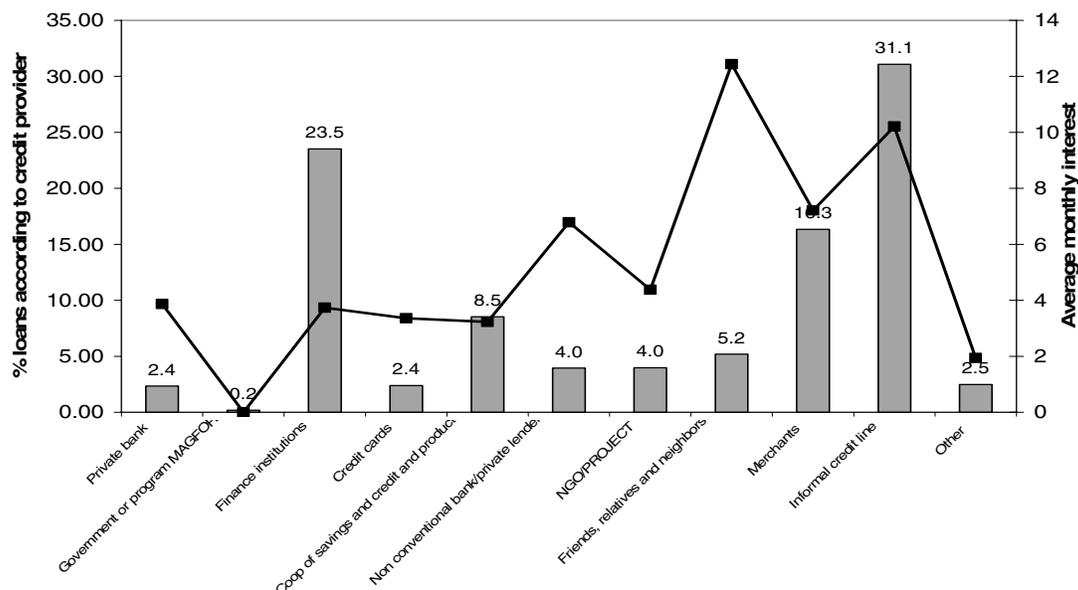
3.21 With the exception of indigenous households, about 25 of every 100 households at all socio-economic groups in Nicaragua received a loan in the 12 months prior to the EMNCV 2005 survey.⁸⁰ A little more than half of these loans were issued by informal creditors (such family, friends, NGOs, merchants, or informal credit lines). In addition, estimates indicate that while interest rates charged by informal lenders can be as high as 12 percent per month, interest rates charged by formal lenders such as private banks, cooperatives, and other financial institutions fluctuate around 4 percent per month (Figure 3.6).

3.22 Loans among the poor account for a large share of their yearly per-capita income this is particularly the case for agricultural households (Table 3.7). Loans to the poor (averaging 670 Cordobas per-capita per year) account for 11 percent of their yearly per-capita income. The same share is at 12 percent for the non-poor. Loans among agricultural households account for up to 20 percent of yearly per-capita income. Regression analysis suggests that more educated households (i.e. those having a head with tertiary education) are 11 percent more likely to have obtained a credit from a formal lender (banks, cooperatives, and micro-finance institutions) than households having a head with no education. Households in urban areas are 7 percent more likely to access formal credit while households in the Atlantic region are 25 percent more likely to borrow from informal sources (such as merchants, informal lenders, and friends). Surprisingly, having a land/house property title does not influence the probability that households access to formal credit, this is discussed below. (Angel-Urdinola et al., 2007).

⁷⁹ For simplicity, in order to estimate some credit statistics (such as type of provider and use of the loan) at the household level, we restricted our sample to the largest credit received in cases where households received more than one loan. Estimates indicate that 9.7 percent of all household who had access to a credit received more than two loans.

⁸⁰ The 2005 EMNV includes a module on credit. Unfortunately, the survey collects information on credit only if a household received a loan in the past 12 months. Therefore, the survey does not allow gathering information on households who applied for credit and did not get it, which is a better proxy for access to the service. Nevertheless, detailed data are gathered on the source of financing, amounts, interest rates, etc.

Figure 3.6: About 60 percent of all household loans are issued by financial institutions (24 percent) and informal credit lines (31 percent).



Source: World Bank using the 2005 Nicaragua EMNV

Table 3.7: Descriptive statistics on loan amounts received by households

	Average loan amount given to households - Cordobas per capita per year - (1)	Average household income - Cordobas per capita per year - (2)	Loans as % of income (1)/(2)
Socio economic group			
Non poor	2,821.32	21,734.10	12.98
Poor	670.28	6,356.42	10.54
Poorest quintile	423.81	4,696.24	9.02
Quintile 3	1,187.53	9,263.26	12.82
Richest quintile	4,473.42	34,163.53	13.09
Vulnerable group			
Indigenous	988.16	19,083.80	5.18
Agricultural Producer	2,545.02	12,980.34	19.61

Source: World Bank using the 2005 Nicaragua EMNV

3.23 About one third of the acquired loans are used for investment purposes. Estimates using the 2005 EMNV suggest that about 70 percent of all loans received by households are used for general household consumption (purchasing cars, houses, and other non-investment items) and 30 for business related investments. Households engaged in agriculture are more likely to use loans for investment-related purposes than the average household (40 percent vs. 30 percent). Indigenous households display the highest rate of loans used for household consumption at 76 percent.

B. INEQUITIES IN INTANGIBLE ASSETS

3.24 This section analyses differences in access and quality of income-generating “intangible” assets by socio-economic group in Nicaragua using the 2005 EMCV concentrating on

participation in associations and titling which is linked to access to credit, as discussed above. There is evidence (Escobar, 1995 and Scott, 1998) suggesting that service delivery and competitiveness tend to be low in countries where institutions remain weak. Participation in associations, formal ownership, and access to credit strengthens community driven development (CDD), which in turn contributes to strengthen governance, improve the targeting of social programs, enhance local capacity building, and promote the inclusion of the poor (Mansura and Rao, 2004).

Networks and Organizations

3.25 Access to networks and associations has become a mechanism for Nicaraguan households to promote social participation, empowerment, and better to access markets and services. In particular, participation in associations is important to access markets and inputs (e.g. producer associations); to protect individuals against other institutions (e.g. unions and consumer associations); to gain political power (community committees); and to access goods, programs, or services (e.g. religious associations and government programs). In this section we consider that a household participates in a productive association if at least one of its members participates in a credit union, a professional association, or a local committee. Community-based associations such as the Self employed Women's Association in India, the Orangi slum association in Pakistan, and the Iringa Nutrition association in Tanzania, among others (Mansura and Rao, 2004) are international examples of highly successful associations that have contributed to increase the welfare of their participants and their communities through service delivery and community programs.

3.26 Regression analysis (see Angel-Urdinola et al, 2007) indicates that having a head who participates in a productive association (credit union, professional association, or local committee) increases the probability that a household receives a loan by 9 percent. Specifically, having a head who is a member of credit union (professional association) increases the probability of getting a loan by 20 to 21 (13 to 19) percent. Controlling for other observables, poorer households are 2 to 5 percent less likely to obtain a credit than non-poor households. Households with secondary and post-secondary education are 6 to 25 percent more likely to obtain a credit as compared to households having a head with no education.

3.27 Participation in productive organizations in Nicaragua increases the probability that households benefit from social programs by 15 to 16 percent. Angel-Urdinola et al, 2007 find that controlling for other socio economic characteristics (education of the head, region, socio economic group, and strata among others) households with a head who participates in a productive association are 15 to 14 percent more likely to benefit from social programs. Households having a head in an association who attained intermediate education (secondary and technical) are 11 to 15 percent more likely to benefit from social programs as compared to households having a head with no education. Households in the Atlantic region are 15 percent less likely to benefit from social programs than households in Managua and urban households are 18 percent more likely to benefit from social programs than rural ones.

3.28 Nationally about 4.4 percent of all Nicaraguan households participate in local committees, 2 percent in professional associations, 2 percent in credit unions, 8 percent in religious associations, and about 6 percent in other type organizations such as women organizations, clubs, etc (Table 3.8). Participation in productive associations (such as local committees and professional associations) is higher in rural areas (particularly in the central region) among agricultural producers, and among households in the bottom 3 income quintiles. Participation in

credit unions, on the contrary, is higher in Managua, in urban areas, and among households in the upper consumption quintiles. Households headed by a male head are more likely to participate in productive associations than households headed by a female head. Participation in religious associations is higher than average in Managua, among indigenous households, and among households engaged in agriculture.

Table 3.8: Household participation in Associations in Nicaragua

Household Participation in %	<i>Local Committees</i> %	<i>Professional Associations</i> %	<i>Credit Unions</i> %	<i>Religious Associations</i> %	<i>Other organizations</i> %
Total	4.47	2.30	1.76	7.57	6.35
Area					
Rural	6.91	3.07	1.19	6.98	7.71
Urban	2.72	1.75	2.16	8.00	5.38
Region					
Managua	2.80	1.83	2.95	11.07	8.25
Pacific	4.21	1.85	1.38	4.43	4.20
Central	5.90	3.33	1.48	7.04	6.81
Atlantic	4.89	1.75	0.88	9.09	6.32
Poverty					
Non poor	4.68	2.29	0.13	5.71	4.80
Poor	5.35	1.77	1.58	8.29	7.02
Employment Sector of head					
Non-Agricultural Producer	2.94	1.26	1.90	7.48	5.31
Agricultural Producer	7.58	4.43	1.47	7.76	8.47
Ethnicity of head					
Non-Indigenous	4.38	2.32	1.83	7.30	6.32
Indigenous	6.42	1.92	0.22	13.66	7.04
Gender of head					
Male Head	4.89	2.56	1.88	7.75	6.55
Female Head	3.55	1.74	1.48	7.18	5.92

Source: World Bank using the 2005 Nicaragua EMNV

3.29 More educated households as well as households having self-employed heads have a higher probability of belonging to productive associations. Households having a head who attained primary, secondary, and tertiary education are 4, 7, and 16 percent more likely to participate in a productive association than households having a head with no education. Households having a self employed head as well as those having a head working in agriculture are 2 to 4 percent more likely to participate in productive associations than households having a head working as wage earners or in non-agriculture-related activities. Households living in the central region are associated with a 4 percent higher probability of participating in productive associations (vs. those residing in Managua) while urban households are 5 percent less likely to participate in productive associations as compared to rural ones.

Box 3.4: Association of Organic Coffee Growers of Matagalpa

Producer associations in Nicaragua are protected under the Municipality Law (Law 45) and the Social Participation Law (Law 475). The IPADE (Instituto para el Desarrollo y la Democracia) and USAID are institutions promoting development of successful programs to strengthen associations of producers in Nicaragua. One example is the “Association of Organic Coffee Growers” in the municipality of Molino Norte in the State of Matagalpa. Seeking help from USAID, the association achieved to train a group of coffee growers in how to produce and commercialize organic coffee. Nowadays organic coffee is worth 3 times as much as regular coffee in the international market and producers have been able to enjoy from higher revenues as they have been trained to access and benefit from this market. Today, about 419 hectares in the state of Matagalpa are used for the production of organic coffee. Small and medium producers have not only achieved to get a better price for their coffee production, but also to cut production costs. “Now, everybody want to produce organic coffee”, claims Mr. Reyes; the president of the Association of Organic Coffee Growers.

The organic coffee project is part of a US\$157 USAID broader initiative to promote sustainable development in Nicaragua. Coffee producer Arturo Jaén, owner of “La Ponderosa farm” learned to produce its own fertilizer out of chicken dung and coffee/corn residuals. Mr. Jaén spends US\$ 0.53 cents to produce a “quintal” of this fertilizer as compared to US\$12 he would have to spend to purchase commercial fertilizer. Besides contributing to improve productivity and the welfare of producers, the association has achieved to promote production techniques that are environmentally friendly and that have helped to reduce erosion and exposure of workers to toxins that may be harmful for their health.

Source: USAID (http://nicaragua.usaid.gov/historia_40.html)

Titling

3.30 The collateral value of landholdings is generally assumed to increase with ownership rights, thereby improving credit access among landholders. The large percentage of untitled property in much of the developing world is a frequently cited contributing factor (Holden, 1997) for low access to credit. Land is considered as advantageous collateral because it cannot be removed and does not easily devalue. However, many land owner borrowers face credit barriers for lack of formally documented ownership rights (Field and Torero, 2006). Consistent with this notion, government land-titling programs are thought to be important to promote access to credit among the poor. Indeed, wide scale land-titling has become a popular policy prescription for reducing credit constraints in developing countries (Binswanger et al.,1999). Nevertheless, property titles are not necessarily sufficient to transform modest landholdings into viable collateral for commercial loans. Use of titles to securitize loans may fail in impoverished settings because transaction costs involved – such as those associated with collateral processing, foreclosure and resale – are sizable compared with the average loan sought. Such costs are even higher when political or legal factors impede repossession of property (Deininger and Freder, 1993).

3.31 More than one third of all homeowners do not have a property title in Nicaragua. Titling can be important intangible asset because it allows you access to credit and thus open the doors to productive investments. Furthermore, titling can have other benefits such as allowing owners to rent out their land for a profit. The 2005 EMNV, reports that though 77 percent of all households

in Nicaragua claim to own the house they live in, only 66 percent possess a property titles on their property. Absence of property titles is more common in rural areas and in the Central and Managua regions, where informal home ownership reaches 34 to 46 percent. Furthermore, even in urban areas and among households in the richest quintiles, informal house ownership is as high as 30 percent. Informal ownership is the highest among indigenous households (at 59 percent) and among households working in agriculture (about 43 percent). Despite these high rates, less than 1 percent of households overall are benefiting from titling programs in Nicaragua (EMNV 2005). Titling programs are more common in urban areas and especially Managua where about 2.5 percent of all households claim to have benefited from a titling program within a year prior to the survey.

Table 3.9: Descriptive statistics on house titling by socio-economic group

	<i>% of households who owe a house</i>	<i>% who own without documentation</i>	<i>% who own with documentation</i>
Total	76.5	34.0	66.0
Rural	77.4	44.4	55.6
Urban	75.8	26.5	73.5
Region			
Managua	75.4	34.0	66.0
Pacific	73.0	33.1	66.9
Central	78.3	29.8	70.2
Atlantic	82.5	46.3	53.7
Poverty			
Non poor	75.8	27.6	72.4
Poor	77.6	44.7	55.3
Employment Sector of head			
Non-Agricultural			
Producer	72.7	29.3	70.7
Agricultural Producer	84.3	42.4	57.6
Ethnicity of head			
Non indigenous	76.0	32.8	67.2
Indigenous	86.4	58.5	41.5

Source: World Bank using the 2005 Nicaragua EMNV

3.32 Lack of titling is also common among agricultural producers who claim to own land. 21 percent of all agricultural producers do not possess a title on their land. This fact is more frequent in the Atlantic region where about 32 percent of all producers who claim to own their land do not have any official documentation. Interestingly, only 10 percent of all landowners who do not have a title on their land fear that they may have problems with their land in the future or that they may be expropriated from it, although this holds true for all socio-economic groups. There is also anecdotal evidence suggesting that households lack incentives to register their property as without a title they avoid paying property taxes and using it as credit collateral. Most landowners claim to have obtained their land by either purchasing it or by inheriting it (Table 3.10). About 11 percent of poor households in rural and 21 percent of households in urban areas claim to have obtained their land during the agricultural reform and about 6 percent of all landowners claim to live in a land they invaded. Not surprisingly, landowners who claim to live in invaded lands are generally poor ones.

Table 3.10: About 20 percent of the urban poor claim to have obtained their land during the “reforma agraria”

	<i>Purchased</i>	<i>Inherited</i>	<i>Agric. Reform</i>	<i>Invaded</i>	<i>Given as gift</i>	<i>Total</i>
Rural Areas						
Non-poor	50.9	36.8	7.2	1.9	3.1	100.0
poor	41.1	38.5	10.8	5.9	3.8	100.0
Urban Areas						
Non-poor	56.7	37.0	4.6	0.0	1.7	100.0
poor	33.8	25.4	20.5	6.5	13.7	100.0

Source: World Bank using the 2005 Nicaragua EMNV

3.33 Generally, having a land title is associated with better outcomes in relation to access to credit and productivity as well as with a higher probability of households renting their land for profit. In situations where land tenure insecurity is pervasive, as in Nicaragua, systematic efforts of land regularization can have positive effects on land values as well as equity. Receipt of a registered title raises land values by 30 percent and greatly increases the propensity to invest. Greater demand for regularization of land rights, especially from the poor, suggests that titling can have a positive distributional effect. Having a land title is a necessary but not sufficient condition to transform modest landholdings into viable collateral for commercial loans. Titles are as important as a well developed market for land and property in general for financial institutions to foresee associated gains above the costs involved in collateral processing, such as foreclosure and resale of land properties, and to be able to legally repossess without political impediments. In addition to efficient land markets and credit systems, titled land needs to be complemented by training, technical assistance and improved market access for increases in productivity and profits to take place.

Table 3.11: Share of landowners who rented their land for profit during the 12 months prior to the survey

<i>Type of Title</i>	Landowner did not rent land during last 12 months	Landowner rented land during last 12 months	<i>Total</i>
Conventional title	69.9	30.1	100
Title from agriculture reform	43.6	56.4	100
Purchase letter	60.5	39.5	100
Other document	54.0	46.0	100
No document	75.8	24.2	100
Total	67.7	32.3	100

Source: World Bank using the 2005 Nicaragua EMNV

C. AGRICULTURAL PRODUCTIVITY

3.34 Poverty rates in Nicaragua for households engaged in agricultural production lie above the national average (70 percent). Other indicators, such as low education levels further suggest this is part of the population with important needs. On average, the segment of the population dedicated to for-profit agricultural production is poorer and less educated than average. The majority of agricultural producers lives in rural areas and in the poorest regions (see Angel-Urdinola et al. 2007). A large share of the poor population (66 and 46 percent in the first and second quintiles) is engaged in agricultural production. Moreover, income from agriculture accounts for more than two thirds of the overall income among the poor. A significant share of all agricultural income – 73 to 92 percent – comes from revenues from agricultural production (the

remaining comes from wages and services). This section studies the distribution of production factors (capital, labor, and land), agricultural inputs, and intangible assets among agricultural producers in Nicaragua. Agricultural productivity is important for economic growth and there are several channels through which productivity and growth in the agricultural sector can affect poverty. For example, higher agricultural productivity can translate into higher income for producers, more employment, production of cheaper food, and higher tax revenue from agricultural activity. Furthermore various studies have found that the multiplier effects of improvement in agricultural productivity, especially in areas with good infrastructure well developed urban-rural communications and access are high.⁸¹

3.35 Agricultural producers are defined for the purposes of this study as those households who work the land (irrespective of individual or outside ownership) and who were also able to attach a monetary value to the produce of their agricultural activities. Our analysis uses a sample of households with a UPA (*Unidad Primaria Agricola*) in order to include agricultural producers who do not own land.⁸² Land owners who do not work the land or who rent their land out, as well as landowners engaged in “pecuary” activities (i.e. livestock, eggs production, milk production, leather production, etc.), were excluded from the analysis.⁸³

3.36 Our estimates show that gaps in agricultural productivity are large in Nicaragua, especially between different producer sizes and regions. Large Agricultural Producers display productivity levels that are more than six times larger than among small producers. Not surprisingly, urban producers, who often enjoy better access to infrastructure, technology, and credit; are more productive than rural producers, even poor urban producers are on average more productive than non-poor rural producers. There are also large regional inequities in productivity. The Atlantic region, being the poorest region, displays the lowest levels of agricultural productivity while the Central and Pacific regions display productivity levels that are higher than the national average. Small-rural producers in the Atlantic region are likely to be one of the most vulnerable groups in Nicaragua: they display higher levels of poverty, low levels of education, low productivity, and limited access to infrastructure, equipment, and qualified labor.⁸⁴ Figure 3.7 displays differences in productivity (yields per hectare in local currency) across regions, producer size, and socio-economic condition.

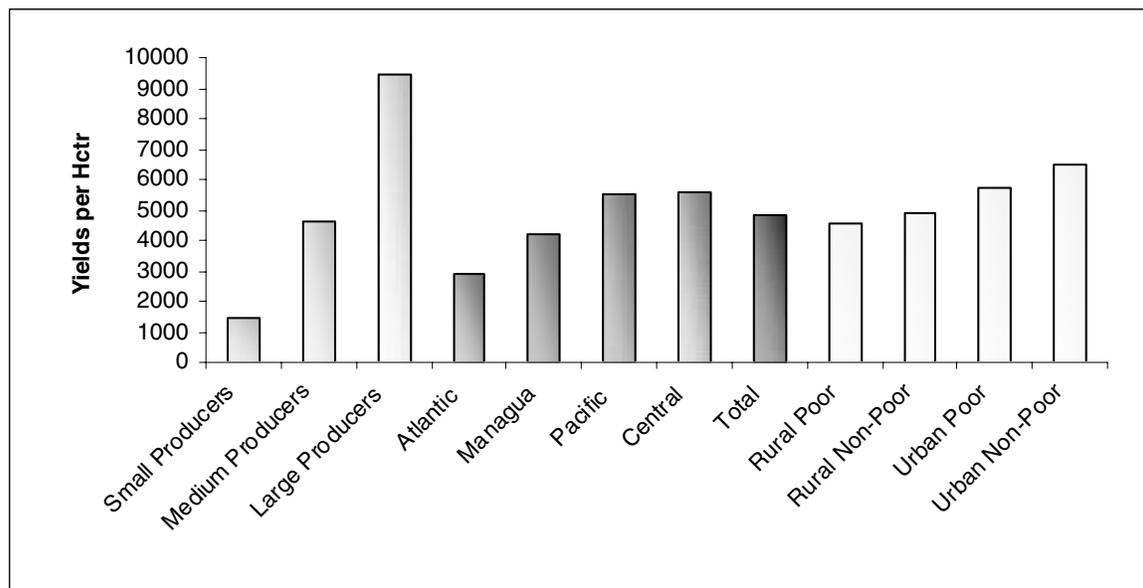
⁸¹ Haggblade et al (1989), Haggblade et al (1991), Hazell and Ramasany (1991) and Delgado et al (1994) among others.

⁸² To facilitate the analysis, we restricted our sample to only one UPA per household (the one with the largest yields. Only 3 percent of all household (113 observations) declared to owe more than one UPA in the year previous to the survey.

⁸³ According to survey estimates, about 31 percent of all households in the sample fulfill this description.

⁸⁴ Rural productivity is usually computed product-by-product in tons (or kilograms) per hectare. Due to data limitations (small sample sizes and lack of information about land size cultivated by product) doing product-by-product analysis is not feasible using the 2005 EMNV data. Analysis in this chapter relies on information on the monetary value in local currency of the output produced from all crops by producer households (which we define as yields) divided by the land used for the production of all crops (in hectares). The main limitation of this “aggregate” analysis is the impossibility to isolate differences in yields that are due to the type of crop produced (such as harvest time, water needs, seasonal demand, market prices, etc...).

Figure 3.7: Economies of scale are important in Nicaragua: Large agricultural producers are 6 times more productive than small ones.



Source: World Bank using the 2005 Nicaragua EMNV. Small Producer, yields of less 2000 CO/year; medium Producer; yields between 2000 and 30,000 CO/year; large Producer yields above 30,000 CO/year

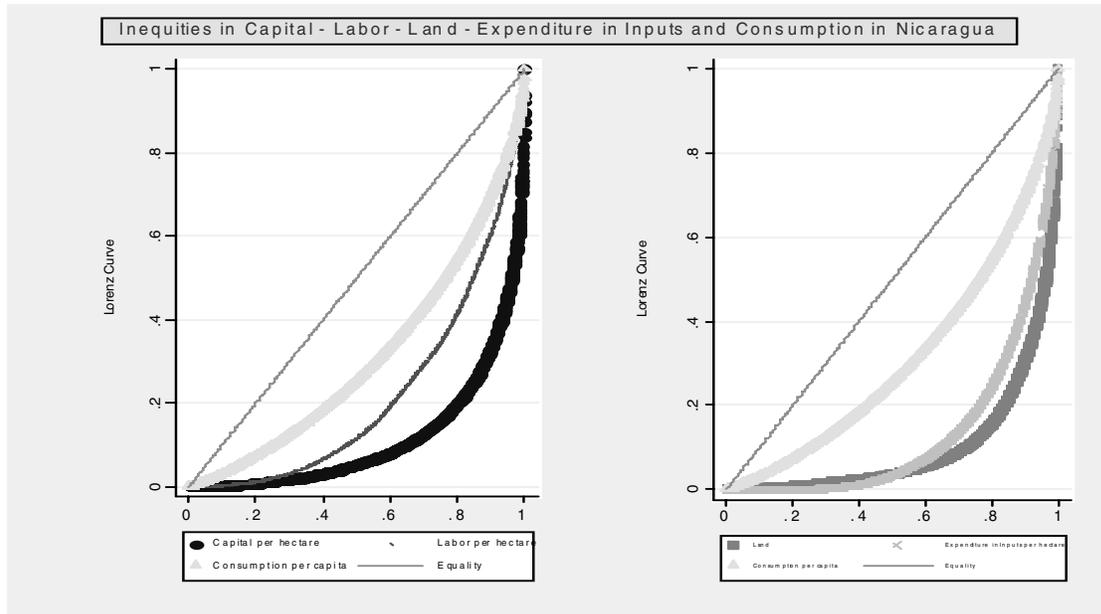
3.37 There exists inequality in productivity among the more productive producers. Inequality in productivity is highest among large producers, among non-poor producers, and among producers in Managua and in the Atlantic region (Angel-Urdinola et al., 2007). As such, large producers as well as non-poor producers should not, necessarily, be considered as homogeneous groups. It is interesting that the Atlantic region is not only the least agriculturally productive region on average but also the one with the highest inequality in agricultural productivity.

Factors of production

3.38 Inequality in productivity is generally explained by inequities in quantity and quality of Capital, Labor, and Land (the main factors of production in agricultural production) available to producers. Among producers, there exist large inequities in access to Land and Capital. While the 2005 EMNV provides good information on the quantity of the factors of production used by producers, information on quality is limited. Therefore, results presented here are likely to be conservative ones as inequities in factors of production are likely to be even higher once quality analysis is introduced. To proxy factors of production we used the following variables: for Labor, we used the number of workers (including family members) working the land in the UPA; for Capital, we used the monetary subjective value in local currency of the agricultural equipment used by the producer (including production animals, tractors, harvest and seeding equipment, water pumps and sprinklers, vehicles, fumigating equipment, and electric plants). Capital and Labor were normalized by the amount of land used for production in hectares (i.e. capital per hectare and labor per hectare). Figure 3.8 plots the Lorenz curves for all factors of production in Nicaragua (for all producers). Results indicate that capital and land are less equally distributed

among producers than labor and other agricultural inputs (such as seeds, fertilizers, etc; see next section).⁸⁵

Figure 3.8: Inequality in access to Capital and Land is much higher than inequality in access to Labor and Agricultural Supplies.



Source: World Bank using the 2005 Nicaragua EMNV.

3.39 While poor and small producers use more labor and less capital and land for production, large and non-poor producers do otherwise. Table 3.12 presents some descriptive statistics on access to factors of production in Nicaragua by socio-economic group, strata, production size, and region. Results in Table 3.18 indicate that the size of the UPA is generally larger among non-poor producers, especially in urban areas. In urban areas non-poor producers have on average 7 times as much land as poor producers, in rural areas non-poor producers only have twice as much. There are also regional differences: the average size of the UPA is higher in the Managua and Atlantic regions (52 and 37 hectares) than in the Pacific and Central regions (19 and 13 hectares). In terms of producer size, unsurprisingly large producers have land plots that are approximately 3 to 4 times larger than those of small and medium-size producers. Capital per hectare, the second key productive factor, is significantly higher among urban non-poor producers: 3 times more than any other group. However, when analyzed by region and producer size differences in capital are less striking than the differences found in UPA. This suggests that the capital stock is highly concentrated among urban non-poor producers. These characteristics of the Nicaraguan agricultural sector concur with accepted economic theory which argues that because labor is relatively cheaper for small and poor producers (they are able to rely mostly on family and unpaid labor) as compared to land and capital which they have limited access to small and poor producers will employ more labor (generally unskilled) in order to conduct activities that other producers undertake using equipment (such land irrigation, seeding, and harvesting).⁸⁶

⁸⁵ We construct an index for agricultural supplies using factor analysis (i.e. principal component techniques) based on whether or not producers use fertilizers, seeds, improved seeds, and *plaguicidas*

⁸⁶ This theory is based on a Cobb-Douglas production function.

Table 3.12: Descriptive Statistics on factors of production and output for agricultural producers in Nicaragua

	Yields in Cordobas per hectare	Land Size in hectares	Capital in Cordobas per hectare	Labor in Workers per hectare
Strata				
Urban Poor	5753	7.07	1625.56	1.80
Urban Non-Poor	6493	67.27	3461.79	1.62
Rural Poor	4584	17.09	729.05	1.44
Rural Non-Poor	4910	33.45	1167.95	1.28
Region				
Managua	4226	52.52	1590.40	2.28
Pacific	5484	12.91	1486.49	1.87
Central	5564	18.90	1063.20	1.55
Atlantic	2867	37.66	491.32	0.70
Producer Size				
Small Producers	1418	14.31	627.53	2.43
Medium Producers	4592	17.77	1074.01	1.43
Large Producers	9428	56.70	1112.04	0.64
Total	4833	23.90	1035.26	1.43

Source: World Bank using the 2005 Nicaragua EMNV. Small Producer, yields of less 2000 CO/year; medium Producer; yields between 2000 and 30,000 CO/year; large Producer yields above 30,000 CO/year

Agricultural Inputs

3.40 The use of agricultural inputs is important to boost agricultural productivity and to mitigate the risk of a bad harvest. Agricultural inputs such as certified seeds, fertilizers, and *plaguicidas* enhance the quality, growth, and development of crops (see Box 3.5.). Usage of inputs in Nicaragua is generally low: only 11 percent of all producers use certified seeds, 6 percent use organic fertilizers, 37 percent use chemical fertilizers, and 67 percent use “*plaguicidas*”. Large and non-poor producers as well as producers in the Pacific region use more inputs than poor, small, and rural producers. Producers in the Atlantic region largely fall behind in their usage of inputs for production as compared to the average producer.

Box 3.5. Relationship between fertilizers, pesticides and agricultural productivity

The relevance of pesticides and fertilizers to agricultural productivity has become a stylized fact in developing economies. Fertilizers are one of the most enhancing productivity agricultural inputs in the agricultural economy. Authors such as Hayami et al (1970), Headly (1968) and Carrasco and Moffit (1992) have found that fertilizers have an economically and statistically significant influence on agricultural productivity. When studying a cross section of countries in the 1960s Hayami (1970) estimated that the use of fertilizers increased productivity between 10 and 17 percent. Headley (1968) studies the impact of pesticides on productivity and finds that the marginal value of pesticides exceeds their marginal cost by a considerable amount. Carrasco and Moffitt (1992) using alternative functional specifications, found that even though the magnitude of the impact of pesticides on productivity may be smaller to the that found by Headley (1968), the impact is still positive and significant. Antle (1983) also finds fertilizers to be an essential element to disentangle the productivity determinants when studying the links between infrastructure and agricultural productivity.

Table 3.13: The share of agricultural producers using certified seeds and fertilizers is generally low, especially among poor and small producers.

	% producers using Non certified Seeds	% producers using Certified Seeds	% producers using organic Fertilizers	% producers using chemical Fertilizers	% producers using <i>Plaguicidas</i>
Area					
Urban Poor	25.51	8.01	2.46	45.04	63.70
Urban Non-Poor	18.95	14.05	12.23	52.75	71.66
Rural Poor	19.76	9.23	5.74	29.47	62.59
Rural Non-Poor	23.39	12.40	5.84	46.89	74.41
Region					
Managua	10.37	17.63	11.32	29.46	64.14
Pacific	20.02	12.53	12.77	61.42	61.95
Central	26.15	11.64	4.46	39.32	73.38
Atlantic	12.88	4.37	1.56	8.47	57.96
Producer Size					
Small	19.30	7.04	6.51	22.17	43.78
Medium	21.47	8.56	5.71	35.83	68.00
Large	20.20	29.03	8.02	63.04	81.79
Total	21.12	10.46	6.02	37.16	66.89

Source: World Bank using the 2005 Nicaragua EMNV. Small Producer, yields of less 2000 CO/year; medium Producer; yields between 2000 and 30,000 CO/year; large Producer yields above 30,000 CO/year

Determinants of productivity

3.41 In this section we estimate the determinants of agricultural productivity, using household surveys. A previous study of the determinants of agricultural output in Nicaragua (Larson, 2004) found that agricultural producers in Nicaragua face decreasing returns to scale, with durable capital equipment being an important part of agricultural families' income determinants. In contrast, the study also finds that having access to technical assistance, product diversification, and social capital (i.e. participation in farmer's organizations) were not statistically significant determinants of productivity.⁸⁷ It is important to note that the results presented here (and also those of Larson, 2004) should be interpreted with care. Household survey data is not optimal for the estimation of the determinants of agricultural productivity. More detailed sector data with larger sample sizes and collecting more detailed information, such as agricultural census, are preferable for this type of analysis and especially for analyzing the impact of "capital" and "inputs" on productivity. Nevertheless, results presented here provide important information on general covariates that influence the average producer's productivity; such as the use of fertilizers, geographical location, and producer size, among others.

3.42 This section relies on regression analysis using a specification where the natural logarithm of output (in yields per hectare) is regressed against proxies for Capital, Labor, and other characteristics of producer households that may influence their levels of productivity (such as access to infrastructure, use of fertilizers, region, level of education of the head, etc.). Our model

⁸⁷ Larson et al (2007) find that while among wealthier households differences in productivity cannot be accounted for by differences in livelihood strategies, this is not the case for the poor ones. In the case of the poor households, they find that non-farm activities are more profitable than self-employment, but various labor market constraints prevent them to chose freely.

is based on a Cobb-Douglas production function (see Box 3.6 below); log-log and log-linear regression models are used.

Box 3.6: Estimating a Cobb-Douglas production function

The Cobb-Douglas production function is the most commonly estimated function in the economics literature. It has the following algebraic form:

$$Q = AL^{\alpha}K^{\beta}H^{\chi}$$

Where Q is output, A, α , β and χ are constants, L is labor, K is capital, and H is land. The function is said to be homogenous of degree $\alpha + \beta + \chi$, since multiplication of L, K and H by some constant will raise output by a proportion $k^{\alpha+\beta+\chi}$. If the three exponents sum to unity, the Cobb-Douglas function is said to be homogeneous of degree one, exhibiting constant returns to scale.

Findings on Impact

3.43 Returns to labor are high, especially for poor producers. Estimates (see Angel-Urdinola et al., 2007) suggest that for every extra worker per hectare, yields per hectare increase between 50 and 70 percent. Returns to poor producers are higher than among non-poor producers, this is not surprising as the marginal utility of having an additional unit of labor (worker) decreases the more workers you have. Non-poor producers will tend to have a higher number of workers to start with.

3.44 Estimates suggest that for every 1000 cordobas invested in capital per hectare (about US\$60 per hectare); productivity is expected to increase by 7 to 10 percent. This result does not necessarily mean that returns to capital are lower than returns to labor. Current investments in Capital are very low, average capital stock among producers is about US\$22 per hectare. Taking into account that the average UPA size is 16 hectares, an investment of US\$60 would then only account for about US\$960 per UPA per year. With this magnitude of investment, producers would not be able to buy the necessary equipment (such as tractors or irrigation systems) to really boost their production. However if investments were to increase ten times (averaging US\$ 600 per hectare or US\$9600 per UPA per year; which would allow producers to buy a tractor, for example) productivity would increase by almost 100 percent.⁸⁸ This indicates that a critical mass of investment needs to be reached before capital investments show higher productivity returns.

3.45 Use of Fertilizers is an important determinant of agricultural productivity. Estimates also indicate that using fertilizers increases productivity levels by 22 to 34 percent nationally. The use of fertilizers increases productivity by more (23 to 50 percent) among small and poor producers.

3.46 The characteristics of agricultural households, such as the gender of the head, participation in productive organizations, socio-economic levels, and land property titles appear not to have an effect on productivity.

⁸⁸ Note also that the returns to capital presented here are likely to be underestimated because the measure of capital stock is probably undervalued by the informer reporting a subjective value of a limited stock of equipment; that is, the LSMS is not the most adequate instrument to estimate the value of the capital stock. Returns to capital found here are similar to those found in Ecuador using 2003 data (see World Bank 2004)

3.47 Having access to a paved road increases average yields per hectare by 17 to 20 percent. This can, as discussed above, occur because producers with access to better roads generally have more access to markets and are able to sell their produce at higher prices. Medium sized coffee and bean producers are associated with 60 to 80 percent higher productivity than other (non-bean, non-banana) producers. Consistent with the descriptive analysis presented above, estimates indicate that medium and large agricultural producers are 2 and 3 times more productive than small producers. Furthermore richer and larger producers in the Pacific and Central region, the main agricultural regions in the country, are associated with 20 to 50 percent higher levels of productivity.

Policy Recommendations

3.48 There has been significant progress in terms of access to basic infrastructure and productive services in the country since 1998 however, levels of infrastructure development in Nicaragua are still low relative to the LAC region. Economies with better and broader access to roads, electricity, transportation, credit, and telecommunications area associated with higher growth rates and lower income inequality and poverty. The share of households with access to piped water, fixed telephone, cellular telephone, and trash collection services increased substantially between 1998 and 2005 in Nicaragua. Other housing related variables related to the household's dwellings, such as the share of dwellings with access to toilet inside, good-quality floor, and good-quality walls also displayed a significant improvement both in rural and urban areas. There is clear indication that the quality of life in terms of infrastructure has improved for many people. Nonetheless further investments and policy efforts are recommended.

3.49 Further investments in roads are likely to improve welfare among the poor: this chapter has found that better roads are associated with higher yields per hectare among agricultural producers and better access to markets. Roads reduce the cost of assembling intermediate inputs for production which in turn, reduces production costs and thereby prices. A lack of good roads and high transportation costs makes it difficult for households engaged in agriculture to commercialize their farm production, which leaves them in the hands of intermediaries who often buy their produce at lower than market prices. Though significant progress has been made, indigenous households and households engaged in agricultural production remain the groups with the lowest access rates to paved roads in the country. Efforts should be continued to expand quality road networks to these groups.

3.50 There is an urgent need for investments in expanding electricity networks in rural areas, in the Atlantic region, and among vulnerable segments of the population. Low access to electricity hinders welfare, especially for households working in agriculture and who deal with perishable products, such as milk and milk derivatives. Lack of access to electricity also lowers the capacity of households to run small businesses and may negatively influence their children's education. The expansion of electricity networks will be difficult to achieve if electricity prices remain stable and as long as the country continues to be highly dependent on oil as the main source of energy. The government should make efforts through the utility service companies to diversify energy sources away from oil based energy. Furthermore, it should invest in monitoring electricity theft. Between 15 and 20 percent of all households with access to electricity do not pay for the service. High rates of energy theft and high oil prices currently force suppliers to cut the service periodically in order to save costs. This situation impedes productivity growth as firms are sometimes unable to function and lowers the quality of life for households.

3.51 The government should consider strategies to continue to improve formal micro-credit programs. Access to credit is important so that households can invest in assets, such as education or agricultural machinery. Results in this chapter indicate that loans among the poor account for a large share of their yearly per-capita income. For instance, among agricultural producer households, loans account for up to 20 percent of per-capita income and are mainly used to operate and expand their business. The majority of all loans received by households are issued by informal sources of credit, such as merchants or family/friends. Loans from informal providers which are often more accessible to the poor are associated with much higher interest rates than loans from formal providers.

3.52 Access to networks and associations has become a mechanism for Nicaraguan households to promote social participation, empowerment, and better to access markets and services. It is estimated that participation in productive organizations such as credit unions, professional associations, or local committees increases the probability that households benefit from social programs by 15 to 16 percent. Furthermore estimates indicate that having a head who participates in a productive organization increases the probability that a household receives a loan by 9 percent. Given these positive impacts investments and programs focused on strengthening and promoting the establishment and participation in these types of associations should be considered by the government.

3.53 It is necessary for the government to invest more in titling programs and to educate the population on the importance of having property titles. Though it is suggested in the evidence that having a land title is not necessarily associated with better credit/productivity outcomes among landowners at the moment, as the country develops and increasing its insertion in the global market, this will become increasingly relevant. About one third of all homeowners in Nicaragua do not possess a property titles on their property. A lack of titling is more common in rural areas and in the Central and Managua regions. It is also common among agricultural producers, data suggests that 21 percent of all agricultural producers do not possess a title on their land. A combined strategy of legislative reform (such as regulating the use of “formal” collaterals for the credit and the land rental markets) and education campaigns should be designed to provide incentives to titling. Expanding title programs, without having the proper culture and incentives for formal ownership, may not necessarily be an effective policy.

3.54 It is important that programs be designed to encourage the greater use of agricultural inputs, these initiatives could include education, subsidization of and greater accessibility to these inputs such as quality fertilizer and seeds. In Nicaragua agricultural production is still very rudimentary for the majority of producers: less than one third of all producers used certified seeds, organic fertilizers, chemical fertilizers, and/or “*plaguicidas*”. These initiatives as well as policy recommendations provided above, such as greater access to roads etc are important to reduce the large gaps in agricultural productivity which exist in Nicaragua, especially between producers of different sizes and different regions. Currently access to land and capital is concentrated among a few large urban non-poor producers; this concentration does not promote sustainable shared growth. Greater agricultural productivity is important for economic growth as it represents about one fifth of Nicaragua’ total output and one third of Nicaragua’s total employment (see Gutierrez and Ranzanni, 2007).

CHAPTER IV. THE DISTRIBUTION OF PUBLIC SOCIAL SPENDING IN NICARAGUA

4.1 The Nicaraguan Government, with assistance from international organizations and foreign donors, finances the public provision of a wide range of social programs aimed at improving living standards and human development of the poor. Indeed public social spending in Nicaragua accounts for 43 percent of the central government's total expenditures in 2005 (52 percent excluding service on the public debt). This chapter evaluates whether this spending on social programs actually reaches the poor, and which programs are, or are not, effective. To this end, analyzing coverage and incidence of social spending is crucial. Assessing coverage allows us to determine the proportion of the poor that enjoys a given service or takes part in a public program. This helps identify groups that lack a specific service or only scarcely participate in a given public program, and as a consequence can better guide the targeting of services. Evaluating incidence allows us to determine the percentage of each public program's spending that benefits different socioeconomic groups. This is useful to determine if a program's resources are favoring the poor, and thus, whether it can improve the pro-poor allocation of public spending.

4.2 This chapter is structured in three sections. The first section characterizes spending for social programs in Nicaragua—both those that correspond to overall Public Social Spending (PSS) and those programs that are specifically part of the Poverty Reduction Strategy (PRS)—and analyzes the distribution of public spending in both categories. The second section examines the distributional incidence of social spending in the sectors of education, health, housing, water and sanitation, social assistance and rural development. Finally, the chapter concludes with policy recommendations for targeting public spending on the poor.

Key findings of this chapter include:

- Substantial scope exists for better targeting of programs for the poor.
 - Almost 47 percent of overall public reduction spending (PRS) benefits people who are not considered poor.
 - Programs that are the most targeted to the poor include primary education programs, several food programs, and rural development programs. Spending on university education is one of the least targeted to the poor.⁸⁹
 - Only 34 percent of Nicaraguan children from the poorest families receive preschool education, compared to 79 percent of wealthiest families. Qualitative surveys suggest that the poor perceive little benefit from preschool education, which suggests a public campaign to explain the benefits and/or better access to facilities may increase coverage to the poor.
- Basic infrastructure spending is not particularly pro-poor, but this is due to the overall low level of infrastructure development. A significant proportion of moderate consumption groups have no access to clean drinking water, sanitation, or road infrastructure. Consequently, the current pattern of spending on basic infrastructure does not have a pro-poor character.
- Rural development projects tend to be pro-poor because they are geographically targeted to areas where much of the poor population lives.
- There is still a wide gap in achieving universal primary education in Nicaragua, unlike other countries in the region. Actions to address demand (subsidizing access to education

⁸⁹ University spending is part of PSS spending but not PRS spending; 87 percent favors the non-poor.

and making the population aware of the importance of schooling) and supply (improving access to the quality of schools) are needed to reach the goal of full school enrollment in Nicaragua.

A. PUBLIC SPENDING IN NICARAGUA: BASIC FACTS

4.3 According to information from the Ministry of the Finance and Public Credit (MHCP), the central government of Nicaragua earmarked 43 percent of central government's total expenditures for Public Social Spending (PSS) in 2005 (equivalent to C\$ 9.107 billion Córdoba or U\$ 544 million, which represent 52 percent excluding service on the public debt). Nicaragua's social spending represents 11.1 percent of its GDP,⁹⁰ and is used to finance services in the areas of education, health care, water, housing and social assistance. In addition to these resources, others are implemented by institutions that are not included in the central government's consolidated budget (i.e., the Nicaraguan Social Security Institute, or INSS). The definition of PSS used by the government is consistent with the one used in other countries, and includes different types of social spending that are not necessarily directly linked to the objective of poverty reduction.

4.4 PSS expenditures by functional category are shown in Table and Figure 4.1. Education expenditures are the highest representing 42.4 percent of PSS spending and receiving C\$ 3.858 billion Córdoba (U\$ 231 million), health expenditures account for 31 percent and receives C\$ 2.821 billion Córdoba (US\$169 million). Housing accounts for 16.5 percent, social assistance 9.1 percent, and spending on sports and culture represent 1.1 percent of PSS expenditures. According to MHCP classifications, housing not only covers home construction, but also spending on water and sanitation services and investments in infrastructure in general. This housing category also includes central government transfers to the municipalities, which are partly used for activities other than housing.

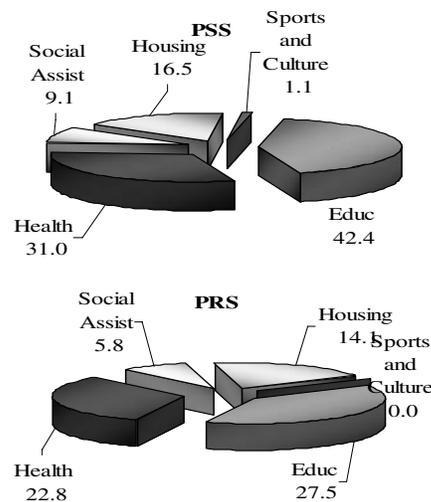
Table 4.1: Public Social Spending (PSS) and PRS spending by Sector/Area in Nicaragua, 2005

Function	PSS expenditures	
	C\$ (millions)	%
Total	9,107	100.0
Education	3,858	42.4
Health	2,821	31.0
Social Assistance	824	9.1
Housing	1,502	16.5
Sports and Culture	102	1.1

Function	PRS expenditures	
	C\$ (millions)	%
Total	9,816	100.0
Education	2,702	27.5
Health	2,235	22.8
Social Assistance	568	5.8
Housing	1,381	14.1
Sports and Culture	1	0.0
Economic Services	2,929	29.8

Source: Author's calculations based on MHCP data

Figure 4.1 Public Social Spending (PSS) and PRS spending by Sector/Area in Nicaragua, 2005



⁹⁰This proportion is similar to the current one in neighboring Honduras.

Box 4.1. Benefit-incidence Analysis Methodology

This methodology is based on the assumption that the benefit of public service provision to household—in monetary terms—coincides with the public sector average cost per household of providing this service. This assumption is quite restrictive, since it ignores inefficiency, corruption, and the possibility that the value to the program user differs from the cost of the service. Additionally, this methodology ignores changes in the behavior of households as a result of public policy changes.⁹¹

If the benefits that each individual receives from specific public programs diminish as the household per capita consumption level goes up, the program is said to be “pro-poor.” If, however, these benefits increase with higher consumption levels, then the program is classified as “pro-non-poor.” Also, a program is classified as “progressive” if the benefit it generates—measured as a proportion of consumption—drops as the household’s level of consumption rises. Thus, it is possible for spending to be pro-non-poor (i.e. the individual benefit derived from spending increases as household consumption levels rise) and at the same time progressive (i.e. the benefit as a proportion of consumption drops as the level of consumption goes up). This distinction takes on great relevance in the case of Nicaragua where, as we will analyze later, a considerable group of programs have a “pro-non-poor but progressive” incidence.

All spending incidence analyses consist of three essential stages: a) defining the individual well-being variable, b) identifying the beneficiaries of social programs, and c) assigning benefits. The two key instruments needed for a distributional study of social spending are available in Nicaragua: a detailed breakdown of social spending by activity, and a household survey providing information about participation in public programs. In both cases, available information is up to date, which is not common in most countries. The survey used is the Living Standards Measurement Survey (LSMS), conducted in 2005 throughout the entire Nicaraguan territory. This survey contains the responses of 36,642 individuals (6,898 households), representing the country’s population, covering an ample range of questions intended to characterize the socioeconomic and demographic situation of Nicaragua. Both the information on public spending and the household survey correspond to the year 2005, insuring that the results of this work fully reflect the current situation in Nicaragua.

Source: Public Spending Incidence Analysis Background paper.

4.5 The GON has defined a set of programs aimed at implementing the Poverty Reduction Strategy (PRS), excluding PSS programs whose relationship to the direct reduction of poverty is not clear enough (i.e., institutional strengthening programs or spending on universities),⁹² and, at the same time, including programs, that are not a part of PSS, and that are geared towards the sustained reduction of poverty (i.e., rural development). Additionally, PRS expenditures exceed social spending, as they include economic services. In 2005, PRS expenditures were C\$11,414.45 Córdoba (US\$ 683.5 million).⁹³ PRS spending includes two major components,

⁹¹ If a poor person receives a new governmental monetary support of \$100, the incidence study recognizes the \$100 increase in the person’s standard of living, but ignores, for example, the possibility that a private donor might reduce his/her donation to the poor person when learning of the increased government support. The available information, in this case and in most studies, impedes a more sophisticated analysis.

⁹² After several revisions in 2004, the concept of PRS spending that is analyzed in this study was defined in the PND 2005.

⁹³ GON (June 2007). 2006 Poverty Spending Report.

social spending and economic services as well as some spending on defense and central-level administration; these latter expenses cannot be allocated to specific beneficiaries, and thus they are excluded from the incidence analysis (see para. 4.6 below and Box 1). PRS spending on social and economic services alone represents 91.6 percent of total PRS expenditures and they were C\$ 9.816 billion Córdobas (U\$ 587 million), representing 11.9 percent of the GDP (Table and Figure 4.1). The largest item is Economic Services, accounting for C\$ 2.929 billion Córdobas (U\$ 175 million), or 29.8 percent of total PSS expenditures (Table 4.1). The amount allocated to education, which excludes spending on universities, constitutes the largest social component of PRS expenditures, representing 27.5 percent of PRS expenditures, and totaling C\$ 2.702 billion Córdobas (U\$ 162 million). PRS resources are also allocated to health (22.8 percent), housing (14.1 percent) and social services (5.8 percent).

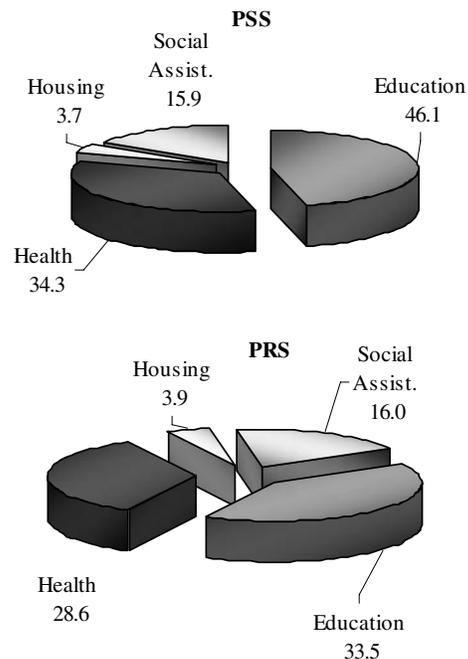
4.6 Responding to the objectives of an incidence study, the different classifications of social spending and PRS expenditures used in this document differ slightly from those used by the MHCP. To analyze the distributional incidence of expenditures, the grouping of public programs into functions must respond to the availability and grouping of information in the household survey; a criterion that is naturally not applied in the MHCP's classifications (Box 1 explains the methodology used for this analysis). The structure of PSS and PRS expenditures used in this chapter is summarized in Table 4.2.

Table 4.2: Public Social Spending (PSS) and PRS spending by Sector/Area for Incidence Analysis Nicaragua, 2005

Function	PSS expenditure	
	C\$ (millions)	%
Total	8012	100.0
Education	3696	46.1
Health	2750	34.3
Housing	294	3.7
Social assist.	1272	15.9
Function	PRS expenditures	
	C\$ (millions)	%
Total	7576	100.0
Education	2540	33.5
Health	2165	28.6
Housing	294	3.9
Social assist.	1211	16.0
Rural development	1365	18.0

Source: Author's calculations based on MHCP data

Figure 4.2: Public Social Spending (PSS) and PRS spending by Sector/Area for Incidence Analysis Nicaragua, 2005



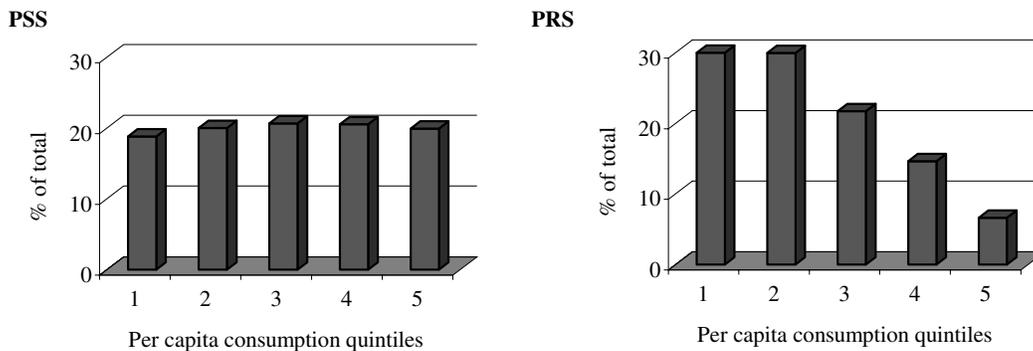
B. DISTRIBUTION OF SPENDING

4.7 Per capita household consumption is used throughout this report to define the level of individual well-being. The population is broken down into fifths –or quintiles– using this

measure of well-being, and is grouped according to levels of poverty. Whereas the average person from the first quintile (the poorest) consumes an average of C\$ 262 Córdobas per month (US\$ 15.66), a person from the wealthiest quintile consumes an average of 8 times that amount (C\$ 1,980 or US\$ 118.36). Those pertaining to the poorest quintile of the population consume 6.3 percent of the total consumption, while the richest quintile consumes 46.8 percent. According to the poverty line, 14.9 percent of Nicaraguans live in extreme poverty, 31.3 percent in non-extreme poverty, and the remaining 53.8 percent are non-poor. Extreme poverty has dropped progressively in Nicaragua, from 19.4 percent in 1993 to the current 14.9 percent in 2005. Overall poverty dropped 5 percentage points between 1993 and 2001, and has remained without significant changes between 2001 and 2005. There is a strong association between area of residence (urban-rural) and levels of poverty.

4.8 In Nicaragua, aggregate public expenditures on social services benefit the different strata of Nicaragua’s population about equally, indicating that public social spending (PSS) is not pro-poor (Figure 4.3). Although aggregate expenditures are not pro-poor—they are distributed relatively equally across the population— benefits are a relatively large share of their household consumption for those in the lower quintiles. Consequently, overall public social spending (PSS) is not pro-poor but progressive in Nicaragua. This progressiveness in the impact of PSS spending implies lower inequality (a drop of 6 percentage points in the Gini coefficient of per capita consumption). In other words, measured inequality falls after social spending (and assuming proportional taxation); a Gini prior to PSS of 40.1 falls close to 34 after PSS. Eighty-three percent of this redistributive impact comes from expenditures in education and health. Compared with the non-poor, the poor receive a higher implicit subsidy for health and social assistance, and a lower subsidy for education and housing.

Figure 4.3 PSS and PRS Spending Participation by Quintiles

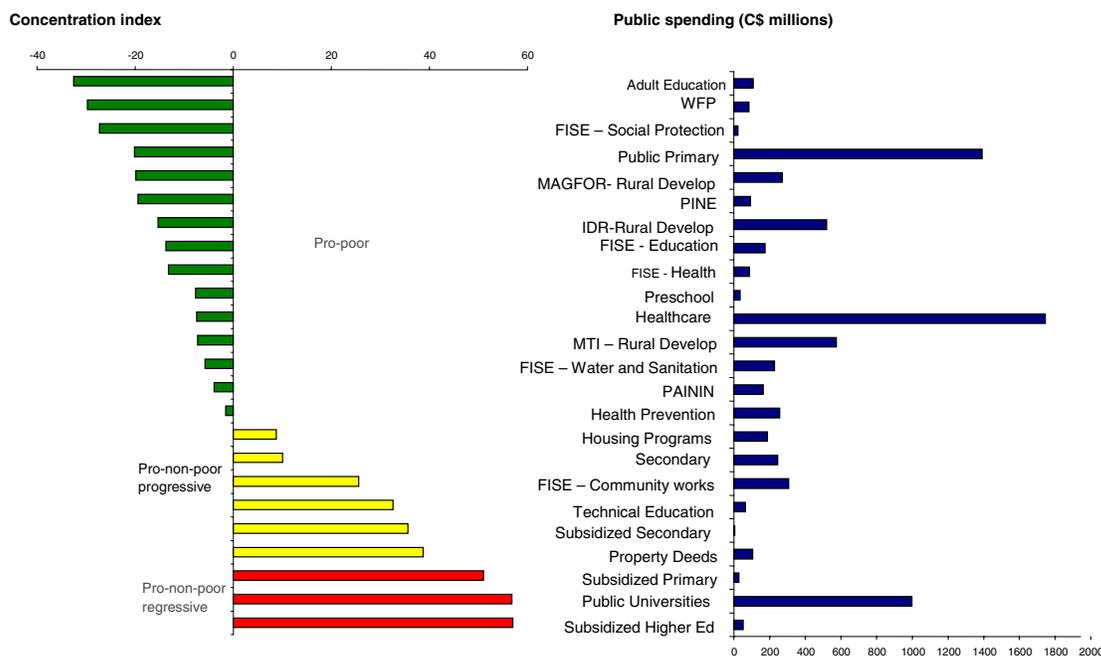


Source: Author’s calculations based on 2005 LSMS

4.9 Expenditures related to the Poverty Reduction Strategy (PRS) are substantially better targeted than PSS; while more than 55 percent of overall PSS spending benefits people who are not considered poor, this share is 47 percent for PRS spending. PRS spending is clearly progressive. The redistributive impact of PRS spending implies a 7.3 point drop in the Gini coefficient of per capita consumption; thirty-seven percent of this impact comes from education programs, followed by health programs (26.8 percent), rural development (19.1 percent) and social assistance (13.5 percent). Nevertheless, the classification of programs by sectors hides some important differences, for instance within the area of education, expenditures on primary education are pro-poor, expenditures on secondary education have a pro-non-poor bias.

4.10 An assessment of how well targeted are a large set of public programs is done by analyzing the program's degree of targeting. For each program a concentration index, that measures if spending favors the poor, was calculated.⁹⁴ Programs were classified into three groups according to their degree of targeting; "pro-poor" if the poor receive more of the program's benefits than the non-poor and a larger share of these benefits than their share of the population, 'pro-non-poor but progressive' if the non-poor receive more than the poor, but still the poor receive a larger share of the program's benefits compared to their share the country's total consumption, and "pro-non-poor and regressive" if the non-poor receive more than the poor, and the share of the of the benefits that the poor receive is less than their share of the country's total consumption. Figure 4.4 illustrates the degree of targeting of a wide range of social programs being implemented in Nicaragua and the absolute amounts in millions of Córdoba allocated to them in public expenditures. The programs most focused on the poor (among the programs analyzed) are the adult education and public primary education programs, several food programs (WFP and PINE), and some FISE components. Rural development programs also have a high degree of targeting, since they are geographically located in areas with high levels of poverty. Within the group of programs considered, at least half have a pro-rich bias. Of these, only the higher education programs and subsidies to private education are regressive.

Figure 4.4 Public Spending Progressivity by Program



Source: Author's calculations based on 2005 LSMS

4.11 The redistributive impact of a program not only depends upon the degree to which it is targeted, but also on its budgetary relevance. In this regard, the programs with the greatest

⁹⁴ A program's degree of targeting is often computed on the basis of concentration indices. These are calculated in a similar way as the Gini index for the distribution of consumption, and range between -100 and 100. Negative values indicate pro-poor spending; the higher the value of the index in absolute terms (the higher the negative number), the greater the degree of targeting. The concentration index is the ratio of the area between the line of perfect equality and the distribution curve of program benefits (A), divided by the sum of this area A and the area under the distribution curve (B), then the concentration index is $A/(A+B)$.

equalizing redistributive impact of all social programs are public primary education and public healthcare (Figure 4.3). Public primary education, in particular, is pro-poor and important in budgetary terms. Public healthcare is also pro-poor, although not as well targeted as primary education, but it is also important in budgetary terms. The rural development programs of IDR, transport programs of MTI and rural development programs of MAGFOR follow in relevance as far as their redistributive impact. At the other extreme, the public university program is the major “dis-equalizing” public program in terms of its redistributive impact favoring the non-poor and being regressive.

Fiscal incidence and simulations

4.12 A complete study of social spending requires a distributional analysis of the sources of financing for spending –taxes and other resources, and of possible inefficiency in the management of such funds. Although both aspects are beyond the scope of this study, some simple simulations were conducted to measure their potential impact on the results. This section contains some very simple simulations of the potential redistributive impact of specific policy changes. Policy decisions should result from considering a large variety of economic, social and ethical issues, and from a realistic appraisal of a series of limitations and/or constraints.

4.13 The Nicaraguan tax system is likely to be relatively neutral. State financing for public spending is supported by three types of taxes: sales or value added, excise, and income and other assets. Sales taxes are usually considered regressive. However, this regressivity is significantly attenuated by using consumption as a proxy for individual welfare (instead of income), and when we also consider a series of tax deductions on essential consumer goods. In addition, property taxes and especially taxes on income and assets add progressivity to the system. Regarding the effect of alternative tax structures, two alternative scenarios related to proportional taxation were considered: one of slightly progressive taxes and the other of slightly regressive taxation. Although the magnitudes would vary, PSS would be the same in both scenarios. In the more pessimistic scenario of regressive taxation, PSS would still imply a drop in inequality with the Gini falling more than 4.5 percentage points.

4.14 Regarding potential inefficiencies in the management of public funds, a possible problem is that some funds may never actually get used by the programs they are assigned to. These funds, not used for their originally allocated purpose, represent a leak in public benefits. Because of limited information, little is known about how many of these “leaks” are associated with corruption. In this respect, two situations are simulated. In the first, the distribution of leakage is similar to the distribution of consumption, while in the second we assume that the beneficiaries of leaks are only found in the top quintile. According to the first hypothesis, assuming inefficiencies of 10 percent and proportional taxation, after PSS spending the Gini would drop by 5.4 percentage points, rather than 6.1 percentage points without leakage. The most extreme case would be 50 percent leakage that only benefits the top quintile. If this were the case, the redistributive impact of PSS spending would be almost null. Ultimately, this would mean that an enormous effort is being made by society to finance social spending, without any redistributive impact.

4.15 Scenarios involving simulations with better targeted spending in education, health, and social assistance, assume that spending is entirely targeted to the poorest three quintiles, thereby limiting spending allocations to only the most disadvantaged 60 percent of the population. Perfect targeting of education spending to the poorest three quintiles of the population would imply a one percentage point drop in the Gini coefficient. In the case of health, the reduction would be 1.8 percentage points. The impact of better targeting of PSS social assistance programs

would be somewhat less (0.9 percentage points), although it should be significant in quantitative terms per beneficiary given that these are theoretically targeted programs (unlike education or health, which are generally universal). Perfect targeting of PSS spending would have a considerable redistributive impact (a 3.7 percentage point reduction in the Gini in the case of PSS and 3.5 percentage points in the case of PRS spending).

C. SECTORAL DISTRIBUTION OF SPENDING

Education

4.16 Education is the largest item in the Nicaraguan public budget. As mentioned above, nearly C\$ 3.7 billion Córdobas (U\$ 221 million) were spent in 2005 on education, which represent 46 percent of total public social spending and approximately one-third of spending to support the Poverty Reduction Strategy (ignoring PRS spending on economic services). Table 4.3 and Figure 4.5 presents different areas of spending on education corresponding to PSS and PRS spending. The Nicaraguan educational system is structured into four main levels: (i) preschool education, for children under 6 years, (ii) obligatory primary education with a duration of 6 years, for children 7 to 12 years of age, (iii) intermediate and secondary education, with 5 years duration and (iv) higher education, which mainly consists of universities. This basic structure is complemented by technical education, adult education and special education programs.

Table 4.3: Education Public social expenditure and PRS spending (Millions of Córdobas)

PSS Spending on Education	Millions C\$	%
Total	3,696	100.0
Preschool education	36	1.0
Primary education	1,421	38.4
Secondary education	250	6.8
Adults	109	2.9
Special programs	25	0.7
MECD central activities	153	4.2
MECD projects	564	15.3
MECD teachers training	23	0.6
Technical education	65	1.8
Universities	1,051	28.4

PRS Spending on Education	Millions C\$	%
Total	2,540	100.0
Preschool education	36	1.4
Primary education	1,421	55.9
Secondary education	250	9.9
Adults	92	3.6
Special programs	25	1.0
MECD activities and shared projects	629	24.8
MECD teachers training	23	0.9
Technical education	65	2.5

Source: Author's calculations based on MHCP data

Figure 4.5 Education Public social expenditure and PRS spending (Millions of Córdobas)

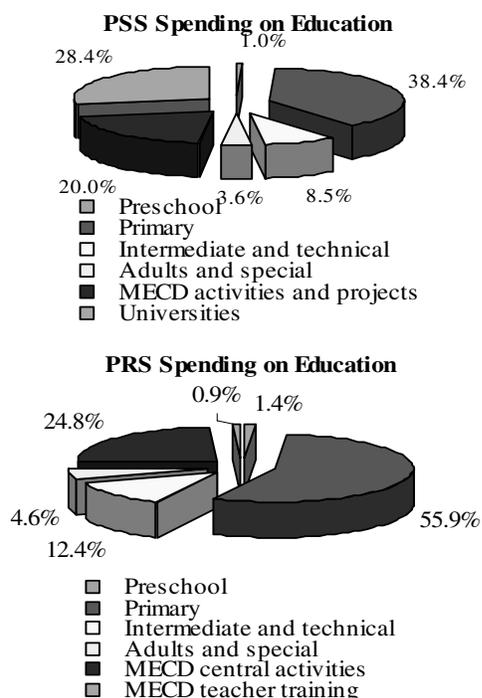
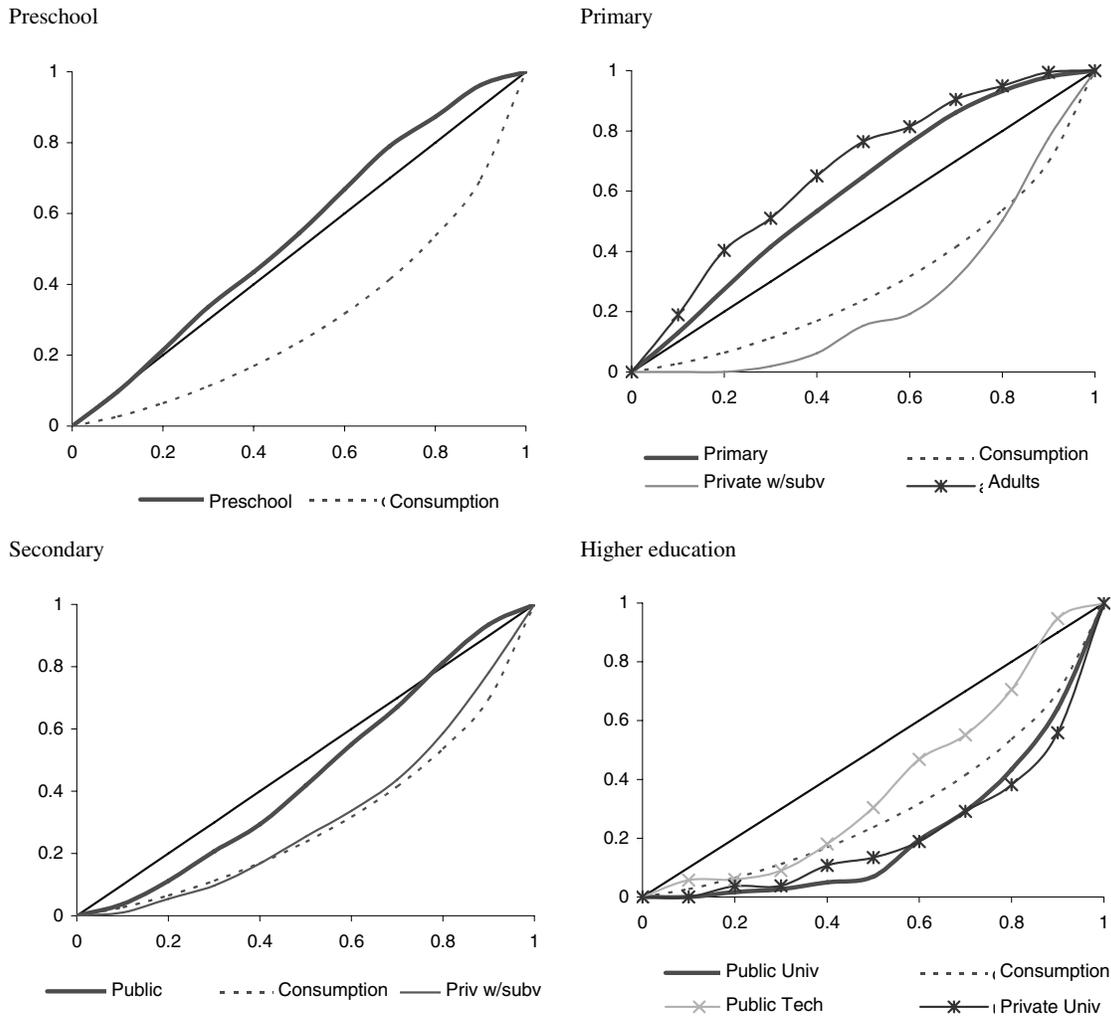


Figure 4.6 Education concentration curves



Source: Author's calculations based on 2005 LSMS

4.17 The most important item in education spending in budgetary terms is public primary education (38.4 percent of PSS in education and 55.9 percent of PRS spending in education).⁹⁵ The adult education program, with a budget of C\$ 109 million Córdoba (US\$ 6.52 million), also generally provides primary level education. Basic spending for secondary education is around C\$ 250 million Córdoba (US\$ 15 million). Technical education financed by INATEC and INTECNA (1.8 percent of the PSS in education). Public spending at the preschool level has even less budgetary relevance (1 percent of the PSS in education and 1.4 percent of PRS spending in education). In contrast, public expenditures on universities account for an enormous portion of social spending: almost 30 percent of the PSS in education is devoted to higher level education. In fact, a constitutional article requires that 6 percent of the general budget's total income be assigned to the universities.⁹⁶ These expenditures are not considered a priority for the Poverty Reduction Strategy, so they are not included when computing PRS spending. The educational

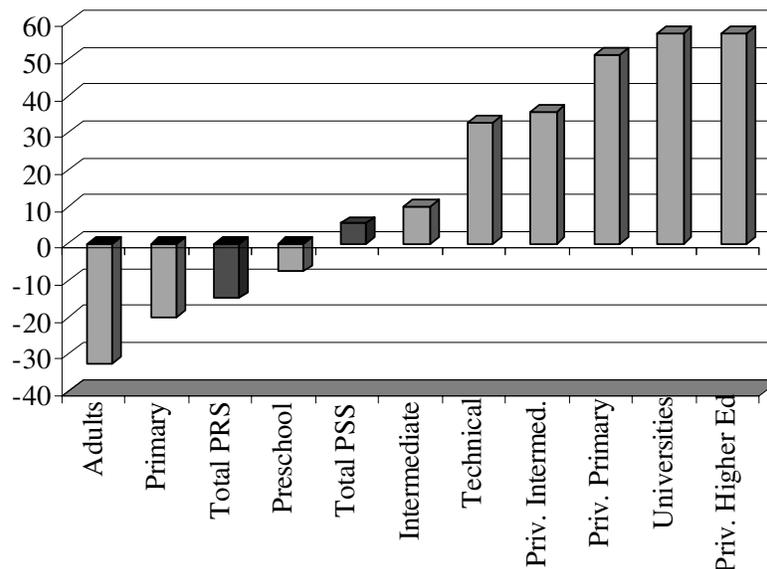
⁹⁵ The spending amounts for primary and preschool education include non-general expenditures made by the MECD, and spending assigned to this level by MIFAMILIA.

⁹⁶ Article 125 of the Nicaraguan Constitution and Article 55 of Law No. 89 (Law on the Autonomy of Higher Education Institutions).

budget is completed with a group of quantitatively less important programs and a group of expenditures that finance central level activities and programs of the Ministry of Education, Culture and Sports (MECD).

4.18 The progressiveness or regressiveness of education spending by level can be shown graphically as a concentration curve and contrasted with the cumulative distribution of consumption, which is the Lorenz curve. Figure 4.6 shows the concentration curves for different education programs and the Lorenz. The progressivity of spending is “pro-poor” if the poor receive more of the program’s benefits than the non-poor and more than their share of the population; graphically this line appears above the diagonal since the 45° line indicates that each percentile in the distribution is receiving the same share, or in other words, each quintile (which represents 20 percent of the population) would receive 20 percent of spending. “Pro-non-poor but progressive” is if the non-poor receive more than the poor, but still the poor receive a share larger than their share of consumption; graphically this line appears below the diagonal but above the Lorenz. “Pro-non-poor and regressive” is if the non-poor receive more than the poor, and the poor receive a share lower than their share of consumption; graphically this line appears below the diagonal and below the Lorenz. In particular, education spending by levels as a proportion of per capita household consumption, shows that primary and preschool education spending are clearly progressive and pro-poor, secondary education spending is progressive and non-pro-poor, and spending on university education is regressive and non-pro-poor.

Figure 4.7: Education Concentration Indices



Source: Author’s calculations based on 2005 LSMS

4.19 The results of the benefit-incidence analysis for education show that PSS spending on education is slightly pro-non-poor, though progressive. On the other hand, PRS expenditures on education, are pro-poor and progressive. The Figure 4.7 illustrates the concentration and progressivity indices for all of the education programs analyzed. The education program best targeted to the poor is adult education, followed by the public primary education program. At the other extreme, subsidies to private education and the public university program have the greatest pro-non-poor character. The program with the greatest redistributive impact is primary

education. It has much greater impact than any other education program, given its budgetary weight and its marked pro-poor bias.

4.20 There are significant similarities in the degree of concentration of public expenditures on education in Nicaragua and Honduras. However, given variations in the definitions of PRS spending adopted in Nicaragua and Honduras, PRS expenditures in Nicaragua end up being somewhat more pro-poor than those of its neighbor.

Preschool education

4.21 Preschool attendance is 38 percent among children 4 to 6 years of age, and it increases to 53 percent among 5 year olds. Attendance at this level rises with the family's per capita consumption level. Whereas 79 percent of the children from the wealthiest quintile in the distribution of per capita consumption attend preschool, only 34 percent of the children from the poorest quintile do so. The lowest rates of preschool attendance are found in the Atlantic region, which has the highest poverty levels and highest percentage of rural population.

4.22 Nicaragua still has a long way to go in expanding preschool education coverage. Interestingly, the two main reasons why parents do not send their children to preschool are the perception that it is not necessary ("they're too young"), and the lack of access to preschool programs. Direct government intervention could easily have an impact on these impediments, either through campaigns aimed at increasing awareness about the importance of preschool education, and/or through setting up more preschool centers.

Primary education

4.23 Among education expenditures, spending on primary education is the most important in budgetary terms, and is also one of the most important components of all public expenditure of Nicaragua. In 2005, the government allocated C\$ 1.421 billion Córdobas (US\$ 85 million) to basic primary education. Also in this year, 89 percent of the children between 7 and 11 years of age attended primary school.⁹⁷ School attendance rates rise significantly with higher levels of household consumption. On average, whereas 94 percent of non-poor children between 7 and 11 years of age attend primary school, that proportion falls to 84 percent for the poor.

4.24 Among children who do not attend primary school, the main reason cited in the LSMS to justify their non-attendance is economic difficulties, particularly in the case of poor families. Two other explanations given for non-attendance include long distances from schools and lack of interest. Both the state and civil society have a fundamental role to play in alleviating the impact of these difficulties. It seems that actions not only on the side of demand (subsidizing access to education and making the population aware of the importance of schooling) but also on the side of supply (facilitating geographic access to schools) are needed in order to meet the goal of universal school enrollment in Nicaragua.

⁹⁷ The analysis is limited to the 7-11 year age range, since many 12 year old children are enrolled in the intermediate/secondary level of education. In 2006, the Ministry of Education established 6 years as the official age for entry into primary school.

Table 4.4 Primary education main characteristics (% of students)

	% in public schools	% in private with subsidy	% in autonomous schools	% in multi-grade classes	% receiving food	% repeating	Time to school
Total	91.4	30.1	18.8	34.2	68.0	11.1	14.9
Quintiles							
Poorest	99.8	0.0	13.4	54.8	77.7	13.7	18.4
2	99.2	86.2	12.7	39.9	79.2	12.1	15.1
3	95.9	34.8	25.2	30.8	71.1	10.8	13.8
4	85.7	31.1	23.4	16.6	57.3	8.8	12.9
5	57.1	26.8	23.5	12.2	34.9	7.1	12.1
Extreme poor	99.8	0.0	13.5	58.9	76.4	14.2	18.6
Poor	99.1	47.1	14.5	45.4	78.2	13.0	16.3
Non-poor	81.8	29.0	24.1	20.2	55.4	8.6	13.2
Rural	99.1	65.7	12.4	60.7	82.1	12.5	18.8
Urban	82.9	28.0	25.8	5.1	52.6	9.5	10.6
Managua	80.0	23.0	36.1	8.9	46.6	11.5	11.3
Pacific	90.9	27.9	19.9	21.9	77.6	10.5	12.9
Central	96.2	45.8	12.4	51.6	70.3	11.4	18.1
Atlantic	94.7	42.5	11.2	46.2	71.1	11.0	15.6

Source: Author's calculations based on 2005 LSMS

4.25 It is interesting to note that compared with their counterparts in the wealthier quintiles, poorer children have fewer absences from school per month, receive more school assistance in the form of food supplements and school supplies, and account for a higher percentage of participation in public schools. However, poorer children also present significantly higher rates of grade repetition and spend more time getting to school (Table 4.4).

4.26 Public spending for primary education is significantly pro-poor and progressive, fundamentally because of the higher concentration of children from the poorest strata of the population in public schools, and to a lesser extent due to the more intensive use of public schools (as opposed to private schools) by the poorest students. While the program is moderately pro-poor for the national aggregate, the results vary by region: public primary education has a stronger pro-poor character in the Central and Atlantic regions, and a greater incidence among the middle strata in the Managua and Pacific regions. Compared with Honduras, the benefits of social expenditure on basic primary education are somewhat better targeted in Nicaragua; 50.8 in contrast to 53 percent favor the poorest and 2nd poorest quintiles, respectively.⁹⁸ An analysis over time, indicates that the public primary education program in Nicaragua has become more pro-poor during the period between 1993 and 2005; public resources favoring the poorest and 2nd poorest quintiles increased from 47 to 53 percent, respectively.

4.27 Additionally, the Nicaraguan government supports an adult education program that mostly corresponds to the primary level. The incidence analysis indicates a highly pro-poor incidence impact. The results are diametrically the opposite in the case of state subsidies to private primary

⁹⁸ Gasparini *et al*, 2005, which used the same methodology as the present study.

education. Such subsidies are not used by any families from the poorest quintile, since their children either do not attend private schools, or do not attend school at all.

4.28 While several Latin American countries are nearing the goal of universal primary school enrollment, Nicaragua still lags behind in this sense. Unlike other countries in the region, progress toward closing the gaps with respect to universal primary education enrollment is still needed in Nicaragua. Since the gap is substantially more severe among the poorer strata of the country, a successful policy would require not only an increase in the economy's aggregate productive capacities, but a shift toward more equal opportunities and more equal incomes.

Secondary education

4.29 In contrast to the primary school level, the attendance gaps between poor youth and other youth are substantial at the secondary level. Whereas 51 percent of non-poor youth between 16 and 18 years of age attend secondary schools, only 15 percent of the extremely poor young people from this age group attend a secondary school. The gap in education, which slightly favors indigenous children at the primary level, is reversed at the secondary level. While the national attendance rate for young people between 13 and 15 years of age is 46 percent, this rate drops to 32 percent for indigenous youth.

4.30 Incidence results indicate that the poorer strata do not benefit from spending on secondary education because they have low rates of attendance at that level. Regional differences in the degree of targeting of state subsidies to secondary education are determined by the concentration of the poor in the Central and Atlantic regions. A comparison with Honduras indicates greater targeting of expenditures in Nicaragua, which results from higher attendance rates among the poorer population and from the somewhat more intensive use of the public secondary school system.

4.31 A breakdown of changes in the incidence of the public secondary school program between 1993 and 2005 shows that the secondary education program has become more pro-poor, fundamentally due to increased access to secondary education by poor youth. While less than 4 percent of the youth from the poorest quintile attended a secondary school in 1993, that percentage rose to 17.4 percent in 2005. Though still low, this implies a very high proportional increase with respect to 1993.

4.32 Nicaragua has many technical education courses, financed mostly by INATEC and INTECNA. Technical education includes intermediate and tertiary level programs in different specialties, trades and skill improvement. Almost 70 percent of the beneficiaries of technical education are from the 4th and 5th quintiles reflecting a pro-non-poor distribution.

University education

4.33 Higher education receives an important portion of Nicaragua's educational budget, while practically no extremely poor youth attend university. University education is essentially unaccessible to young people from the poorest quintiles; direct, indirect and opportunity costs are prohibitive. Surprisingly only 33 percent of those attending universities use public universities. Expenditures on university education are clearly pro-non-poor and regressive. Similarly, subsidies to private university education have a pro-non-poor bias. The reasons for the pro-non-poor distribution of university education are clear in the case of Nicaragua; 79.6 percent of enrollments come from the 4th and 5th top quintiles, while there are no university students from

the poorest quintile. Moreover, unlike other countries, there is an additional effect that comes from the lower relative use of state universities by students with fewer resources. Aggregate expenditures on university education in Nicaragua are somewhat better targeted than in Honduras; 81 vis-à-vis 93.7 percent of public university education resources favor the 4th and 5th quintiles together, respectively.

4.34 The pro-non-poor character of higher education, common in all incidence studies in Latin America, does imply that public spending in this sector needs to be revised. The decision to provide a public service responds to a multiplicity of reasons; distributional equity is only one of them. This analysis suggests that a redistributive logic would argue in favor of rethinking or redefining the allocations made to the education sector. Nonetheless, there are other valid reasons for assigning such an important portion of the budget to a service that almost only benefits the strata with better living conditions.

HEALTH⁹⁹

4.35 The health of a country's population is one of the main pillars of a strategy aimed at achieving permanent reductions in poverty and stable avenues of development. In Nicaragua, the health sector is comprised of the Ministry of Health (MINSa), the Nicaraguan Institute of Social Security (INSS), and the private sector, with few operational links between them. Public healthcare services are administered by MINSa, which offers medical services through a network of facilities consisting of health posts, health centers and hospitals. In 2005, MINSa's services included 1,025 health centers and health posts, and 34 hospitals. The INSS also offers medical services through social security facilities. Health care services are provided by 60 hospitals and clinics administered by the private sector, NGOs and other institutions.

4.36 During 2005, the Nicaraguan public sector spent C\$2.75 billion Córdobas (US\$ 164 million) in PSS expenditures on healthcare programs, where C\$2.165 billion Córdobas (US\$ 129 million) were included in PRS spending. The largest share of healthcare resources, 63.4 percent are allocated to public curative services, and a much smaller share to health prevention activities, 9.3 percent. The rest of the resources are allocated to central administrative activities and other expenditures (27.2 percent).

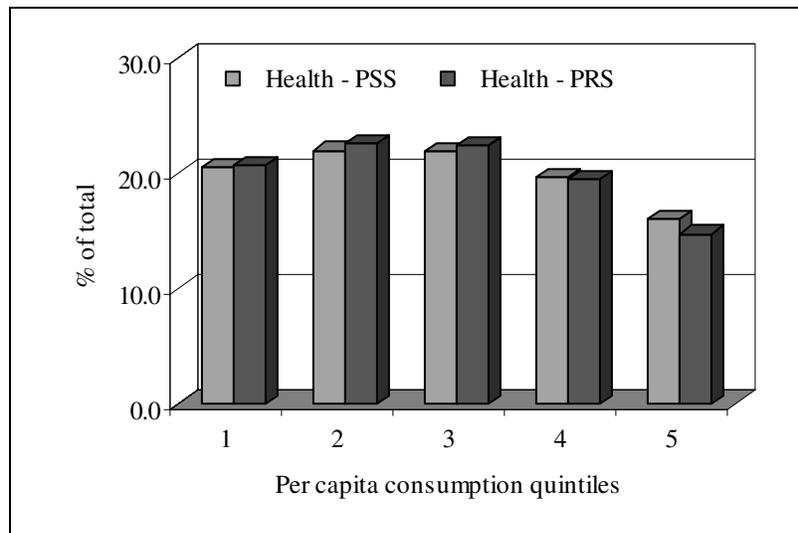
4.37 The public healthcare system offers various services to the population. The 2005 LSMS allows us to identify the services delivered to children due to diarrhea, the medical consultations received by the general population due to illness, and the checkups made in relation to recent childbirth. Unfortunately, available budgetary information does not disaggregate the amount of resources allocated to each of these activities. Diarrhea is one of the main health problems for children under 6 years of age in Nicaragua, and it is closely associated to the low quality of drinking water. This illness alone affects one out of every four Nicaraguan children under 6 years of age; with the incidence being as high as one in every three children in the Atlantic. Consequently, the use of medical services related to diarrheic diseases are pro-poor due to the fact that there is a high concentration of children in the poor quintiles, and because there is more intensive use of the public health facilities by the poor. The regressivity across quintiles is considerably more significant in relation to the use of public healthcare services in the case of

⁹⁹ Nicaragua's Health System is made up of the Ministry of Health (MINSa), the Nicaraguan Social Security Institute (INSS), the private sector, medical services provided by the Ministry of the Interior and the Army, and institutions which train human resources for the sector (General Health Law, Art. 7).

other illnesses for the general population. Whereas 32.1 percent of individuals from the poorest quintile visits a doctor when they are ill, this proportion rises to 52.5 percent for the top quintile.

4.38 There are also important differences in the use of healthcare services in the country's different regions, partly associated to each region's income level; wealthier individuals and thus, wealthier regions tend to report more illness and have higher rates of utilization of healthcare services. In consequence, in Managua there is a greater concentration of people reporting being ill due to the fact that a larger share of the capitals' population comes from high income quintiles. Thus, the healthcare sector slightly pro-poor overall character is not found in all regions.

Figure 4.8 Healthcare spending (Participation by quintiles)



Source: Author's calculations based on 2005 LSMS

4.39 Two other important services provided by the public healthcare system are prenatal checkups during pregnancy, and childbirth care. It is worth noting that the proportion of women who receive prenatal checkups increases with the level of consumption. Thus, while 84.9 percent of the women from the poorest quintile receive some prenatal care, this proportion rises until reaching 98.7 percent for women from the wealthiest quintile. Also, there are striking disparities in the percentages of childbirths attended by healthcare personnel. While only 59.4 percent of women from the poorest quintile receive such care, this percentage rises to 97 percent for women from the wealthiest quintile. Nevertheless, both programs are pro-non-poor but progressive, given that the distribution of healthcare services favors the non-poor but still the poor receive a larger share of services than their share of consumption.

4.40 The incidence analysis of aggregate expenditures on health (PSS and PRS) indicates that this spending is slightly pro-poor. The poorest quintile in Nicaragua benefits from 20.5 percent of total PSS spending on healthcare, and from 20.7 percent of total PRS spending on healthcare. In both cases these proportions remain relatively stable until reaching the wealthiest quintile, when they drop significantly (Figure 4.8).

4.41 Noteworthy, the public program with the greatest redistributive impact is healthcare, mainly because of the size of the budgetary allocation and because of the higher concentration of pregnancies and children under 6 years of age among the poor. In consequence, for health spending to be more pro-poor a larger share of resources would need to be allocated to maternal

and child healthcare and preventive health programs; both of which would also support the attainment of the MDGs. Compared with the results in Honduras, we observe that healthcare services are more pro-poor in Nicaragua than in Honduras. The redistributive impact of PSS spending is higher in Nicaragua compared to Honduras, and PRS expenditures have a similar distributive impact; 23.4 vis-à-vis 36.8 percent of public healthcare resources favor the 4th and 5th quintiles together, respectively..

HOUSING AND LOCAL PUBLIC SERVICES

4.42 The government of Nicaragua provides financing for the construction of homes and the legalization of property deeds. In addition, this section examines the incidence of some urban services related to housing: public lighting, garbage collection and street construction. Some 4.5 percent of Nicaraguan households benefited from new investments in public lighting, 12.5 percent from the building and improving streets, 0.9 percent from the legalization of property deeds and 1.1 percent from the construction of new homes. Households from the higher quintiles seem to have benefited more than the two lower quintiles from public construction and street improvement. This same pattern is observed for the legalization of property deeds and garbage collection services.

4.43 Results of the incidence analysis indicate that all public services analyzed and housing programs have a pro-non-poor bias but are still progressive expenditures (except garbage collection, which is regressive).

WATER AND SANITATION

4.44 Water network coverage in Nicaragua is somewhat low in comparison to the average in Latin America (see SEDLAC, 2007). In particular, access to this service is less extensive than in Honduras. Whereas only 66.5 percent of households in Nicaragua enjoy running water on the land where their house stands, this percentage reaches 80.1 percent in Honduras. Also, there are greater differences between quintiles in Nicaragua. While only 26.8 percent of the households from the poorest quintile have access to water services, that rate rises to 88.8 percent for the wealthiest quintile (which is still a relatively low value in contrast to other Latin American countries).

4.45 Sanitation services also have low coverage in Nicaragua. Overall, only 21.4 percent of households have a toilet connected to the sewage network. The most common sanitary services are untreated latrines (33.4 percent), followed by latrines with treatment (26.4 percent). In addition, approximately 10.7 percent of households have no type of sanitary service whatsoever. The extremely poor have practically no access to the sewage network (1 percent of this population's dwellings are connected to the network). Moreover, approximately one out of every four homes does not possess any kind of sanitary service and 44.1 percent only possess untreated latrines.

4.46 The incidence of public funds for the water and sanitation sector is not linear. This is the result of the interaction of several factors, including the fact that spending on maintenance mainly benefits the wealthiest quintile and, additionally, that the fourth quintile benefits the most from new sector investments (on average). Public expenditures on maintenance of the sanitation network are strongly concentrated among the wealthiest quintile. New investments in this network also show a substantial pro-non-poor bias, though somewhat less so. For water, although expenditures on the maintenance of the network also have a pro-non-poor bias, it is much less

concentrated than in the case of sanitation. Investments for expanding water sector infrastructure indicate a balanced distribution among quintiles. In addition, the burden of financing for water weighs more heavily on the richer groups than the benefits of spending. Finally, overall the water and sanitation sectoral incidence of public spending has a pro-non-poor character, though the bias is not as marked as for household consumption, indicating that it is pro-non-poor but progressive.

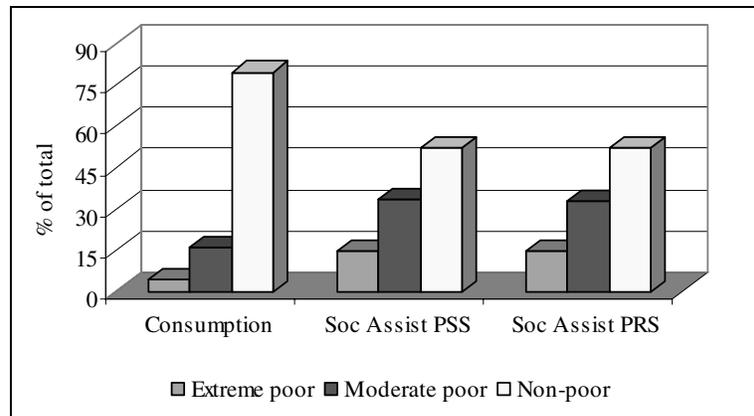
4.47 We find that sanitation works (both maintenance and investment) are not only pro-non-poor but are also regressive. If they were financed with proportional taxes, this would tend to increase the inequality of the distribution of consumption. However, a larger part of expenditures are financed by fees paid by the service users.

SOCIAL ASSISTANCE¹⁰⁰

4.48 In 2005, C\$ 1.272 billion Córdobas (U\$ 76 million) were earmarked for PSS spending in social assistance, whereas PRS spending in this item totaled C\$ 1.211 billion Córdobas (U\$ 72 million).¹⁰¹ More than 90 percent of both types of expenditures correspond to the Emergency Social Investment Fund (FISE) and food programs. Among the main food programs are the Comprehensive Care Program for Nicaraguan Children (PAININ), the Comprehensive School Nutrition Program (PINE), and other food assistance programs for areas affected by natural disasters.

4.49 The group of social assistance programs analyzed by the benefit incidence represent over 80 percent of total PSS and PRS expenditures on this function. However, there are numerous programs with small budgets that are not analyzed. Some of these programs are, for example, the Program to Promote Responsible Paternity and Maternity (C\$ 6.7 million or U\$ 400 thousand), the Program to Support Poor Rural Families (C\$ 2 million or U\$ 120 thousand) allocated to specific target populations. The distribution of benefits in the remaining programs is similar to the aggregate of programs for which specific functions were assigned.

Figure 4.9 Household consumption and public social assistance spending (group participation by poverty level)



Source: Author's calculations based on 2005 LSMS

¹⁰⁰ Box 2 provides a brief analysis of the Nicaraguan Social Security system.

¹⁰¹ The differences between PSS and PRS expenditures are due to the fact that approximately C\$ 60 million (U\$ 3.6 million) from the Ministry of the Family budget were not included in the latter. Since more detailed information is not available about excluded programs, this amount was distributed among the Ministry of the Family's different programs of the Ministry of the Family. In the case of FISE, PSS and PRS expenditures are similar.

Box 4.2: Social Security in Nicaragua

Nicaragua's social security system is not highly developed. According to the data in the 2005 LSMS, only 13.5 percent of the population over 60 years of age report receiving benefits from the pension system. The elderly living in urban areas benefit much more from this protection (19.9 percent) than those living in rural areas (3.4 percent), probably due to the differing degrees of informality of economic activities in each area. The pension system's coverage increases with higher levels of consumption. Whereas almost 20 percent of persons over 60 years from the top quintile enjoy coverage, that percentage falls to 3.6 percent in the poorest quintile. When broken down by levels of poverty, coverage of non-poor retirees is double that of the coverage of the poor (16.7 versus 8.3 percent, respectively). However, no important discrepancies in pension coverage based on ethnic origin were found. Lastly, there are notable differences in existing levels of coverage between regions, derived from differences in the degree of development and the main kinds of productive activities available in each region. At one extreme, 22.7 percent of the population older than 60 years of age residing in Managua receives pension coverage, while only 4.6 percent of the population of the same age group from the Atlantic region receives a retirement pension.

Unlike most social expenditures that are financed by general taxes, financing of the social security system is linked to individual contributions, and is administered by an autonomous entity: the Nicaraguan Social Security Institute (INSS). Higher contributions made during one's employable life leads to more generous pensions. For this reason, a complete analysis of the impact of the social security system must evaluate the distributional incidence of its financing source. This box offers only one side of the expenditure-income equation of Nicaragua's social security system. Forty percent of the retirement benefits pertain to the highest quintile, whereas only 4 percent are allocated to the poorest quintile. The impact, in proportion to consumption, is highest for the 3rd quintile (3.3 percent of total consumption) and lowest in the poorest quintile (1.3 percent). The concentration index for expenditures on pensions (37.1) reinforces the evidence that they are pro-non-poor expenditures. However, it is important to stress once again that the final incidence of the social security system depends on the distributional impact of the financing mechanism.

Source: Public Spending Incidence Analysis Background paper.

4.50 The poor receive less than 50 percent of social assistance expenditures (Figure 4.9). This is an interesting finding, given the fact that these programs are specifically designed to respond to the neediest population groups. Thus, the incidence analysis finds substantial leakage of resources that benefit more affluent quintiles. The uniform incidence impact is due mainly to the fact that the relative targeting of food programs to the poorest quintiles is overcome by the slightly overall pro-non-poor bias of FISE investments (of greater budgetary importance, such as, FISE social protection, FISE education and FISE health). In poor countries like Nicaragua, a significant proportion of the individuals who belong to intermediate consumption quintiles (or even to the wealthiest quintile) lack some kind of basic infrastructure such as potable water service or road infrastructure. This is one of the reasons why FISE investments benefit all quintiles of the consumption distribution. Nevertheless, when the subsidy is expressed as a percentage of consumption, the differences are more marked between poor and non-poor.

4.51 The best targeted social assistance programs are the food transfer programs financed by the WFP, and the FISE social protection module. In third place we find the PINE, but with a considerably lower degree of concentration. On the other hand, the FISE's community works and

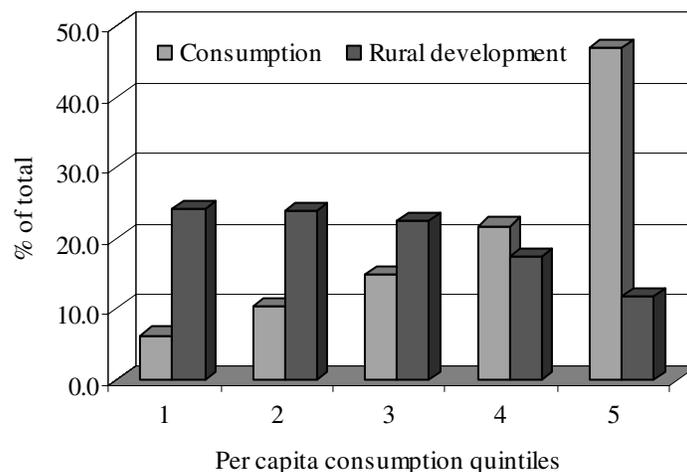
services module is clearly more concentrated on the wealthier. Assuming proportional financing, all of these programs tend to improve the distribution of income. Analyzing the distributional impact of each program, FISE's water and sanitation, and education components have the greatest equalizing impact. The moderate targeting of these programs (especially the potable water and sanitation projects), is compensated by their budgetary relevance, turning them into the programs with the greatest redistributive impact. They are followed in order of importance by the PAININ and the WFP. Although the WFP program is the best targeted program, it has a very limited budget which limits its redistributive impact. A similar analysis can explain why the FISE's social protection component occupies last place in its distributional ranking.

RURAL DEVELOPMENT AND ROAD INFRASTRUCTURE

4.52 In 2005, 44 percent of Nicaragua's entire population resided in rural areas. In that same year, poverty indices in these areas greatly surpass those of urban areas: 67.9 percent of the rural population is poor, as opposed to 29.1 percent in urban areas, and 26.9 percent of the extreme poor live in rural versus 5.4 percent in urban areas. In that year, spending for rural development activities is a total of C\$ 1.477 billion Córdobas (US\$ 88 million), with 92.4 percent corresponding to poverty-related expenditures. The interest of both the Nicaraguan government and international donors and organizations in developing rural programs is in part based on the greater relative poverty of these areas, with a particular focus on the population dedicated to farming activities.

4.53 Rural development programs are clearly progressive and pro-poor. Figure 4.10 illustrates the distribution of consumption and of spending on rural development among different quintiles. The poorest quintile receives 24.2 percent of benefits, while the richest quintile receives 11.7 percent. The markedly pro-poor character of these programs is entirely linked to the concentration of poor people in the country's rural areas. Although these programs are generally not focused on the poor population of a particular geographic area, they are implemented in zones where the majority of people are poor. This simple geographic targeting would seem sufficient for insuring the strong pro-poor character of these programs.

Figure 4.10 Household consumption and public spending for rural development by quintiles



Source: Author's calculations based on 2005 LSMS

4.54 On the other hand, redistributive impact indices for rural development programs indicate that the rural productive reactivation programs, technical assistance programs and rural roads programs provide the greatest redistributive impact. This report also finds that the distribution of benefits from rural development programs is better targeted on the poor in Honduras than in Nicaragua.

POLICY IMPLICATIONS: MAKING PUBLIC SPENDING PRO-POOR

4.55 Both Nicaraguan society and the international community are engaged in efforts to finance a broad range of public programs whose intention is improving the living standards of Nicaraguans, particularly the most impoverished. This section helps to evaluate the coverage of these programs, and their degree of targeting. In particular, micro data from the recent 2005 Living Standards Measurement Study (LSMS) was used to identify the direct beneficiaries of public programs pertaining to Public Social Spending (PSS), and of those programs linked to the Poverty Reduction Strategy (PRS).

4.56 Any given policy decision must consider a great variety of economic, social and ethical arguments, and a realistic evaluation of constraints and restrictions. This chapter provides estimates of the redistributive impact of certain measures—such as more progressive taxation, reduced inefficiency, increases in certain functions of social expenditures, and increased targeting of expenditures in education, healthcare and social assistance sectors—for current economic policy debates.

4.57 One of this study's main findings is the low degree of targeting of many social programs. In fact, aggregate PSS is pro-non-poor, and overall PRS spending has a relatively better level of targeting; while more than 55 percent of PSS-related expenditures benefit people who are not considered poor, this share is 47 percent for PRS-related expenditures. This is the consequence of the coexistence of programs that have very varied targeting. While the benefits of some programs are focused on the poorest, others, in contrast, benefit the non-poor to a greater extent. The programs most targeted on the poor (among those analyzed) are the adult and public primary education programs, several food programs (WFP and PINE), and some FISE components (FISE social, FISE education and FISE health). Rural development programs also have a high degree of targeting, since they are geographically located in areas with high levels of poverty. Within the group of programs considered, at least half have a pro-non-poor bias. Of these, however, only the higher education programs and subsidies to private education are regressive.

4.58 This study's findings indicate that there is sufficient margin for significantly increasing the degree to which social spending is targeted via reallocating budgets to better targeted programs to poorer beneficiaries or to extending the network of social programs—currently limited by the low coverage of numerous programs—to lower income sectors. The quality of public spending is partly determined by how well targeted and what level of coverage is captured by priority projects. Often, coverage of basic services in Nicaragua, which are constitutionally mandated to be universal, is limited precisely by budget fragmentation and rigidities due paradoxically to earmarking constitutionally mandated allocations. In addition, the quality of public spending is also linked to the project's effectiveness or its impact to change the target indicator, the degree of efficiency or how much the intervention costs vis-à-vis alternatives, the prioritization of projects or selection on the basis of their highest economic and social return, and the satisfaction of the beneficiaries demand expressed by civil participation.

4.59 The different sections of the chapter offer a detailed examination of the coverage and incidence of numerous public services. From this analysis emerge several priority areas where efforts should be focused. For example, Nicaragua still has a long way to go to expand preschool education coverage. Only 30 percent of poor Nicaraguan children receive education at an early age. The arguments mentioned by the parents for not sending their children to preschool (the belief that their children do not need preschool education, and the lack of nearby school) can be directly confronted by the government, through campaigns to make them aware of the relevance of preschool education and/or the establishment of more preschool facilities.

4.60 Unlike other countries in the region, where progress toward educational development is at a medium to high level, efforts aimed at closing the gaps with respect to universal primary education enrollment are still needed in Nicaragua. Since these gaps are substantially more severe among the poor, a successful policy in this sense would require not only an increase in the economy's aggregate productive capacities, but a shift toward more equal opportunities and more equal incomes. Actions on both the side of the demand (subsidizing access to education and making the population aware of the importance of schooling) and on the side of the supply (facilitating geographic access to schools) are needed to reach the goal of full school enrollment in Nicaragua.

4.61 Low income youth in Nicaragua have limited access to secondary education (only 30 percent of 15 year olds who are poor attend) and access to a university education is almost non-existent (1 percent). Not only is this an inequitable situation, the low enrollments of youths who are poor in the intermediate/secondary and higher educational system is also inefficient from a human development perspective. Nicaragua is not taking advantage of valuable human capital by failing to enable to encourage a larger percentage of its low income youth to continue studying.

4.62 The study underlines the importance of public expenditures to compensate for some inequalities in health originating from socioeconomic conditions. Poor families almost exclusively receive the treatment for common childhood illnesses such as diarrhea, or adequate childbirth care from public health facilities. For example, the outstanding progress that has been made in relation to prenatal care is attributed to the state's provision of healthcare services in rural areas, which must be encouraged and reinforced.

4.63 In Nicaragua a significant proportion of individuals from the intermediate consumption quintiles (or even the most affluent quintiles) lack some kind of basic infrastructure, such as safe drinking water, sanitation or road infrastructure. For this reason, investments in infrastructure often do not have a pro-poor character. This makes sense when looking at Nicaragua's regional distribution of the poor. The Managua region is substantially less poor than the rest of the country, in particular in relation to the Central and Atlantic regions. Many social programs have an important impact on vast sectors of the population in Managua which, by Latin American standards, are considered poor. However, in the Nicaraguan context these sectors are not considered the neediest, so that the subsidies they receive are not evaluated as clearly pro-poor.

4.64 In spite of the fact that rural development programs are often not targeted on the poor population of a specific geographic area, they are mostly carried out in areas where the majority of the population is poor. This simple geographic targeting would seem to be sufficient to give rural development programs a strong pro-poor character. The policy implication of this result is that if other more sophisticated means for orienting program targeting are deemed too costly to be implemented, a simple geographic targeting in rural areas can generate pro-poor results, given that most of Nicaragua's poor live in rural areas.

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Table A1.1 Population

Group	2001						2005					
	Total No. of People in HH	Children 16 and under	Children 5 and under	Total Fertility	Dependency Ratio	Total No. of People in HH	Children 16 and under	Children 5 and under	Total Fertility	Dependency Ratio		
All Nicaragua	5.3	2.2	0.8	2.4	0.8	5.2	2.0	0.7	2.2	0.7		
Extreme Poor	7.4	4.0	1.5	3.7	1.2	7.3	3.5	1.2	3.2	1.0		
Not Extreme Poor	5.1	2.0	1.7	2.2	0.7	6.1	2.7	0.9	2.6	0.8		
Poor	6.7	3.3	1.2	3.2	1.0	6.5	2.9	1.0	2.8	0.9		
Non-Poor	4.6	1.6	0.5	1.9	0.7	4.4	1.4	0.5	1.8	0.6		
Urban (All)	5.1	2.0	0.7	2.1	0.7	5.0	1.7	0.6	1.8	0.7		
Extreme Poor	7.7	4.2	1.5	3.9	1.3	7.6	3.4	1.2	2.6	1.0		
Not Extreme Poor	5.0	1.9	0.6	2.0	0.7	6.5	2.8	1.0	2.3	0.9		
Poor	6.8	3.4	1.2	3.1	1.0	6.7	2.9	1.0	2.4	0.9		
Non-Poor	4.6	1.6	0.5	1.8	0.6	4.5	1.4	0.5	1.6	0.6		
Rural (All)	5.7	2.7	1.0	2.9	0.9	5.5	2.4	0.7	2.7	0.8		
Extreme Poor	7.4	3.9	1.5	3.6	1.2	7.3	3.6	1.2	3.4	1.0		
Not Extreme Poor	5.3	2.3	0.8	2.7	0.8	5.9	2.6	0.8	2.9	0.8		
Poor	6.6	3.3	1.2	3.2	1.0	6.3	3.0	1.0	3.1	0.9		
Non-Poor	4.5	1.8	0.6	2.3	0.7	4.3	1.5	0.5	2.1	0.6		
Managua	4.9	1.8	0.6	1.9	0.6	4.9	1.6	0.6	1.8	0.6		
Pacific Urban	5.0	2.0	0.7	2.2	0.8	5.1	1.8	0.6	1.8	0.7		
Pacific Rural	5.6	2.5	0.8	2.7	0.9	5.2	2.1	0.6	2.4	0.7		
Central Urban	5.2	2.1	0.8	2.2	0.8	4.8	1.8	0.6	1.9	0.7		
Central Rural	5.8	2.7	1.0	2.9	0.9	5.5	2.4	0.7	2.8	0.8		
Atlantic Urban	5.7	2.7	0.9	2.9	1.0	5.2	2.1	0.7	2.1	0.8		
Atlantic Rural	6.4	3.3	1.2	3.7	1.0	6.1	3.1	1.1	3.4	1.0		

Table A1.2 Education

Group	2001										2005													
	Illiterate (10 or +) yrs	% 4-6 attend-ing pre-school	% Not attend-ing 7-12	Net Enroll-ment Primary Boys	Net Enroll-ment Primary Girls	Gross Enroll-ment Primary	% Not attend-ing 13-18	Mean Yrs School-ing Total	Mean Yrs School-ing Male	Mean Yrs School-ing Female	Distance Primary (Kms)	Distance Primary (Min)	Illiterate (10 or +) yrs	% 4-6 attend-ing pre-school	% Not attend-ing 7-12	Net Enroll-ment Primary Boys	Net Enroll-ment Primary Girls	Gross Enroll-ment Primary	% Not attend-ing 13-18	Mean Yrs School-ing Total	Mean Yrs School-ing Male	Mean Yrs School-ing Female	Distance Primary (Kms)	Distance Primary (Min)
All Nic.	18.7	28.8	12.1	83.4	82.6	113.3	37.2	4.9	4.5	5.3	0.9	15.1	18.4	37.9	9.4	82.5	85.9	109.1	35.8	5.1	4.8	5.5	0.9	13.7
Ext. Poor	41.3	22.1	27.7	73.2	71.2	101.7	62.2	2.6	2.4	2.9	1.5	23.8	38.1	22.7	21.3	71.3	79.0	103.5	55.3	3.2	3.0	3.5	1.1	21.2
Not Ext. Poor	15.2	30.5	8.5	88.8	86.7	116.0	32.2	5.4	5.0	5.7	0.8	14.1	23.7	34.1	10.4	83.8	89.4	114.5	43.4	4.4	4.1	4.8	1.0	15.6
Poor	29.4	24.3	18.6	78.9	79.7	112.6	49.9	3.6	3.3	3.9	1.3	19.9	28.2	29.8	14.1	79.5	85.8	110.7	47.2	4.0	3.7	4.4	1.1	17.2
Non-Poor	10.8	34.9	4.6	88.5	85.8	114.1	25.8	6.1	5.8	6.5	0.7	12.4	10.8	47.6	3.7	86.0	86.1	107.2	24.2	6.3	6.0	6.6	0.8	11.7
Urban	10.9	32.4	6.9	87.4	85.3	115.1	25.9	5.9	5.5	6.2	0.6	10.1	10.4	42.7	5.9	84.0	84.6	105.5	26.7	6.1	5.8	6.5	0.5	8.8
Ext. Poor	35.5	18.9	22.9	67.0	72.1	101.7	53.3	3.2	2.8	3.6	1.0	17.2	31.3	22.3	18.9	70.7	75.2	101.8	49.5	4.1	3.5	4.7	0.5	10.6
Poor	19.4	26.6	12.5	84.7	84.4	118.6	12.5	4.5	4.3	4.7	0.8	12.2	18.5	31.8	11.3	81.7	85.7	108.9	39.8	5.0	4.6	5.4	0.4	9.0
Non-Poor	7.7	36.6	3.6	89.1	85.9	113.0	3.6	6.5	6.1	6.8	0.5	9.5	7.4	48.6	2.9	85.4	84.0	103.6	20.3	6.7	6.4	7.0	0.5	8.7
Rural	30.4	24.9	18.1	78.5	79.5	111.2	18.1	3.6	3.3	3.9	1.5	23.1	29.0	32.9	12.9	81.0	87.2	112.6	45.9	4.0	3.8	4.3	1.6	20.7
Ext. Poor	43.2	23.2	28.6	65.8	72.8	101.8	28.6	2.4	3.6	2.6	1.6	25.8	40.0	22.8	21.8	71.5	79.8	103.9	56.8	3.0	2.9	3.2	1.3	23.8
Poor	35.7	22.9	22.4	75.3	77.0	108.8	22.4	3.0	2.8	3.3	1.5	24.5	33.5	28.9	15.5	78.4	85.8	111.5	51.1	3.5	3.3	3.8	1.4	21.4
Non-Poor	20.4	30.7	7.2	86.9	85.6	117.2	7.2	5.0	4.8	5.2	1.4	19.6	20.4	44.9	5.6	87.5	91.3	115.6	33.7	5.3	5.0	5.7	1.8	19.7
Managua	7.8	33.0	4.0	90.2	85.9	119.9	4.0	6.4	6.0	6.7	0.5	11.0	8.8	48.1	4.9	82.3	83.7	101.3	25.5	6.4	6.1	6.7	0.5	9.9
Pacif. Urb.	10.1	37.7	6.3	88.9	84.2	114.8	6.3	5.8	5.6	6.0	0.4	7.9	9.9	43.4	5.7	84.1	84.8	105.7	29.1	6.2	5.8	6.5	0.4	7.9
Pacif. Rur.	20.5	29.2	6.2	90.6	90.5	122.9	6.2	4.6	4.2	5.0	1.1	18.0	21.7	36.5	7.1	86.1	90.5	116.3	38.7	5.1	4.6	5.7	1.3	16.9
Cent. Urb.	17.5	28.5	11.7	77.6	85.4	106.9	11.7	5.5	5.0	6.1	0.8	11.4	15.3	37.1	6.4	85.8	85.9	108.7	26.6	5.9	5.6	6.2	0.5	8.9
Cent. Rur.	37.5	24.7	25.8	72.2	71.7	103.9	25.8	3.0	2.7	3.2	1.6	24.4	31.4	33.3	12.8	80.5	88.6	112.0	49.7	3.7	3.5	3.9	1.3	21.1
Atlan. Urb.	15.6	29.2	7.7	91.6	84.0	117.8	7.7	4.6	4.3	5.0	0.5	10.6	13.6	40.3	7.0	86.9	89.9	119.5	21.4	5.3	5.0	5.6	0.4	8.6
Atlan. Rur.	37.7	16.4	24.5	68.4	78.7	105.1	24.5	2.7	2.5	2.9	2.2	37.0	37.1	25.0	20.9	76.4	79.6	109.3	52.0	3.0	2.9	3.2	2.8	27.7

Table A1.3 Health and Nutrition

Group	2001										2005.0									
	Received prenatal care	Average # of Prenatal Controls, for those who received any care	Non Infit Birth %	Births Attended by Doctor %	Incidence of Diarrreah (under 6)	Consultation for Diarrreah (under 6)	IRA Last Month (under 6) %	3 DPT With card	Distance Health (kms)	Distance Health (mins)	Received prenatal care	Average # of Prenatal Controls, for those who received any care	Non Infit Birth %	Births Attended by Doctor %	Incidence of Diarrreah (under 6)	Consultation for Diarrreah (under 6)	IRA Last Month (under 6) %	3 DPT With card	Distance Health (kms)	Distance Health (mins)
All Nicaragua	88.6	5.6	27.4	70.5	22.0	63.0	23.7	20.5	3.0	34.9	92.5	6.0	19.8	78.1	25.6	70.8	34.9	75.2	2.8	36.2
Extreme Poor	77.6	4.7	54.8	43.2	27.0	61.0	23.2	18.6	5.9	71.4	83.8	5.3	45.2	52.2	26.5	56.8	34.0	65.5	4.8	68.9
Not Ext. Poor	91.0	5.8	21.4	76.5	20.8	63.7	23.9	21.0	2.6	30.4	90.9	5.7	24.4	73.6	25.1	72.9	35.6	75.6	4.0	50.4
Poor	84.5	5.2	39.1	58.0	23.5	60.6	22.9	16.9	4.4	52.2	88.6	5.6	31.3	66.6	25.6	67.0	35.0	72.5	4.2	55.7
Non-Poor	93.2	6.1	14.1	84.6	20.1	67.0	24.9	26.5	2.1	24.8	96.6	6.5	7.7	90.3	25.6	75.6	34.8	77.2	1.9	24.7
Urban (All)	91.3	6.0	14.7	83.5	19.7	66.3	21.8	22.5	1.1	16.5	96.1	6.5	4.4	93.6	24.0	78.0	33.9	72.3	0.9	14.7
Extreme Poor	75.7	4.7	48.7	50.5	25.0	69.4	18.3	24.9	1.7	34.2	86.1	5.8	20.5	75.0	27.5	72.8	24.0	84.9	0.9	17.9
Poor	88.6	5.3	25.5	71.7	21.2	65.2	19.6	20.6	1.3	20.6	93.0	6.0	8.5	88.9	24.8	79.1	31.1	78.1	0.9	15.8
Non-Poor	92.8	6.3	8.5	90.3	18.7	67.2	23.3	24.1	1.0	15.4	97.7	6.7	2.3	96.0	23.6	77.3	35.5	69.4	0.9	14.4
Rural (All)	85.3	5.2	42.7	54.7	24.5	60.2	25.8	18.5	5.9	63.9	88.0	5.5	38.9	59.0	27.3	63.9	36.1	78.4	5.4	66.2
Extreme Poor	78.2	4.7	56.7	41.0	27.6	58.7	24.6	16.0	7.2	82.7	83.3	5.2	51.5	60.0	26.3	52.9	36.4	59.8	5.7	81.5
Poor	82.0	5.1	47.3	49.8	24.9	58.3	24.8	14.8	6.2	71.3	86.0	5.4	44.4	53.7	26.0	60.7	37.3	68.6	5.9	76.1
Non-Poor	94.2	5.4	30.1	68.1	23.6	66.5	28.9	33.0	5.5	45.8	93.3	5.8	24.2	73.0	31.1	72.1	32.8	89.7	4.6	52.1
Managua	90.8	6.2	7.5	92.0	16.1	54.1	19.7	22.6	1.5	20.0	96.2	6.6	2.2	96.9	25.6	81.0	33.2	60.6	1.2	16.5
Pacific Urban	92.1	6.1	17.0	80.7	16.8	68.5	27.6	36.1	0.5	13.2	96.5	6.4	3.7	94.9	21.4	81.0	31.5	75.5	0.7	13.1
Pacific Rural	92.6	5.7	28.7	70.9	21.2	57.0	32.9	27.4	0.9	44.6	94.5	5.9	22.1	76.1	27.0	69.4	39.2	89.6	3.0	39.6
Central Urban	94.9	5.6	17.2	80.2	25.4	77.6	17.6	13.9	1.0	18.6	97.2	6.3	5.6	91.4	21.1	72.6	36.5	86.1	0.8	16.9
Central Rural	87.6	5.1	44.6	51.4	26.7	64.2	25.2	16.9	6.5	70.3	88.2	5.4	37.4	60.3	23.8	65.0	37.3	74.4	6.2	77.1
Atlantic Urban	85.6	5.6	32.0	65.2	25.9	62.0	22.0	8.7	1.1	17.7	91.1	6.4	17.2	76.2	33.0	73.5	33.1	88.7	0.8	16.3
Atlantic Rural	61.7	4.3	67.3	29.5	26.0	52.1	16.9	2.2	11.1	100.3	79.5	4.9	64.5	33.0	33.4	56.4	33.8	71.5	8.0	91.5

Table A 1.4. Infrastructure and Housing

Group	2001										2005									
	Without safe water ¹	Without Latrine Toilet	Without Electricity	Inadequate Walls ²	Dirt Floor ³	Inadequate Ceiling ⁴	Inadequate Housing ⁵	Overcrowding (4 or more)	Principal Access Road is Paved	Without safe water ¹	Without Latrine Toilet	Without Electricity	Inadequate Walls ²	Dirt Floor ³	Inadequate Ceiling ⁴	Inadequate Housing ⁵	Overcrowding (4 or more)	Principal Access Road is Paved		
All Nicaragua	15.8	13.8	27.8	29.9	43.4	7.6	53.7	37.8	42.2	16.0	10.7	26.2	28.7	40.0	4.6	49.9	37.2	52.2		
Extreme Poor	36.6	36.8	74.0	52.6	75.2	19.7	85.4	75.6	11.0	38.4	26.1	67.9	51.9	75.0	14.8	85.6	75.0	22.8		
Not Extreme Poor	13.3	11.0	22.3	27.2	39.6	6.1	49.9	33.2	46.00	25.5	17.6	42.3	42.3	63.0	7.6	73.6	57.5	35.9		
Poor	26.3	26.6	53.7	44.5	65.7	13.7	76.4	64.3	21.4	29.2	20.0	49.6	45.0	66.4	9.6	77.0	62.4	32.2		
Non-Poor	9.8	6.4	12.9	21.5	30.6	4.1	40.6	22.5	54.2	8.3	5.2	12.5	19.1	24.4	1.6	33.9	22.4	64.0		
Urban (All)	6.5	5.0	9.1	20.1	30.5	5.6	39.3	31.6	58.2	4.6	3.1	4.5	16.9	25.4	2.1	33.2	30.3	76.0		
Extreme Poor	20.5	22.7	49.6	51.1	64.6	20.5	77.1	80.9	19.0	12.7	7.3	31.4	37.2	71.9	6.1	76.2	73.0	61.6		
Poor	11.5	12.0	25.0	34.0	56.7	14.2	63.6	66.3	37.9	10.7	6.3	12.0	30.1	53.8	5.2	61.2	63.1	64.3		
Non-Poor	4.9	3.0	3.3	16.1	22.9	3.1	32.2	21.5	64.1	2.8	2.2	3.4	13.2	17.6	1.2	25.5	21.3	79.2		
Rural (All)	30.8	27.8	59.0	45.5	64.0	10.8	76.7	47.6	16.8	32.1	21.7	56.7	45.3	60.4	8.1	73.2	46.9	19.0		
Extreme Poor	41.5	41.1	81.4	53.0	78.3	19.4	87.9	74.1	8.6	44.5	30.7	76.9	55.6	75.8	16.9	87.9	75.4	13.3		
Poor	35.2	35.3	71.0	50.9	71.2	13.3	84.1	63.1	11.4	38.5	27.0	68.8	52.7	72.9	11.9	85.1	62.1	15.7		
Non-Poor	24.4	16.9	41.8	37.8	53.7	7.2	65.9	25.4	24.4	22.7	13.4	29.4	34.8	42.5	2.6	56.1	25.1	23.7		
Managua	4.8	2.3	1.5	18.0	25.5	3.8	34.5	30.4	72.4	2.7	2.6	1.4	16.3	24.0	1.9	32.4	28.4	78.8		
Pacific Urban	6.2	3.7	7.2	19.2	36.2	10.2	39.8	36.1	57.1	5.5	3.0	1.6	14.0	28.7	3.1	31.9	37.0	83.0		
Pacific Rural	19.3	16.2	40.6	39.9	65.3	16.2	71.2	49.8	31.6	12.6	13.3	29.5	30.7	56.5	7.4	60.8	46.8	28.8		
Central Urban	8.0	8.2	17.2	14.5	37.1	2.6	40.8	25.3	34.4	5.8	3.3	9.3	12.1	30.2	1.8	32.0	25.9	67.3		
Central Rural	34.7	34.4	73.6	37.3	71.8	5.4	79.2	46.0	9.0	38.9	22.6	67.1	38.0	68.5	5.4	75.9	47.5	19.9		
Atlantic Urban	11.9	15.3	22.5	51.7	23.0	3.6	61.5	39.1	33.3	10.0	6.7	20.3	49.8	17.4	0.6	54.3	27.9	27.5		
Atlantic Rural	56.9	45.7	82.3	93.0	47.5	18.6	95.6	52.7	0.0	53.8	36.0	91.4	91.1	52.6	16.6	94.1	50.9	0.4		

¹ Safe water is tubed water inside or outside, standpipe or well

² Bamboo, Cane or Palm; Wood; Residues or Rubble; and, Other

³ Dirt; and Other

⁴ Straw or similar; Residues or Rubble; and, Other

⁵ If Inadequate Walls, or Inadequate Floors, or Inadequate Ceiling

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- F07 Nicaragua 2005 - Incidence of Diarrhea and Type of care of those reporting Diarrhea (Children under 6 years of age)
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- F13 Nicaragua 2005: Place of Consultation by Poverty group, Quintiles and Geographic Area (includes all ill and children under 6 years of age reporting diarrhea)
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Table A2 – A01 Nicaragua 1998-2005 Contribution to Poverty Contribution to poverty (headcount)

	Extreme Poverty			Change 1998-2005	All Poverty			Change 1998-2005
	1998	2001	2005		1998	2001	2005	
All Nicaragua	100.0%	100.0%	100.0%	-	100.0%	100.0%	100.0%	-
Urban	23.9%	24.0%	20.1%	-3.8%	34.6%	30.1%	35.1%	0.5%
Rural	76.1%	76.0%	79.9%	3.8%	65.4%	67.8%	64.9%	-0.5%
Managua	4.7%	4.0%	5.5%	0.8%	10.1%	11.0%	10.3%	0.2%
Pacific Urban	9.5%	6.8%	5.4%	-4.1%	13.9%	14.1%	13.2%	-0.7%
Pacific Rural	21.7%	15.5%	14.2%	-7.5%	21.8%	17.8%	15.6%	-6.2%
Central Urban	7.4%	9.4%	8.6%	1.2%	8.7%	10.4%	10.1%	1.4%
Central Rural	39.3%	47.7%	43.9%	4.6%	32.2%	30.6%	31.9%	-0.3%
Atlantic Urban	4.9%	4.8%	2.2%	-2.7%	4.7%	5.2%	3.3%	-1.4%
Atlantic Rural	12.5%	11.7%	20.2%	7.7%	8.7%	11.0%	15.6%	6.9%

Source: 2000, 2001 and 1998 LSMS data.

Table A2 – A02 Nicaragua 1998-2005 LSMS Headcount rates:

	Extreme Poverty				Change 1998-2005	All Poverty				Change 1998-2005
	1993	1998	2001	2005		1993	1998	2001	2005	
All Nicaragua	19.4	17.3	15.1	14.9	-2.4	50.3	47.9	45.8	46.2	-1.7
Urban	7.3	7.6	6.2	5.4	-2.2	31.9	30.5	30.1	29.1	-1.4
Rural	36.3	28.9	27.4	26.9	-2.0	76.1	68.5	67.8	67.9	-0.6
Managua	5.1	3.1	2.5	3.4	0.3	29.9	18.5	20.2	19.5	1.0
Pacific Urban	6.4	9.8	5.9	4.8	-5.0	28.1	39.6	37.2	35.9	-3.7
Pacific Rural	31.6	24.1	16.3	17.0	-7.1	70.7	67.1	56.8	58.2	-8.9
Central Urban	15.3	12.2	11.1	10.5	-1.7	49.1	39.4	37.6	37.9	-1.5
Central Rural	47.6	32.7	38.4	32.9	0.2	84.7	74.0	75.1	74.4	0.4
Atlantic Urban	7.9	17.0	13.1	7.4	-9.6	35.5	44.4	43.0	34.8	-9.6
Atlantic Rural	30.3	41.4	26.9	31.2	-10.2	83.6	79.3	76.7	74.9	-4.4

Source: 2000, 2001 and 1998 LSMS data.

Table A2 – A03 Nicaragua 1998 – 2005 Poverty Gap & FGT P2

	Poverty gap			Change 1998-2005	Poverty severity (FGT P2)			Change 1998-2005
	1998	2001	2005		1998	2001	2005	
All Nicaragua	18.30	17.00	16.27	-2.03	9.30	8.40	7.60	-1.70
Urban	9.90	9.14	8.04	-1.86	4.50	3.97	3.21	-1.29
Rural	28.30	27.97	26.67	-1.63	14.90	14.62	13.16	-1.74
Managua	5.10	5.31	4.84	-0.26	2.10	2.04	1.79	-0.31
Pacific Urban	12.60	10.69	9.13	-3.47	5.70	4.37	3.34	-2.36
Pacific Rural	26.00	20.17	19.95	-6.05	12.80	9.37	8.83	-3.97
Central Urban	14.30	13.12	12.69	-1.61	7.00	6.24	5.81	-1.19
Central Rural	30.90	34.80	31.16	0.26	16.60	19.41	15.97	-0.63
Atlantic Urban	17.50	14.28	10.36	-7.14	8.70	6.76	4.13	-4.57
Atlantic Rural	37.30	29.96	29.80	-7.50	21.50	15.34	14.97	-6.53

Source: 2000, 2001 and 1998 LSMS data.

Table A2 – A04 Nicaragua 1998 – 2005 Extreme Poverty Gap & FGT P2

	Extreme poverty gap			Change 1998-2005	Extreme poverty severity (FGT P2)			Change 1998-2005
	1998	2001	2005		1998	2001	2005	
All Nicaragua	4.80	4.13	3.40	-1.40	2.00	1.61	1.16	-0.84
Urban	1.90	1.50	1.03	-0.87	0.70	0.54	0.31	-0.39
Rural	8.30	7.82	6.38	-1.92	3.50	3.11	2.22	-1.28
Managua	0.60	0.49	0.46	-0.14	0.20	0.20	0.09	-0.11
Pacific Urban	2.30	1.24	0.81	-1.49	0.80	0.36	0.20	-0.60
Pacific Rural	6.00	3.84	3.03	-2.97	2.30	1.30	0.84	-1.46
Central Urban	3.50	3.03	2.58	-0.92	1.40	1.16	0.95	-0.45
Central Rural	9.80	11.58	8.30	-1.50	4.00	4.73	2.98	-1.02
Atlantic Urban	4.20	3.19	1.20	-3.00	1.40	1.09	0.28	-1.12
Atlantic Rural	13.60	7.92	7.84	-5.76	6.60	3.32	2.85	-3.75

Source: 2000, 2001 and 1998 LSMS data.

Table A2 – A05 Nicaragua 2005 – Poverty Populations by Areas and Regions

	Extreme Poor		All Poor		Non-Poor		Total
	Urban	Rural	Urban	Rural	Urban	Rural	
Managua	29	13	203	42	939	77	1262
Pacific Urban	41	-	313	-	558	-	871
Pacific Rural	-	108	-	371	-	266	636
Central Urban	66	-	239	-	392	-	632
Central Rural	-	336	-	760	-	261	1021
Atlantic Urban	17	-	78	-	147	-	225
Atlantic Rural	-	154	-	371	-	124	495
All Nicaragua	154	612	834	1543	2037	728	5142

Source: 2005 LSMS data.

Table A2 – A06 Nicaragua 2005 – Poverty Populations by Regions

	Extreme Poor	Poor	Non-Poor	National
Managua	42	246	1016	1262
Pacific Urban	41	313	558	871
Pacific Rural	108	371	266	636
Central Urban	66	239	392	632
Central Rural	336	760	261	1021
Atlantic Urban	17	78	147	225
Atlantic Rural	154	371	124	495
All Nicaragua	766	2377	2765	5142

Source: 2005 LSMS data.

Table A2 – A07 Nicaragua 2005 – Poverty % (Regions)

	Extreme Poor	Poor	Non-Poor	National
Managua	5.5%	10.3%	36.8%	24.5%
Pacific Urban	5.4%	13.2%	20.2%	16.9%
Pacific Rural	14.2%	15.6%	9.6%	12.4%
Central Urban	8.6%	10.1%	14.2%	12.3%
Central Rural	43.9%	31.9%	9.4%	19.8%
Atlantic Urban	2.2%	3.3%	5.3%	4.4%
Atlantic Rural	20.2%	15.6%	4.5%	9.6%
All Nicaragua	100.0%	100.0%	100.0%	100.0%

Source: 2005 LSMS data.

Table A2 – A08 Nicaragua 2005 – Poverty Population by Areas

	Extreme Poor	All Poor	Non-Poor	All Population
Urban	156	844	2062	2906
Rural	619	1562	737	2299
Total	775	2406	2799	5205

Source: 2005 LSMS data.

Table A2 – A09 Nicaragua 2005 – Poverty % (Areas)

	Extreme Poor	All Poor	Non-Poor	All Population
Urban	20.1%	35.1%	73.7%	55.8%
Rural	79.9%	64.9%	26.3%	44.2%
Total	100.0%	100.0%	100.0%	100.0%

Source: 2005 LSMS data.

Table A2 – A10 Nicaragua 1998 – 2005 LSMS – Significant Head-Count Ratios

	Headcount				Sample size
	Extreme poverty line	Standard error	General poverty line	Standard error	
1998	0.173	0.010	0.478	0.013	4,040
2001	0.151	0.010	0.458	0.016	4,191
2005	0.149	0.008	0.462	0.013	6,882
Difference 2005-1998	-2.5%		-1.6%		
Standard error of difference	0.014		0.020		
t value	-1.71		-0.79		
Significance level	9%		43%		

Source: 2005, 2001 and 1998 LSMS data.

Table A2 – A11 Nicaragua 1998 – 2005 LSMS – Significant Head-Count Ratios: Original-Final Urban

	Headcount				Sample size
	Extreme poverty line	Standard error	General poverty line	Standard error	
1998	0.076	0.010	0.305	0.020	2,187
2001	0.062	0.009	0.301	0.020	2,352
2005	0.054	0.008	0.291	0.017	3,470
Difference 2005-1998	-2.3%		-1.4%		
Standard error of difference	0.013		0.028		
t value	-1.75		-0.50		
Significance level	8%		61%		

Source: 2005, 2001 and 1998 LSMS data.

Table A2 – A12 Nicaragua 1998 – 2005 LSMS – Confidence Intervals

	p value	Lower limit	Point estimate	Upper limit
General 1998		43.5%	47.8%	52.2%
General 2001		41.3%	45.8%	50.4%
General 2005	1%	42.7%	46.2%	49.7%
Extreme 1998		14.3%	17.3%	20.4%
Extreme 2001		12.3%	15.1%	17.8%
Extreme 2005		12.7%	14.9%	17.1%
General 1998		44.5%	47.8%	51.2%
General 2001		42.4%	45.8%	49.3%
General 2005	5%	43.6%	46.2%	48.9%
Extreme 1998		15.0%	17.3%	19.7%
Extreme 2001		12.9%	15.1%	17.2%
Extreme 2005		13.2%	14.9%	16.6%

Source: 2005, 2001 and 1998 LSMS data.

Table A2 – A13 National Consumption by Area and Region (2001 LSMS)

	Consumo (Millones de Córdobas de 2001)	Porcentaje del Consumo	Población (Miles)	Porcentaje de la población
Nacional	40,498	100.0	5,205	100.0
Urbano	30,208	74.6	3,036	58.3
Rural	10,290	25.4	2,169	41.7
Managua	16,028	39.6	1,292	24.8
Pacífico Urbano	7,369	18.2	904	17.4
Pacífico Rural	4,144	10.2	746	14.3
Central Urbano	5,318	13.1	663	12.7
Central Rural	4,020	9.9	972	18.7
Atlántico Urbano	2,176	5.4	286	5.5
Atlántico Rural	1,443	3.6	341	6.6

Source: 2005 and 2001 LSMS data.

Table A2 – A14 Share of National Consumption by poverty lines (2001 LSMS)

	Consumo (Millones de Córdobas de 2001)	Porcentaje del Consumo	Población (Miles)	Porcentaje de la población
Nacional	40,498	100.0	5,205	100.0
Pobre extremo	1,530	3.8	783	15.1
Pobre no extremo	6,213	15.3	1,602	30.8
Pobre	7,743	19.1	2,385	45.8
No pobre	32,755	80.9	2,820	54.2

Table A2 – A15 Share of National Consumption by Quintiles (2001 LSMS)

	Consumo (Millones de Córdobas de 2001)	Porcentaje del Consumo	Población (Miles)	Porcentaje de la población
Nacional	40,498	100.0	5,205	100.0
Quintil 1	2,271	5.6	1,041	20.0
Quintil 2	3,982	9.8	1,040	20.0
Quintil 3	5,752	14.2	1,042	20.0
Quintil 4	8,543	21.1	1,040	20.0
Quintil 5	19,949	49.3	1,042	20.0

Fuente: EMNV 2001. Se calcula el consumo usando pesos muestrales ("peso3"). Participación se calcula usando consume per cápita ya que esta tabla es para población no para familias.

Table A2 – A16 Share of National Consumption by Area (2005 LSMS)

	Consumo (Millones de Córdobas de 2001)	Porcentaje del Consumo	Población (Miles)	Porcentaje de la población
Nacional	51,907	100.0	5,142	100.0
Urbano	37,151	74.6	2,871	58.3
Rural	14,756	25.4	2,271	41.7
Managua	18,759	39.6	1,262	24.8
Pacífico Urbano	9,805	18.2	871	17.4
Pacífico Rural	4,823	10.2	636	14.3
Central Urbano	7,181	13.1	632	12.7
Central Rural	5,963	9.9	1,021	18.7
Atlántico Urbano	2,560	5.4	225	5.5
Atlántico Rural	2,818	3.6	495	6.6

Table A2 – A17 Share of National Consumption by poverty lines (2005 LSMS)

	Consumo (Millones de Córdobas de 2001)	Porcentaje del Consumo	Población (Miles)	Porcentaje de la población
Nacional	51,907	100.0	5,142	100.0
Pobre extremo	2,181	4.2	766	14.9
Pobre no extremo	8,479	16.3	1,612	31.3
Pobre	10,660	20.5	2,377	46.2
No pobre	41,248	79.5	2,765	53.8

Table A2 – A18 Share of National Consumption by Quintiles (2005 LSMS)

	Consumo (Millones de Córdobas de 2001)	Porcentaje del Consumo	Población (Miles)	Porcentaje de la población
Nacional	51,907	100.0	5,142	100.0
Quintil 1	3,219	6.2	1,028	20.0
Quintil 2	5,340	10.3	1,029	20.0
Quintil 3	7,619	14.7	1,030	20.0
Quintil 4	11,240	21.7	1,027	20.0
Quintil 5	24,490	47.2	1,029	20.0

Fuente: EMNV 2005. Se calcula el consumo usando pesos muestrales ("peso3"). Participación se calcula usando consume per cápita ya que esta tabla es para población no para familias.

Table A2 – A19 Gini's Nicaragua 2001 – 2005 LSMS

Type	Level	Year	Value	Change
Consumption	National	2001	43.1	
		2005	40.6	-2.53
	Urban	2001	41.4	
		2005	38.1	-3.30
	Rural	2001	34.7	
		2005	33.8	-0.82
Income	National	2001	55.1	
		2005	50.9	-4.19
	Urban	2001	54.3	
		2005	48.9	-5.41
	Rural	2001	48.3	
		2005	45.8	-2.56

Source: 2005 and 2001 LSMS data.

Table A2 – B01 Nicaragua 2005: LSMS Consumption Patterns (Comprehensive)

Grupo	Nacional	Area de residencia		Region de residencia							
		Urbano	Rural	Managua	Pacífico		Central		Atlántico		
					Urbano	Rural	Urbano	Rural	Urbano	Rural	
Alimentos	52.47	46.40	60.14	44.66	47.94	58.08	48.29	61.45	49.26	61.42	
Vivienda	12.40	14.25	10.07	15.56	13.09	10.22	13.03	10.01	12.40	10.07	
Serv. vivienda (Agua, Electric, etc)	7.33	9.56	4.50	9.12	10.01	5.37	9.41	4.31	8.41	3.61	
Educación	4.53	5.28	3.58	5.25	5.53	4.44	5.04	3.33	5.17	2.55	
Salud	5.84	5.56	6.19	5.21	5.67	5.98	5.96	6.14	5.98	6.67	
Personal y Otros	10.27	10.63	9.81	10.65	10.27	9.34	10.64	9.68	11.79	10.51	
Equipamiento Hogar	2.37	3.17	1.35	3.32	3.02	1.96	3.26	1.13	2.36	0.74	
Transporte	4.80	5.15	4.36	6.22	4.47	4.61	4.37	3.94	4.63	4.40	
Transferencias	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.02	

Grupo	Pobreza				Rural				Urbano			
	Pobre extremo	Pobres Moderados	Pobres (todos)	No pobre	Pobre extremo	Pobres Moderados	Pobres (todos)	No pobre	Pobre extremo	Pobres Moderados	Pobres (todos)	No pobre
Vivienda	10.44	10.61	10.56	13.99	10.48	10.01	10.20	9.79	10.29	11.43	11.22	15.49
Serv. vivienda (Agua, Electric, etc)	5.84	6.53	6.31	8.20	5.00	4.11	4.46	4.59	9.16	9.84	9.72	9.49
Educación	2.92	3.80	3.52	5.40	2.79	3.43	3.18	4.42	3.45	4.29	4.14	5.75
Salud	4.28	5.22	4.91	6.63	4.31	5.45	5.00	8.70	4.14	4.89	4.75	5.89
Personal y Otros	8.42	9.51	9.16	11.22	8.27	9.61	9.08	11.37	9.02	9.38	9.31	11.16
Equipamiento Hogar	0.86	1.36	1.20	3.37	0.74	0.95	0.87	2.37	1.37	1.91	1.81	3.73
Transporte	1.86	3.68	3.09	6.27	1.74	3.93	3.06	7.11	2.32	3.33	3.14	5.97
Transferencias	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01

Grupo	Quintil				
	1	2	3	4	5
Alimentos	65.06	59.07	53.27	48.24	36.69
Vivienda	10.20	10.55	11.62	12.27	17.37
Serv. vivienda (Agua, Electric, etc)	5.74	6.68	7.09	7.97	9.15
Educación	3.04	3.65	4.75	5.51	5.69
Salud	4.53	5.19	6.45	6.62	6.40
Personal y Otros	8.48	9.64	10.25	10.83	12.12
Equipamiento Hogar	0.85	1.42	2.01	2.90	4.66
Transporte	2.09	3.79	4.56	5.65	7.90
Transferencias	0.00	0.00	0.01	0.01	0.02

Values are the average of each household

Others include: Ceremonies, dubs fees, lottery, domestic service, shoes, linens, cook ware, detergent, transport, communication, etc.

Table A2 – B02 Nicaragua 2005: LSMS Annual Average Value of Consumption Per Capita (Comprehensive)

	Total	Alimentos	Vivienda	Serv. Vivienda	Educación	Salud	Equipamien o Hogar	Transporte	Transferenc ias	Personal y Otros
	C\$	C\$	C\$	C\$	C\$	C\$	C\$	C\$	C\$	C\$
Área de Residencia										
Urbano	12,940.06	5,085.06	2,213.59	1,246.89	730.18	750.74	549.22	876.58	1.63	1,486.18
Rural	6,497.46	3,554.74	721.68	298.51	251.15	464.08	133.70	380.00	2.03	691.56
Total	10,094.61	4,409.18	1,554.67	828.03	518.61	624.13	365.70	657.26	1.81	1,135.23
Region de residencia										
Managua	14,866.42	5,627.19	2,716.31	1,392.94	816.12	801.16	664.20	1,129.77	1.08	1,717.65
Pacifico Urbano	11,251.00	4,681.53	1,736.17	1,098.90	686.30	698.48	430.83	674.64	2.48	1,241.67
Pacifico Rural	7,578.07	3,893.47	1,059.42	426.79	352.98	495.45	204.77	413.91	5.53	725.76
Central Urbano	11,369.02	4,653.96	1,772.66	1,097.03	636.77	724.92	497.52	690.30	1.27	1,294.59
Central Rural	5,842.52	3,291.70	561.92	246.38	208.09	441.90	106.67	344.05	0.32	641.49
Atlantico Urbano	11,350.57	4,824.76	1,791.09	1,034.27	551.66	668.08	373.40	652.17	1.56	1,453.57
Atlantico Rural	5,696.64	3,289.61	571.17	188.69	152.16	434.42	59.20	340.79	1.55	659.03
Total	10,094.61	4,409.18	1,554.67	828.03	518.61	624.13	365.70	657.26	1.81	1,135.23
Pobreza										
Pobre extremo	2,849.30	1,855.46	295.22	164.43	88.00	123.41	25.26	56.20	0.02	241.30
Pobres Moderados	5,260.33	3,097.28	562.70	347.78	202.89	273.93	73.77	198.13	0.44	503.41
Pobre (todos)	4,483.93	2,697.39	476.57	288.74	165.89	225.46	58.15	152.43	0.30	419.00
No pobre	14,919.17	5,881.12	2,481.72	1,291.75	821.91	966.94	630.16	1,091.36	3.10	1,751.11
Total	10,094.61	4,409.18	1,554.67	828.03	518.61	624.13	365.70	657.26	1.81	1,135.23

Source: LSMS 2005 data

Table A2 – B03 Nicaragua 2005: LSMS Annual Average Value of Consumption Per Capita (Comprehensive) by Poverty Group and Area

	Total	Alimentos	Vivienda	Serv. Vivienda	Educación	Salud	Equipamien o Hogar	Transporte	Transferenc ias	Personal y Otros
	C\$	C\$	C\$	C\$	C\$	C\$	C\$	C\$	C\$	C\$
Urbano										
Pobre extremo	2,978.72	1,783.29	306.53	278.83	107.09	121.58	41.03	70.65	0.03	269.70
Pobres Moderados	5,461.65	2,989.63	625.29	537.14	237.78	262.41	106.06	187.90	0.09	515.34
Pobre (todos)	5,003.75	2,767.16	566.51	489.50	213.68	236.44	94.07	166.28	0.08	470.04
No pobre	16,190.94	6,034.52	2,888.27	1,557.14	941.74	961.40	735.65	1,167.53	2.27	1,902.42
Total	12,940.06	5,085.06	2,213.59	1,246.89	730.18	750.74	549.22	876.58	1.63	1,486.18
Rural										
Pobre extremo	2,816.74	1,873.62	292.37	135.66	83.20	123.87	21.30	52.56	0.02	234.15
Pobres Moderados	5,113.26	3,175.93	516.98	209.44	177.40	282.35	50.17	205.60	0.70	494.69
Pobre (todos)	4,202.88	2,659.67	427.94	180.19	140.05	219.53	38.73	144.94	0.43	391.41
No pobre	11,361.10	5,451.95	1,344.29	549.29	486.65	982.45	335.01	878.26	5.43	1,327.78
Total	6,497.46	3,554.74	721.68	298.51	251.15	464.08	133.70	380.00	2.03	691.56
Pobreza										
Pobre extremo	2,849.30	1,855.46	295.22	164.43	88.00	123.41	25.26	56.20	0.02	241.30
Pobres Moderados	5,260.33	3,097.28	562.70	347.78	202.89	273.93	73.77	198.13	0.44	503.41
Pobre (todos)	4,483.93	2,697.39	476.57	288.74	165.89	225.46	58.15	152.43	0.30	419.00
No pobre	14,919.17	5,881.12	2,481.72	1,291.75	821.91	966.94	630.16	1,091.36	3.10	1,751.11
Total	10,094.61	4,409.18	1,554.67	828.03	518.61	624.13	365.70	657.26	1.81	1,135.23

Source: LSMS 2005 data

Table A2 – C.1 Nicaragua 2005: LSMS Income Patterns

	Área de Residencia		Región de residencia							Pobreza				Total
	Urbano	Rural	Managua	Pacífico Urbano	Pacífico Rural	Central Urbano	Central Rural	Atlántico Urbano	Atlántico Rural	Pobre extremo	Pobre Moderado	Pobres (todos)	No pobre	
Trabajo														
Asalariado agrícola	3.8%	19.5%	1.6%	4.0%	18.5%	7.6%	23.4%	8.5%	14.4%	27.4%	13.7%	18.1%	4.4%	10.7%
Asalariado No agrícola	44.2%	15.9%	51.5%	42.7%	26.8%	36.3%	10.6%	31.5%	5.6%	16.0%	27.8%	24.0%	38.3%	31.7%
Auto-empleo no agrícola	23.0%	9.1%	18.1%	25.3%	14.1%	25.8%	6.8%	25.3%	7.5%	6.4%	13.0%	10.9%	21.9%	16.8%
Auto-empleo agrícola	2.3%	32.2%	1.0%	2.0%	15.8%	4.9%	38.0%	6.3%	47.1%	28.4%	21.5%	23.7%	8.4%	15.5%
Indeterminado	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Renta imputada	13.7%	10.1%	16.5%	11.1%	10.6%	11.8%	9.0%	12.5%	11.4%	9.3%	10.2%	9.9%	14.0%	12.1%
Trasferencia educación	1.5%	5.3%	0.7%	2.1%	4.7%	1.9%	5.3%	3.2%	6.9%	6.6%	4.6%	5.3%	1.4%	3.2%
Obseq. Aliment. Recibidos	1.1%	2.5%	1.1%	1.0%	2.3%	1.4%	2.7%	1.9%	2.4%	2.2%	2.1%	2.1%	1.4%	1.7%
Remesas recibidas	7.3%	3.8%	5.8%	9.0%	5.4%	7.6%	3.2%	7.2%	2.5%	3.0%	4.8%	4.2%	7.1%	5.8%
Caridad recibida	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%
Rentas de capital	0.5%	0.2%	0.6%	0.4%	0.3%	0.4%	0.1%	0.8%	0.2%	0.1%	0.2%	0.1%	0.6%	0.4%
Pensiones	2.2%	0.5%	2.4%	2.1%	1.2%	1.6%	0.2%	1.6%	0.2%	0.4%	1.4%	1.1%	1.7%	1.4%
Otros	0.4%	0.8%	0.5%	0.3%	0.4%	0.5%	0.4%	1.2%	1.7%	0.3%	0.6%	0.5%	0.7%	0.6%
Total anual ingreso per cápita	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table A2 – C.2 Nicaragua 2005: LSMS Income Patterns by group and area

	Urbano				Rural				Pobreza			
	Pobre extremo	Pobres moderados	Pobres (todos)	No pobre	Pobre extremo	Pobres moderados	Pobres (todos)	No pobre	Pobre extremo	Pobres moderados	Pobres (todos)	No pobre
Trabajo												
Asalariado agrícola	19.9%	6.0%	8.5%	1.8%	29.3%	19.3%	23.2%	11.5%	27.4%	13.7%	18.1%	4.4%
Asalariado No agrícola	41.8%	46.4%	45.5%	43.7%	9.5%	14.2%	12.3%	23.4%	16.0%	27.8%	24.0%	38.3%
Auto-empleo no agrícola	17.1%	20.7%	20.0%	24.2%	3.7%	7.5%	6.0%	15.6%	6.4%	13.0%	10.9%	21.9%
Auto-empleo agrícola	3.5%	3.5%	3.5%	1.8%	34.6%	34.7%	34.7%	26.9%	28.4%	21.5%	23.7%	8.4%
Indeterminado	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Renta imputada	8.0%	10.2%	9.8%	15.3%	9.6%	10.2%	9.9%	10.5%	9.3%	10.2%	9.9%	14.0%
Trasferencia educación	4.2%	2.7%	3.0%	0.9%	7.2%	6.1%	6.5%	2.9%	6.6%	4.6%	5.3%	1.4%
Obseq. Aliment. Recibidos	1.0%	1.2%	1.2%	1.1%	2.5%	2.7%	2.6%	2.3%	2.2%	2.1%	2.1%	1.4%
Remesas recibidas	3.3%	6.5%	5.9%	7.8%	2.9%	3.5%	3.3%	5.0%	3.0%	4.8%	4.2%	7.1%
Caridad recibida	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
Rentas de capital	0.1%	0.2%	0.2%	0.7%	0.1%	0.1%	0.1%	0.4%	0.1%	0.2%	0.1%	0.6%
Pensiones	1.0%	2.4%	2.2%	2.2%	0.2%	0.7%	0.5%	0.3%	0.4%	1.4%	1.1%	1.7%
Otros	0.1%	0.2%	0.2%	0.5%	0.4%	0.9%	0.7%	1.1%	0.3%	0.6%	0.5%	0.7%
Total anual ingreso per cápita	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table A2 – C.3 Nicaragua 2005: LSMS Average Income

	Área de Residencia		Región de residencia						Total	
	Urbano	Rural	Managua	Pacífico Urbano	Pacífico Rural	Central Urbano	Central Rural	Atlántico Urbano		Atlántico Rural
Trabajo										
Asalariado agrícola	468.23	1,269.04	228.24	664.66	1,382.73	641.65	1,413.14	699.76	957.84	821.92
Asalariado No agrícola	6,897.92	1,507.99	8,697.08	6,183.22	2,509.66	4,837.21	934.75	4,460.62	513.79	4,517.39
Auto-empleo no agrícola	3,890.07	993.65	3,400.26	4,006.74	1,431.45	3,961.75	777.86	4,438.96	879.12	2,610.83
Auto-empleo agrícola	1,197.20	2,701.52	683.70	1,603.16	1,179.39	1,736.38	3,522.33	608.25	3,503.80	1,861.60
Indeterminado	-	-	-	-	-	-	-	-	-	-
Renta imputada	2,092.27	667.87	2,597.59	1,615.03	975.52	1,649.50	510.12	1,718.73	541.35	1,463.17
Trasferencia educación	97.76	232.28	45.01	149.63	213.92	112.97	235.89	173.65	270.07	157.17
Obseq. Aliment. Recibidos	105.88	149.12	104.62	86.54	145.29	133.35	152.29	181.15	125.84	124.98
Remesas recibidas	1,127.50	308.95	990.37	1,276.31	430.32	1,099.66	276.16	1,073.12	171.01	765.98
Caridad recibida	3.58	5.39	8.52	0.09	0.55	0.86	10.34	0.09	0.47	4.38
Rentas de capital	172.38	62.83	206.86	95.11	138.05	127.87	18.74	432.27	17.16	124.00
Pensiones	379.55	80.28	504.61	325.76	243.86	223.60	20.21	136.57	7.19	247.37
Otros	113.25	79.33	115.78	69.57	12.34	271.03	24.99	215.49	91.88	98.27
Total anual ingreso per cápita (2005)	16,545.59	8,058.26	17,582.63	16,075.82	8,663.09	14,795.83	7,896.82	14,138.66	7,079.53	12,797.06
Total anual ingreso per cápita (Precios del 2001)	12,534.54	6,104.74	13,320.17	12,178.65	6,562.95	11,208.96	5,982.44	10,711.11	5,363.28	9,694.74
Total anual ingreso per cápita (Precios de 1998)	9,347.79	4,552.69	9,933.69	9,082.39	4,894.40	8,359.22	4,461.48	7,987.94	3,999.73	7,229.98

Table A2 – C.4 Nicaragua 2005: LSMS Average Income by groups and area

	Urbano				Rural				Pobreza			
	Pobre extremo	Pobres moderados	Pobres (todos)	No pobre	Pobre extremo	Pobres moderados	Pobres (todos)	No pobre	Pobre extremo	Pobres moderados	Pobres (todos)	No pobre
Trabajo												
Asalariado agrícola	1,268.65	1,232.68	1,246.94	1,315.89	962.34	403.82	506.82	452.42	1,207.09	882.77	987.21	679.79
Asalariado No agrícola	421.79	1,025.66	786.28	3,037.74	2,375.96	3,561.60	3,342.94	8,354.11	814.54	2,096.22	1,683.49	6,954.23
Auto-empleo no agrícola	165.13	531.91	386.51	2,280.56	795.38	1,575.60	1,431.71	4,897.06	291.80	972.51	753.30	4,208.10
Auto-empleo agrícola	1,170.10	1,978.79	1,658.21	4,912.93	149.93	210.43	199.27	1,605.97	965.07	1,232.27	1,146.22	2,476.74
Indeterminado	-	-	-	-	-	-	-	-	-	-	-	-
Renta imputada	270.17	480.49	397.12	1,241.77	299.32	606.30	549.69	2,724.15	276.03	533.60	450.66	2,333.82
Trasferencia educación	205.74	263.74	240.75	214.32	148.28	151.98	151.30	75.83	194.19	216.56	209.36	112.30
Obseq. Aliment. Recibidos	75.43	139.51	114.10	223.33	40.44	75.92	69.38	120.83	68.39	112.66	98.41	147.82
Remesas recibidas	121.56	243.97	195.44	549.55	166.62	451.32	398.81	1,425.99	130.62	331.50	266.81	1,195.21
Caridad recibida	3.16	6.67	5.28	5.63	0.10	0.46	0.39	4.89	2.55	4.05	3.57	5.08
Rentas de capital	4.39	6.59	5.72	183.89	5.29	12.24	10.96	238.51	4.57	8.98	7.56	224.13
Pensiones	10.15	45.09	31.24	184.23	51.07	172.24	149.89	473.62	18.38	98.77	72.88	397.42
Otros	12.71	36.21	26.89	190.47	2.20	20.41	17.05	152.66	10.60	29.54	23.44	162.61
Total anual ingreso per cápita (2005)	3,729.00	5,991.32	5,094.50	14,340.32	4,996.94	7,242.30	6,828.21	20,526.03	3,983.83	6,519.43	5,702.91	18,897.24
Total anual ingreso per cápita (Precios 2001)	2,825.00	4,538.88	3,859.47	10,863.88	3,785.56	5,486.59	5,172.89	15,550.02	3,018.05	4,938.96	4,320.39	14,316.09
Total anual ingreso per cápita (Precios 1998)	2,106.78	3,384.93	2,878.25	8,101.88	2,823.13	4,091.70	3,857.75	11,596.63	2,250.75	3,683.29	3,221.98	10,676.41

Table A2 – D.1 Nicaragua 2005 - Demographic Characteristics

Demographic Characteristics	Total number of people in household	Women adults (16 yrs and above)	Men adults (16 yrs and above)	Children (under 16 yrs)	Children (5 yrs and under)	Mean Age of Household Head	Mean Age of Head's Spouse	Dependency Ratio ¹	Dependency Ratio ²
All	5.2	1.7	1.5	2.0	0.7	48.7	41.1	0.7	0.7
Extreme Poor	7.3	1.8	1.9	3.5	1.2	48.7	41.9	1.0	1.0
Moderately Poor	6.1	1.7	1.7	2.7	0.9	48.8	41.0	0.8	0.8
Poor	6.5	1.8	1.8	2.9	1.0	48.8	41.3	0.9	0.9
Non-poor	4.4	1.6	1.4	1.4	0.5	48.6	41.0	0.6	0.6
Urban	5.0	1.8	1.5	1.7	0.6	49.2	41.7	0.6	0.7
Extreme Poor	7.6	2.1	2.1	3.4	1.2	52.8	47.1	0.9	1.0
Moderately Poor	6.5	2.0	1.8	2.8	1.0	50.5	42.9	0.8	0.9
Poor	6.7	2.0	1.8	2.9	1.0	50.9	43.7	0.8	0.9
Non-poor	4.5	1.7	1.4	1.4	0.5	48.8	41.1	0.6	0.6
Rural	5.5	1.5	1.6	2.4	0.7	47.9	40.5	0.7	0.8
Extreme Poor	7.3	1.8	1.9	3.6	1.2	47.7	40.8	1.0	1.0
Moderately Poor	5.9	1.5	1.7	2.6	0.8	47.7	40.0	0.8	0.8
Poor	6.3	1.6	1.8	3.0	1.0	47.7	40.2	0.9	0.9
Non-poor	4.3	1.3	1.5	1.5	0.5	48.2	40.9	0.6	0.6
Quintile									
Poorest	7.1	1.8	1.9	3.4	1.2	48.6	41.7	1.0	1.0
II	6.2	1.7	1.7	2.7	0.9	48.8	40.7	0.8	0.8
III	5.4	1.7	1.6	2.1	0.7	48.0	40.8	0.7	0.8
IV	4.8	1.7	1.4	1.7	0.6	48.9	40.0	0.6	0.7
Richest	3.7	1.5	1.2	0.9	0.3	48.9	42.3	0.4	0.5
Zone									
Managua - Urban	4.9	1.8	1.5	1.6	0.6	48.5	41.0	0.6	0.6
Managua - Rural	4.6	1.6	1.7	1.4	0.5	51.8	43.2	0.5	0.7
Managua - Total	4.9	1.8	1.5	1.6	0.6	48.8	41.3	0.6	0.6
Pacific - Urban	5.1	1.8	1.6	1.8	0.6	50.1	43.0	0.6	0.7
Pacific - Rural	5.2	1.6	1.6	2.1	0.6	49.2	41.8	0.7	0.7
Pacific - Total	5.2	1.7	1.6	1.9	0.6	49.7	42.5	0.6	0.7
Central - Urban	4.8	1.7	1.3	1.8	0.6	49.9	41.3	0.7	0.7
Central - Rural	5.5	1.5	1.7	2.4	0.7	47.5	40.3	0.7	0.8
Central - Total	5.2	1.6	1.5	2.1	0.7	48.5	40.7	0.7	0.8
Atlantic - Urban	5.2	1.7	1.4	2.1	0.7	47.4	40.9	0.7	0.8
Atlantic - Rural	6.1	1.4	1.6	3.1	1.1	45.7	38.5	1.0	1.0
Atlantic - Total	5.8	1.5	1.5	2.8	0.9	46.3	39.3	0.9	0.9

Source: 2005 LSMS data

Note: Moderately poor include those that are poor but not extreme poor

¹ Number of 0-12 years and greater than 64 years over all others

² Number of 0-12 years and greater than 60 years over all others

Table A2 – E01 Nicaragua 2005 - Gross Enrollment Rates by Gender

	Primary ²			Secondary ³		
	Total	Male	Female	Total	Male	Female
All	109.1	107.8	110.5	67.8	61.0	74.6
Extreme Poor	103.5	96.8	110.4	25.7	22.1	29.6
Moderately Poor	114.5	113.7	115.3	47.7	41.0	54.3
Poor	110.7	107.9	113.6	40.5	34.6	33.3
Non-poor	107.2	107.6	106.7	97.3	90.6	103.7
Urban	105.5	105.2	105.9	92.0	84.7	98.7
Extreme Poor	101.8	93.8	110.5	45.7	38.2	51.7
Moderately Poor	110.7	109.0	112.6	63.5	56.8	69.5
Poor	108.9	106.1	112.2	59.9	53.2	65.8
Non-poor	103.6	104.6	102.6	108.4	100.2	116.2
Rural	112.6	110.4	114.9	41.8	37.6	46.5
Extreme Poor	103.9	97.5	110.4	20.5	18.7	22.6
Moderately Poor	116.9	117.0	116.9	37.1	31.4	43.2
Poor	111.5	108.8	114.2	30.6	26.3	35.5
Non-poor	115.6	114.4	117.2	69.8	67.6	71.9
Quintile						
Poorest	105.1	100.5	110.1	26.8	23.7	30.3
II	116.4	114.6	118.2	44.8	37.5	52.5
III	112.5	112.9	112.2	77.6	72.6	82.1
IV	105.9	104.6	107.4	99.7	90.9	108.5
Richest	102.8	107.0	98.0	109.8	107.2	112.0
Zone						
Managua - Urban	99.7	97.1	103.2	101.0	95.1	106.8
Managua - Rural	116.3	118.5	114.7	103.2	113.0	93.3
Managua - Total	101.3	98.6	104.6	101.2	96.6	105.7
Pacific- Urban	105.7	105.5	106.0	83.5	80.8	85.9
Pacific - Rural	116.3	114.7	118.2	59.7	49.9	69.0
Pacific - Total	110.6	109.8	111.5	72.5	66.5	78.1
Central - Urban	108.7	113.7	104.6	93.2	80.4	103.8
Central - Rural	112.0	108.9	115.1	34.2	31.1	38.1
Central - Total	110.9	110.3	111.5	55.3	46.6	64.7
Atlantic- Urban	119.5	121.2	117.9	84.4	68.9	99.3
Atlantic - Rural	109.3	107.4	111.4	24.0	24.6	23.4
Atlantic - Total	112.1	111.1	113.2	43.1	38.3	48.0
Indigenous						
No	108.1	106.6	109.6	68.4	61.8	75.0
Yes	126.1	125.5	126.8	57.8	46.4	67.9
Worked land last 12 months?						
No	106.9	105.1	108.8	85.6	77.0	93.7
Yes	112.3	111.6	113.0	43.0	40.6	45.7

Source: 2005 LSMS data

2 number in elementary school/ number of 7-12 yrs old

3 number in secondary school/ number of 13-17 yrs old

Table A2 – E02 Nicaragua 2005 - Net Enrollment Rates by Gender

	Primary ²			Secondary ³		
	Total	Male	Female	Total	Male	Female
All	84.1	82.5	85.9	45.1	39.9	50.4
Extreme Poor	75.1	71.3	79.0	16.7	12.5	21.4
Not Extreme Poor	86.5	83.8	89.4	32.7	26.7	38.8
Poor	82.6	79.5	85.8	27.5	21.9	33.3
Non-poor	86.1	86.0	86.1	64.2	60.1	68.1
Urban	84.3	84.0	84.6	61.1	56.4	65.3
Extreme Poor	72.8	70.7	75.2	27.4	14.6	37.6
Not Extreme Poor	86.1	84.3	88.3	44.4	39.1	49.2
Poor	83.5	81.7	85.7	41.0	34.5	46.8
Non-poor	84.7	85.4	84.0	71.3	67.2	75.2
Rural	84.0	81.0	87.2	28.1	23.6	33.0
Extreme Poor	75.6	71.5	79.8	13.9	12.0	16.2
Not Extreme Poor	86.7	83.4	90.1	24.9	19.1	31.2
Poor	82.1	78.4	85.8	20.6	16.2	25.6
Non-poor	89.2	87.5	91.3	46.7	43.1	50.3
Quintile						
Poorest	77.9	74.9	81.0	17.4	13.9	21.5
II	85.7	81.3	90.1	30.6	25.6	35.9
III	88.4	87.5	89.5	52.2	45.1	58.8
IV	86.4	87.2	85.5	64.3	61.4	67.2
Richest	83.6	84.2	82.8	74.2	71.6	76.4
Zone						
Managua - Urban	82.2	82.5	81.9	67.4	64.4	70.3
Managua - Rural	89.2	79.7	96.1	53.7	54.3	53.0
Managua - Total	82.9	82.3	83.7	66.2	63.5	68.8
Pacific- Urban	84.4	84.1	84.8	56.8	52.7	60.5
Pacific - Rural	88.1	86.1	90.5	44.2	32.6	55.1
Pacific - Total	86.1	85.0	87.4	51.0	43.4	58.0
Central - Urban	85.8	85.8	85.9	59.9	52.1	66.4
Central - Rural	84.5	80.5	88.6	22.6	20.4	25.4
Central - Total	84.9	82.1	87.6	35.9	30.3	42.0
Atlantic- Urban	88.4	86.9	89.9	55.0	49.1	60.6
Atlantic - Rural	78.0	76.4	79.6	14.1	14.6	13.6
Atlantic - Total	80.8	79.3	82.5	27.0	25.2	28.8
Indigenous						
No	83.8	81.9	85.9	45.7	40.3	51.0
Yes	89.4	90.6	88.0	35.6	29.7	40.9
Worked land last 12 months?						
No	84.7	83.5	86.0	57.2	51.3	62.7
Yes	83.4	80.9	86.0	28.5	25.3	32.1

Source: 2005 LSMS data

² number in elementary school/ number of 7-12 yrs old

³ number in secondary school/ number of 13-17 yrs old

**Table A2 – E03 Nicaragua 2005 - Reason for Not Attending School by Gender
(7 - 12 year olds only)**

	Extreme Poor			Moderately Poor			Poor			Non-poor		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Male												
Not interested	35.9	11.7	15.0	12.6	14.0	13.5	18.6	12.7	14.2	22.3	3.5	14.3
Domestic work/work	6.9	1.8	2.5	0.0	10.8	6.7	1.8	5.6	4.6	0.0	6.5	2.8
No vacancy/no class/no teacher	0.0	7.6	6.6	2.5	12.0	8.3	1.9	9.5	7.5	0.0	7.2	3.0
Distance	0.0	12.2	10.5	0.0	17.0	10.5	0.0	14.2	10.5	0.0	7.1	3.0
Insufficient Security	0.0	3.5	3.0	0.0	5.3	3.3	0.0	4.3	3.2	0.0	11.0	4.7
Family problems	5.9	7.4	7.2	0.7	4.6	3.1	2.1	6.2	5.1	24.0	4.7	15.8
Monetary problems	39.6	48.7	47.4	54.0	22.5	34.5	50.3	37.5	40.9	37.2	34.4	36.0
Other	11.7	7.1	7.8	30.1	13.8	20.0	25.3	10.0	14.0	16.5	25.6	20.4
Female												
Not interested	8.4	3.1	4.1	1.9	7.6	5.8	4.7	4.9	4.8	11.1	0.0	5.5
Domestic work/work	0.0	1.6	1.3	0.0	6.4	4.4	0.0	3.5	2.6	0.0	3.9	2.0
No vacancy/no class/no teacher	0.0	4.5	3.6	4.1	0.2	1.5	2.3	2.8	2.7	10.1	13.2	11.7
Distance	0.0	16.3	13.3	0.0	28.7	19.8	0.0	21.2	16.1	0.0	21.6	10.8
Insufficient Security	0.0	3.9	3.2	0.0	3.0	2.1	0.0	3.6	2.7	0.0	7.2	3.6
Family problems	20.9	6.4	9.1	31.0	8.5	15.5	26.6	7.2	11.9	38.7	17.9	28.3
Monetary problems	61.2	49.8	51.9	51.1	30.8	37.1	55.5	42.4	45.5	28.7	18.1	23.4
Other	9.5	14.4	13.5	11.9	14.7	13.9	10.9	14.5	13.6	11.4	18.1	14.7

Source: 2005 LSMS data

**Table A2 – E04 Nicaragua 2005 - Reason for Not Attending School by Gender
(13 - 18 year olds only)**

	Extreme Poor			Moderately Poor			Poor			Non-poor		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Male												
Not interested	23.3	19.8	27.8	28.7	34.2	22.7	26.5	31.0	30.6	34.8	26.9	30.9
Finished Studies	0.0		0.0	0.1		0.0	0.0		0.1			
Domestic Work										0.8	0.8	0.8
Had to work	37.2	24.8	34.3	37.2	27.4	35.1	37.2	26.8	33.9	31.4	20.3	25.9
No place/no class/no teacher	1.4		1.8	3.4		1.2	2.6		2.2	2.7	0.1	1.4
School is too far	2.2		1.9	2.9		1.9	2.6		1.9	2.3		1.1
Family problems	1.0	0.2	1.1	1.3	0.9	0.9	1.2	0.7	1.2	1.9	3.0	2.5
Lack of money	29.7	55.0	29.3	22.9	33.8	34.0	25.7	38.5	26.6	20.5	39.0	29.6
Other	5.1	0.2	3.8	3.5	3.8	4.3	4.1	3.0	3.6	5.7	9.9	7.7
Female												
Not interested	27.7	31.7	24.8	23.9	22.2	28.3	25.4	23.6	23.2	15.6	16.7	16.2
Finished Studies	0.3		0.1	0.0		0.2	0.1		0.0		0.7	0.4
Domestic Work	14.1	6.5	9.5	9.9	5.2	12.9	11.5	5.4	7.9	10.6	5.9	8.1
Had to work	0.8	9.5	3.1	4.7	1.8	2.1	3.2	2.9	3.5	8.1	7.0	7.5
No place/no class/no teacher	5.5	17.9	5.0	6.7	0.0	7.4	6.2	2.6	3.9	3.4	0.2	1.7
School is too far	4.3		3.7	6.4		3.7	5.6		3.7	5.7		2.6
Child-care/pregnancy	9.7	7.8	12.7	14.3	14.2	9.4	12.5	13.3	14.2	13.4	20.6	17.2
Family problems	4.1	5.4	4.6	4.9	4.3	4.3	4.6	4.4	4.7	6.3	4.4	5.3
Lack of money	27.3	21.2	30.0	23.8	42.4	26.4	25.2	39.3	31.6	30.1	35.7	33.1
Other	6.2	0.0	6.6	5.3	10.0	5.3	5.7	8.5	7.2	6.8	8.9	7.9

Source: 2005 LSMS data

Table A2 – E05 Nicaragua 2005 - Percent Not Attending School

	Percent not attending school		
	7 - 12 yrs	13 - 18 yrs	7 - 18 yrs
All	9.4	35.8	22.3
Extreme Poor	21.3	55.3	36.6
Moderately Poor	10.4	43.4	26.1
Poor	14.1	47.2	29.7
Non-poor	3.7	24.2	14.1
Urban	5.9	26.7	16.3
Extreme Poor	18.9	49.5	33.9
Moderately Poor	9.5	37.4	23.0
Poor	11.3	39.8	25.1
Non-poor	2.9	20.3	11.8
Rural	12.9	45.9	28.5
Extreme Poor	21.8	56.8	37.3
Moderately Poor	10.9	47.4	28.2
Poor	15.5	51.1	31.8
Non-poor	5.6	33.7	19.7
Quintile			
Poorest	19.1	55.0	35.0
II	11.7	44.6	27.9
III	5.0	31.7	17.7
IV	3.9	25.3	14.2
Richest	1.1	15.8	9.6
Zone			
Managua - Urban	5.4	25.9	15.6
Managua - Rural	0.0	21.6	10.5
Managua - Total	4.9	25.5	15.1
Pacific - Urban	5.7	29.1	17.7
Pacific - Rural	7.1	38.7	23.0
Pacific - Total	6.3	33.4	20.1
Central - Urban	6.4	26.6	16.7
Central - Rural	12.8	49.7	30.0
Central - Total	10.8	41.4	25.5
Atlantic- Urban	7.0	21.4	14.0
Atlantic - Rural	20.9	52.0	34.7
Atlantic - Total	17.1	42.5	28.6
Indigenous			
No	9.6	36.0	22.5
Yes	5.9	32.4	17.9
Worked land last 12 months?			
No	6.8	29.2	17.8
Yes	13.0	45.4	28.6

Source: 2005 LSMS data

Table A2 – E06 Nicaragua 2005 - Pre-school attendance of children 3-6 years old

	0-3 years		4-6 years		
	CICO/CDI	Pre-school	CICO/CDI	Pre-school	School
All	3.3	3.5	3.1	37.9	18.5
Extreme Poor	2.9	1.3	1.6	22.7	13.9
Moderately Poor	3.5	2.7	3.9	34.1	15.4
Poor	3.3	2.2	3.0	29.8	14.8
Non-poor	3.2	5.1	3.1	47.6	22.9
Urban	3.0	4.1	2.5	42.7	21.5
Extreme Poor	3.4	0.0	2.9	22.3	14.9
Moderately Poor	2.6	4.2	3.0	34.7	15.8
Poor	2.8	3.5	3.0	31.8	15.6
Non-poor	3.2	4.5	2.2	48.6	24.7
Rural	3.5	2.8	3.6	32.9	15.4
Extreme Poor	2.7	1.6	1.3	22.8	13.6
Moderately Poor	4.3	1.3	4.4	33.6	15.1
Poor	3.6	1.4	3.0	28.9	14.5
Non-poor	3.3	6.9	5.4	44.9	18.0
Quintile					
Poorest	3.1	2.3	2.4	25.4	13.5
II	2.8	2.7	3.9	33.7	15.9
III	4.2	2.6	3.5	37.7	20.7
IV	4.1	4.1	2.3	50.2	22.3
Richest	2.0	7.7	3.3	53.9	24.3
Zone					
Managua - Urban	2.4	5.0	2.3	46.3	21.5
Managua - Rural	0.0	10.5	18.5	72.2	9.3
Managua - Total	2.1	5.5	3.4	48.1	20.7
Pacific - Urban	2.2	4.3	0.0	43.4	19.1
Pacific - Rural	2.5	3.9	1.3	36.5	24.3
Pacific - Total	2.3	4.1	0.6	40.2	21.5
Central - Urban	4.8	2.8	4.7	37.1	22.5
Central - Rural	4.8	1.4	4.5	33.3	13.4
Central - Total	4.8	1.9	4.6	34.7	16.8
Atlantic- Urban	4.7	2.4	4.7	40.3	26.1
Atlantic - Rural	3.0	2.9	2.8	25.0	11.0
Atlantic - Total	3.5	2.7	3.2	28.7	14.7
Indigenous					
No	3.3	3.4	3.1	37.2	18.2
Yes	3.4	5.1	2.5	48.8	21.5
Worked land last 12 months?					
No	2.8	4.2	2.2	42.1	20.4
Yes	4.1	2.2	4.4	31.1	15.5

*Note: Using data from Section 4a
Source: LSMS 2005*

Table A2 – E07 Nicaragua 2005 - Primary School Repetition Rates, percent with no books and mean number of days absent

	Repetition (%)	No books (%)	Days absent
All	11.7	4.8	4.3
Extreme Poor	14.7	6.3	4.0
Moderately Poor	13.0	4.4	4.1
Poor	13.6	5.0	4.0
Non-poor	9.3	4.5	4.6
Urban	10.4	3.5	4.4
Extreme Poor	15.0	3.7	3.4
Moderately Poor	14.0	3.1	4.0
Poor	14.1	3.2	3.9
Non-poor	8.1	3.8	4.6
Rural	12.9	5.9	4.3
Extreme Poor	14.6	6.9	4.1
Moderately Poor	12.5	5.2	4.1
Poor	13.3	5.9	4.1
Non-poor	11.8	5.9	4.5
Quintile			
Poorest	14.1	6.0	4.1
II	12.7	4.9	4.0
III	11.6	4.0	4.6
IV	9.6	3.9	4.6
Richest	7.7	4.8	4.0
Zone			
Managua - Urban	11.2	3.7	5.2
Managua - Rural	20.9	6.8	4.2
Managua	12.3	4.1	5.2
Pacific- Urban	9.7	2.6	3.7
Pacific - Rural	12.9	3.0	3.3
Pacific- Total	11.3	2.8	3.5
Central - Urban	11.1	4.0	3.3
Central - Rural	12.2	4.1	4.2
Central - Total	11.9	4.1	3.9
Atlantic- Urban	8.2	4.9	4.0
Atlantic - Rural	12.7	12.0	5.4
Atlantic - Total	11.4	10.0	5.1
Indigenous			
No	11.9	4.3	4.3
Yes	9.1	11.5	4.1
Worked land last 12 months?			
No	10.9	4.1	4.3
Yes	12.7	5.7	4.3

Source: LSMS 2005

Table A2 – E08 Nicaragua 2005 - Secondary School Repetition Rates, percent with no books and mean number of days absent

	Repetition (%)	No books (%)	Days absent
All	6.0	24.1	3.4
Extreme Poor	5.2	22.2	4.2
Moderately Poor	6.2	20.7	2.7
Poor	6.0	21.0	3.0
Non-poor	6.0	25.6	3.5
Urban	6.6	23.1	3.7
Extreme Poor	8.7	18.5	6.4
Moderately Poor	8.1	16.5	3.3
Poor	8.2	16.8	3.8
Non-poor	6.2	24.8	3.7
Rural	4.7	22.2	4.2
Extreme Poor	3.1	24.3	2.5
Moderately Poor	4.1	25.4	2.1
Poor	3.8	25.1	2.2
Non-poor	5.6	28.3	2.6
Quintile			
Poorest	6.7	23.2	3.9
II	6.6	22.3	2.9
III	5.9	23.6	2.7
IV	6.4	25.0	4.0
Richest	5.2	25.2	3.3
Zone			
Managua - Urban	7.5	28.1	3.7
Managua - Rural	10.9	28.8	1.7
Managua	7.8	28.1	3.6
Pacific- Urban	6.5	19.7	3.4
Pacific - Rural	3.7	29.4	2.4
Pacific - Total	5.4	23.3	3.0
Central - Urban	5.4	18.8	4.0
Central - Rural	5.1	19.5	2.5
Central - Total	5.3	19.1	3.5
Atlantic- Urban	6.3	24.0	4.7
Atlantic - Rural	2.2	36.9	3.0
Atlantic - Total	4.8	28.9	3.8
Indigenous			
No	5.8	24.4	3.4
Yes	6.7	14.8	3.6
Worked land last 12 months?			
No	6.1	23.6	3.8
Yes	5.6	25.5	2.3

Source: LSMS 2005

Table A2 – E09 Nicaragua 2005 - Percent Illiterate (10 years and older) and Average Years of Schooling (10-19 years old)

	Illiterate (10 years and up)	Means years of schooling (10-19 years old)		
		Total	Male	Female
All	18.4	5.1	4.8	5.5
Extreme Poor	38.1	3.2	3.0	3.5
Moderately Poor	23.7	4.4	4.1	4.8
Poor	28.2	4.0	3.7	4.4
Non-poor	10.8	6.3	6.0	6.6
Urban	10.4	6.1	5.8	6.5
Extreme Poor	31.3	4.1	3.5	4.7
Moderately Poor	15.6	5.3	4.9	5.6
Poor	18.5	5.0	4.6	5.4
Non-poor	7.4	6.7	6.4	7.0
Rural	29.0	4.0	3.8	4.3
Extreme Poor	40.0	3.0	2.9	3.2
Moderately Poor	29.5	3.8	3.6	4.1
Poor	33.5	3.5	3.3	3.8
Non-poor	20.4	5.3	5.0	5.7
Quintile				
Poorest	36.3	3.3	3.1	3.5
II	23.2	4.4	4.1	4.8
III	16.8	5.5	5.1	5.9
IV	12.2	6.0	5.8	6.3
Richest	6.3	7.3	6.9	7.6
Zone				
Managua - Urban	7.6	6.5	6.2	6.8
Managua - Rural	9.9	5.7	5.7	5.7
Managua	8.8	6.4	6.1	6.7
Pacific- Urban	9.9	6.2	5.8	6.5
Pacific - Rural	21.7	5.1	4.6	5.7
Pacific- Total	14.8	5.7	5.2	6.2
Central - Urban	15.3	5.9	5.6	6.2
Central - Rural	31.4	3.7	3.5	3.9
Central - Total	25.1	4.5	4.2	4.8
Atlantic- Urban	13.6	5.3	5.0	5.6
Atlantic - Rural	37.1	3.0	2.9	3.2
Atlantic - Total	29.2	3.7	3.5	4.0
Indigenous				
No	18.4	5.2	4.8	5.5
Yes	17.4	4.4	4.0	3.8
Worked land last 12 months?				
No	12.2	5.9	5.5	6.3
Yes	29.3	4.0	4.7	4.3

*Note: Literate is defined as those who can read and write
Source: LSMS 2005*

Table A2 – E10 Nicaragua 2005 - Percent Literate (15-24 years and 15 years and older) and Ratio of Females to Males (literate and in school)

	Literate (15-24 years)	Literate (15 years and older)	Ratio of Literate Females to Males (15-24 years)	Ratio of Girls to Boys in Primary and Secondary education
All	90.4	79.8	95	104
Extreme Poor	77.1	87.4	80	111
Not Extreme Poor	87.0	72.7	92	103
Poor	83.9	68.1	88	106
Non-poor	95.8	88.1	101	103
Urban	95.8	88.6	103	106
Extreme Poor	85.6	65.5	103	121
Not Extreme Poor	92.9	82.4	99	101
Poor	91.5	79.3	100	104
Non-poor	97.6	91.9	104	107
Rural	83.0	67.1	84	102
Extreme Poor	74.5	55.2	73	109
Not Extreme Poor	82.4	65.4	85	105
Poor	79.3	61.6	80	106
Non-poor	90.6	76.9	92	93
Quintile				
Poorest	78.3	59.1	78	105
II	87.3	73.1	94	110
III	92.1	80.9	101	99
IV	94.9	86.4	101	105
Richest	99.0	93.2	100	102
Zone				
Managua - Urban	96.5	92.0	100	96
Managua - Rural	95.6	78.1	69	110
Managua	96.4	90.6	96	97
Pacific- Urban	96.6	89.2	97	102
Pacific - Rural	89.9	74.8	99	104
Pacific- Total	93.9	83.4	98	103
Central - Urban	93.9	82.8	117	128
Central - Rural	79.6	63.9	76	102
Central - Total	85.2	71.6	92	111
Atlantic- Urban	94.4	84.3	109	111
Atlantic - Rural	76.7	59.3	87	97
Atlantic - Total	82.8	68.0	95	102
Indigenous				
No	90.5	79.8	95	104
Yes	89.2	80.8	103	98
Worked land last 12 months?				
No	94.5	86.7	104	108
Yes	83.3	66.7	80	98

*Note: Literate is defined as those who can read and write
Source: LSMS 2005*

**Table A2 – F01 Nicaragua 2005 - Fertility by Poverty, Quintile and Region
(Women 15-49 years of age)**

	Total Fertility (Births per Woman)
All	2.2
Extreme Poor	3.2
Not Extreme Poor	2.6
Poor	2.8
Non-poor	1.8
Urban	1.8
Extreme Poor	2.6
Not Extreme Poor	2.3
Poor	2.4
Non-poor	1.6
Rural	2.7
Extreme Poor	3.4
Not Extreme Poor	2.9
Poor	3.1
Non-poor	2.1
Quintile	
Poorest	3.2
II	2.6
III	2.2
IV	1.9
Richest	1.4
Zone	
Managua - Urban	1.8
Managua - Rural	1.8
Managua	1.8
Pacific - Urban	1.8
Pacific - Rural	2.4
Pacific - Total	2.1
Central - Urban	1.9
Central - Rural	2.8
Central - Total	2.4
Atlantic- Urban	2.1
Atlantic - Rural	3.4
Atlantic - Total	2.9

Source: 2005 LSMS data

Table A 2 – F02 Nicaragua 2005: Percent of Children receiving DPT and Polio Immunization by Quintile, Poverty Status and Region (12-23 months of age)

	Receive Pentavalente or DPT Vaccine	Receive Polio Vaccine
All	96.2	96.6
Extreme Poor	97.8	98.7
Moderately Poor	94.8	94.7
Poor	96.6	97.2
Non-poor	96.6	97.2
Urban	97.3	98.0
Extreme Poor	99.7	99.7
Moderately Poor	97.0	98.1
Poor	97.4	98.4
Non-poor	97.2	97.8
Rural	94.9	95.0
Extreme Poor	97.4	98.5
Moderately Poor	92.8	91.7
Poor	94.9	94.7
Non-poor	95.0	95.8
Quintile		
Poorest	95.6	96.2
II	96.9	96.8
III	95.1	96.6
IV	98.9	98.9
Richest	94.6	94.6
Zone		
Managua - Urban	97.6	97.6
Managua - Rural	100*	100*
Managua - Total	97.9	97.9
Pacific - Urban	98.5	100.0
Pacific - Rural	94.0	92.3
Pacific - Total	96.4	96.3
Central - Urban	95.0	96.5
Central - Rural	97.0	97.0
Central - Total	96.1	96.8
Atlantic- Urban	97.7	97.7
Atlantic - Rural	92.6	94.4
Atlantic - Total	93.9	95.3

Source: 2005 LSMS data

Table A 2 – F03 Nicaragua 2005: DPT and Polio Immunization by Quintile, Poverty Status and Region (% of 12-23 months of age with card)

	<i>Times Immunized Pentavalente/DPT</i>				<i>Times Immunized Polio</i>			
	0	1	2	3	0	1	2	3
All	1.6	5.7	17.5	75.2	1.0	4.6	14.3	80.1
Extreme Poor	6.7	12.6	15.2	65.5	2.3	19.0	10.6	68.1
Moderately Poor	2.4	5.5	16.5	75.6	2.4	1.4	10.2	86.0
Poor	3.7	7.7	16.1	72.5	2.4	6.8	10.3	80.5
Non-poor	0.0	4.2	18.6	77.2	0.0	2.9	17.2	79.9
Urban	0.0	4.6	23.1	72.3	0.0	3.1	18.3	78.6
Extreme Poor	0.0	0.0	15.1	84.9	0.0	0.0	15.1	84.9
Moderately Poor	0.0	4.7	18.7	76.6	0.0	0.0	5.7	94.3
Poor	0.0	3.9	18.0	78.1	0.0	0.0	7.3	92.7
Non-poor	0.0	5.0	25.6	69.4	0.0	4.7	23.8	71.5
Rural	3.4	6.9	11.3	78.4	2.2	6.2	9.8	81.9
Extreme Poor	8.6	16.3	15.3	59.8	3.0	24.5	9.3	63.2
Moderately Poor	4.8	6.3	14.3	74.6	4.8	2.7	14.6	77.9
Poor	6.3	10.4	14.7	68.6	4.1	11.5	12.5	71.9
Non-poor	0.0	3.0	7.3	89.7	0.0	0.0	6.6	93.4
Quintile								
Poorest	5.8	9.4	16.2	68.6	2.5	14.9	12.0	70.6
II	3.0	4.2	19.8	73.0	3.0	0.7	11.1	85.2
III	0.0	4.9	21.3	73.8	0.0	0.5	20.8	78.6
IV	0.0	10.7	16.6	72.7	0.0	10.2	16.6	73.2
Richest	0.0	0.4	10.5	89.1	0.0	0.0	6.8	93.2
Zone								
Managua - Urban	0.0	8.0	34.2	57.9	0.0	8.0	25.0	67.0
Managua - Rural	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0
Managua - Total	0.0	7.5	31.9	60.6	0.0	7.5	23.4	69.1
Pacific - Urban	0.0	4.4	20.1	75.5	0.0	0.0	20.1	79.9
Pacific - Rural	0.0	0.0	10.4	89.6	0.0	0.0	10.4	89.6
Pacific - Total	0.0	2.3	15.6	82.1	0.0	0.0	15.6	84.4
Central - Urban	0.0	0.0	13.9	86.1	0.0	0.0	8.0	92.0
Central - Rural	0.0	13.6	12.0	74.4	0.0	8.7	7.7	83.6
Central - Total	0.0	7.1	12.9	80.0	0.0	4.5	7.9	87.6
Atlantic- Urban	0.0	1.9	9.4	88.7	0.0	0.6	8.8	90.6
Atlantic - Rural	8.0	8.2	12.3	71.5	5.1	9.4	11.2	74.3
Atlantic - Total	6.2	6.8	11.6	75.4	4.0	7.4	10.7	78.0

Source: 2005 LSMS data

Table A 2 – F04 Nicaragua 2005: DPT and Polio Immunization by Quintile, Poverty Status and Region (% of 12-23 months of age)

	<i>Times Immunized Pentavalente/DPT</i>				<i>Times Immunized Polio</i>			
	0	1	2	3	0	1	2	3
All	3.8	2.6	9.2	84.3	3.4	2.3	9.1	85.2
Extreme Poor	2.2	6.4	11.6	79.8	1.3	7.7	10.6	80.3
Moderately Poor	5.2	2.3	7.9	84.6	5.3	0.8	8.0	85.9
Poor	4.2	3.7	9.2	82.9	3.9	3.1	8.9	84.0
Non-poor	3.4	1.5	9.3	85.8	2.8	1.5	9.2	86.5
Urban	2.7	1.3	9.3	86.7	2.0	1.2	8.5	88.3
Extreme Poor	0.3	0.0	13.9	85.8	0.3	0.0	13.9	85.8
Moderately Poor	3.0	1.3	7.8	87.9	1.9	0.0	5.9	92.2
Poor	2.6	1.1	8.8	87.5	1.6	0.0	7.2	91.2
Non-poor	2.8	1.4	9.6	86.2	2.2	1.9	9.2	86.7
Rural	5.1	4.2	9.1	81.6	5.0	3.6	9.7	81.7
Extreme Poor	2.6	7.8	11.1	78.5	1.5	9.4	10.0	79.1
Moderately Poor	7.2	3.1	8.0	81.7	8.3	1.4	9.9	80.3
Poor	5.1	5.2	9.4	80.3	5.3	5.0	9.9	79.8
Non-poor	5.0	1.7	8.5	84.8	4.2	0.3	9.2	86.3
Quintile								
Poorest	4.4	5.6	10.9	79.1	3.9	6.0	10.7	79.5
II	3.1	1.6	7.3	88.0	3.2	0.6	7.0	89.2
III	4.9	2.0	14.6	78.5	3.4	1.3	15.8	79.5
IV	1.1	2.8	6.8	89.3	1.1	2.6	6.8	89.5
Richest	5.4	0.1	4.2	90.3	5.4	0.0	2.3	92.3
Zone								
Managua - Urban	2.3	2.1	13.6	82.0	2.4	2.1	11.2	84.3
Managua - Rural	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0
Managua - Total	2.1	1.9	12.3	83.7	2.1	1.9	10.1	85.9
Pacific - Urban	1.5	1.3	6.2	91.0	0.0	1.5	6.2	92.3
Pacific - Rural	6.0	0.0	4.6	89.4	7.7	0.0	4.6	87.7
Pacific - Total	3.6	0.7	5.5	90.2	3.6	0.8	5.5	90.1
Central - Urban	5.0	0.0	7.0	88.0	3.5	0.0	7.5	89.0
Central - Rural	3.0	3.0	8.1	85.9	3.0	2.0	8.1	86.9
Central - Total	3.9	1.7	7.6	86.8	3.2	1.1	7.9	87.8
Atlantic- Urban	2.3	1.0	5.2	91.5	2.3	0.2	5.4	92.1
Atlantic - Rural	7.5	9.9	15.6	67.0	5.6	9.2	17.6	67.6
Atlantic - Total	6.1	7.5	12.8	73.6	4.7	6.8	14.3	74.2

Source: 2005 LSMS data

**Table A2 – F05 Nicaragua 2005 - Incidence of Diarrhea and IRA
(Children under 5 years of age)**

	Diarrhea last month		IRA last month	
	Incidence (%)	Consulted someone (%)	Incidence (%)	Consulted someone (%)
All	28.1	72.3	35.2	66.1
Extreme Poor	29.3	57.7	33.1	55.3
Moderately Poor	27.5	73.5	35.6	61.8
Poor	28.1	67.8	34.8	59.7
Non-poor	28.0	78.1	35.7	73.6
Urban	26.3	79.8	33.6	73.0
Extreme Poor	32.4	77.0	24.6	58.0
Moderately Poor	25.9	81.0	31.6	71.1
Poor	27.0	80.1	30.4	69.3
Non-poor	25.9	79.6	35.6	74.9
Rural	30.0	65.1	36.9	58.8
Extreme Poor	28.6	52.9	35.1	54.9
Moderately Poor	28.9	67.8	39.0	55.5
Poor	28.8	61.2	37.3	55.2
Non-poor	33.9	74.9	35.9	70.0
Quintile				
Poorest	29.1	59.4	33.4	55.6
II	26.7	75.7	37.3	64.2
III	29.7	71.4	37.0	65.0
IV	29.5	80.7	32.4	75.2
Richest	24.2	83.5	36.0	77.5
Zone				
Managua - Urban	28.2	79.8	33.4	73.0
Managua - Rural	24.1	100.0	26.4	100.0
Managua	27.8	81.0	32.9	74.6
Pacific - Urban	22.7	83.5	32.9	81.3
Pacific - Rural	30.7	72.1	40.6	58.6
Pacific - Total	26.1	77.7	36.1	70.6
Central - Urban	24.2	78.0	35.7	69.8
Central - Rural	25.9	64.4	37.6	64.9
Central - Total	25.3	69.1	36.9	66.6
Atlantic- Urban	35.7	74.8	32.4	52.4
Atlantic - Rural	36.3	58.0	34.3	45.2
Atlantic - Total	36.1	62.0	33.8	46.9

Source: 2005 LSMS data

Table A2 – F06 Nicaragua 2005 - Incidence of IRA (Children under 6 years of age)

	IRA last month	
	Incidence (%)	Consulted someone (%)
All	34.9	65.0
Extreme Poor	34.0	51.4
Moderately Poor	35.6	61.4
Poor	35.0	58.1
Non-poor	34.8	73.5
Urban	33.9	72.6
Extreme Poor	24.0	54.0
Moderately Poor	32.7	71.1
Poor	31.1	68.6
Non-poor	35.5	74.7
Rural	36.1	57.0
Extreme Poor	36.4	51.0
Moderately Poor	37.9	54.7
Poor	37.3	53.2
Non-poor	32.8	69.7
Quintile		
Poorest	34.2	52.4
II	37.4	64.4
III	35.3	65.5
IV	33.0	72.7
Richest	34.4	79.1
Zone		
Managua - Urban	34.2	75.6
Managua - Rural	21.5	100.0
Managua	33.2	76.9
Pacific - Urban	31.5	76.6
Pacific - Rural	39.2	57.1
Pacific - Total	34.9	67.1
Central - Urban	36.5	70.8
Central - Rural	37.3	62.7
Central - Total	37.0	65.7
Atlantic - Urban	33.1	50.4
Atlantic - Rural	33.8	43.7
Atlantic - Total	33.6	45.3

Source: 2005 LSMS data

Table A2 – F07 Nicaragua 2005 - Incidence of Diarrhea and Type of care of those reporting Diarrhea (Children under 6 years of age)

	Diarrhea last month (%)	Of those reporting Diarrhea:								Mean Consultations (number)
		Type of Treatment (%)				Consulted someone (%)	Consulted (%)			
		Home remedy	Saline/Oral whey	Medicine	None		Doctor	Nurse	Other	
All	25.6	12.4	50.3	35.1	2.2	70.8	85.0	12.9	2.1	1.4
Extreme Poor	26.5	19.5	51.1	25.6	3.8	56.8	70.8	25.5	3.7	1.3
Moderately Poor	25.1	13.9	46.5	37.8	1.8	72.9	84.0	14.3	1.7	1.4
Poor	25.6	15.9	48.2	33.4	2.5	67.0	79.9	17.7	2.4	1.3
Non-poor	25.6	8.0	53.0	37.3	1.7	75.6	90.5	7.7	1.8	1.5
Urban	24.0	7.7	50.0	40.7	1.6	78.0	95.9	3.7	0.4	1.5
Extreme Poor	27.5	17.9	42.2	39.7	0.2	72.8	93.7	6.3	0.0	1.3
Moderately Poor	24.1	7.2	49.3	42.0	1.5	80.8	94.7	5.3	0.0	1.5
Poor	24.8	9.4	47.8	41.5	1.3	79.1	94.5	5.5	0.0	1.4
Non-poor	23.6	6.6	51.4	40.2	1.8	77.3	96.8	2.6	0.6	1.5
Rural	27.3	17.0	50.6	29.7	2.7	63.9	72.1	23.8	4.1	1.3
Extreme Poor	26.3	19.9	53.4	22.0	4.7	52.9	63.0	32.0	5.0	1.2
Moderately Poor	25.8	18.9	44.4	34.7	2.0	67.0	74.4	22.3	3.3	1.3
Poor	26.0	19.4	48.3	29.1	3.2	60.7	70.0	26.0	4.0	1.3
Non-poor	31.1	11.1	56.2	31.1	1.6	72.1	76.3	19.2	4.5	1.3
Quintile										
Poorest	25.7	19.2	49.1	28.1	3.6	58.8	72.4	24.0	3.6	1.3
II	24.6	13.4	51.9	32.6	2.1	74.7	83.7	14.8	1.5	1.4
III	27.7	12.6	41.4	44.3	1.7	69.5	82.6	14.0	3.4	1.4
IV	26.3	6.8	58.8	32.3	2.2	76.5	93.6	5.2	1.2	4.5
Richest	23.1	4.0	52.9	43.1	0.0	84.1	97.6	2.4	0.0	1.6
Zone										
Managua - Urban	25.8	3.8	49.8	45.0	1.4	79.8	98.2	1.8	0.0	1.6
Managua - Rural	23.3	16.0	51.9	32.0	0.0	100.0	78.1	21.9	0.0	1.4
Managua	25.6	4.7	50.0	44.0	1.3	81.0	96.5	3.5	0.0	1.6
Pacific - Urban	21.4	10.3	51.7	36.7	1.3	81.0	96.5	2.2	1.3	1.4
Pacific - Rural	27.0	19.6	54.1	25.5	0.8	69.4	91.8	8.2	0.0	1.4
Pacific - Total	23.8	14.9	52.8	31.2	1.1	75.2	94.4	4.9	0.7	1.4
Central - Urban	21.1	12.3	49.8	36.3	1.6	72.6	92.4	7.6	0.0	1.3
Central - Rural	23.8	19.4	54.1	23.7	2.7	65.0	75.5	21.3	3.2	1.2
Central - Total	22.8	17.0	52.7	28.0	2.3	67.6	81.7	16.3	2.0	1.2
Atlantic- Urban	33.0	8.3	47.7	41.3	2.7	73.5	91.2	8.8	0.0	1.6
Atlantic - Rural	33.4	12.6	44.3	38.8	4.4	56.4	49.9	40.6	9.5	1.4
Atlantic - Total	33.3	11.5	45.1	39.4	4.0	60.5	62.2	31.2	6.6	1.4

Source: 2005 LSMS data

Table A2 – F08 Nicaragua 2005 - Incidence of Diarrhea and Type of care of those reporting Diarrhea (Children under 5 years of age)

	Diarrhea last month (%)	Of those reporting Diarrhea:								Mean Consultations (number)
		Type of Treatment (%)				Consulted someone (%)	Consulted (%)			
		Home remedy	Saline/Oral whey	Medicine	None		Doctor	Nurse	Other	
All	28.1	12.3	50.2	35.4	2.1	72.3	85.4	12.8	1.8	1.4
Extreme Poor	29.3	17.9	52.4	25.9	3.8	57.7	70.6	25.7	3.7	1.3
Moderately Poor	27.5	14.7	44.7	39.4	1.3	73.5	84.2	14.0	1.8	1.4
Poor	28.1	15.8	47.4	34.6	2.2	67.8	80.1	17.6	2.3	1.3
Non-poor	28.0	8.0	53.7	36.4	1.9	78.1	91.1	7.8	1.1	1.5
Urban	26.3	7.6	49.6	41.2	1.6	79.8	96.3	3.7	0.0	1.5
Extreme Poor	32.4	14.4	45.8	39.6	0.2	77.0	94.1	5.9	0.0	1.3
Moderately Poor	25.9	6.7	46.7	45.3	1.3	81.0	94.2	5.8	0.0	1.4
Poor	27.0	8.3	46.5	44.2	1.1	80.1	94.2	5.8	0.0	1.4
Non-poor	25.9	7.1	51.5	39.4	1.9	79.6	97.5	2.5	0.0	1.5
Rural	30.0	17.1	50.9	29.5	2.5	65.1	72.1	24.0	3.9	1.3
Extreme Poor	28.6	18.8	45.0	22.5	4.7	52.9	61.9	33.1	5.0	1.3
Moderately Poor	28.9	20.7	43.2	34.8	1.3	67.8	75.3	21.4	3.3	1.3
Poor	28.8	19.9	47.9	29.4	2.8	61.2	70.2	25.8	4.0	1.3
Non-poor	33.9	10.0	58.4	29.8	1.8	74.9	75.9	20.2	3.9	1.3
Quintile										
Poorest	29.1	18.1	49.8	28.5	3.6	59.4	72.7	23.8	3.5	1.3
II	26.7	14.0	50.7	34.1	1.2	75.7	84.1	14.3	1.6	1.4
III	29.7	13.9	39.4	44.8	1.9	71.4	82.5	14.9	2.6	1.4
IV	29.5	5.8	61.2	30.6	2.4	80.7	94.3	5.2	0.5	1.5
Richest	24.2	4.5	51.5	44.0	0.0	83.5	97.9	2.1	0.0	1.6
Zone										
Managua - Urban	28.2	4.0	47.6	46.8	1.5	79.8	98.1	1.9	0.0	1.6
Managua - Rural	24.1	19.1	61.8	19.1	0.0	100.0	73.9	26.1	0.0	1.5
Managua	27.8	5.0	48.5	45.0	1.5	81.0	96.2	3.8	0.0	1.6
Pacific - Urban	22.7	10.0	53.2	35.3	1.5	83.5	97.7	2.3	0.0	1.4
Pacific - Rural	30.7	18.3	55.3	25.6	0.8	72.1	91.4	8.6	0.0	1.4
Pacific - Total	26.1	14.1	54.2	30.5	1.2	77.7	94.8	5.2	0.0	1.4
Central - Urban	24.2	12.5	50.1	36.3	1.1	78.0	92.8	7.2	0.0	1.2
Central - Rural	25.9	20.8	52.3	25.1	1.9	64.4	75.5	20.9	3.6	1.2
Central - Total	25.3	17.9	51.5	29.0	1.6	69.1	82.3	15.5	2.2	1.2
Atlantic- Urban	35.7	7.4	48.2	41.4	3.0	74.8	91.4	8.6	0.0	1.6
Atlantic - Rural	36.3	12.2	45.3	37.9	4.6	58.0	50.5	41.1	8.4	1.4
Atlantic - Total	36.1	11.0	46.0	38.8	4.2	62.0	62.7	31.4	5.9	1.4

Source: 2005 LSMS data

**Table A2 – F09 Nicaragua 2005 - Reason for Not Seeking care for those reporting Diarrhea last month
(Children under 6 years of age)**

	Not serious	Too far	Bad care	No Medicine	Economic Problem	Know of Sickness	Other
All	18.9	16.3	17.8	4.7	7.2	31.0	4.0
Extreme Poor	12.9	30.7	13.9	6.1	10.5	21.8	4.1
Moderately Poor	12.7	15.4	13.0	4.9	4.1	43.0	6.8
Poor	12.8	22.7	13.5	5.5	7.1	32.9	5.5
Non-poor	29.2	5.4	25.3	3.4	7.4	27.9	1.4
Urban	27.9	0.6	23.5	6.4	1.9	35.0	4.7
Extreme Poor	5.2	0.0	8.9	11.5	8.9	51.7	13.7
Moderately Poor	17.1	2.2	11.8	6.7	0.9	49.5	11.9
Poor	13.9	1.6	11.0	8.0	3.0	50.1	12.4
Non-poor	36.2	0.0	30.9	5.5	1.2	26.0	0.2
Rural	13.6	25.5	14.5	3.7	10.4	28.8	3.5
Extreme Poor	14.0	35.0	14.6	5.4	10.7	17.6	2.7
Moderately Poor	10.8	21.2	13.5	4.1	5.6	40.1	4.7
Poor	12.5	28.6	14.1	4.8	8.3	28.1	3.6
Non-poor	17.4	14.5	15.9	0.0	17.8	31.1	3.3
Quintile							
Poorest	13.6	28.0	12.0	6.9	8.7	27.3	3.5
II	15.2	16.7	14.5	4.6	3.0	42.4	3.6
III	14.2	7.6	35.4	2.4	4.6	27.4	8.4
IV	29.9	1.3	15.0	5.3	15.9	32.3	0.4
Richest	51.8	12.6	4.5	0.0	1.3	29.8	0.0
Zone							
Managua - Urban	21.1	0.0	41.3	0.0	0.0	30.0	7.6
Managua - Rural	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Managua	21.1	0.0	41.3	0.0	0.0	30.0	7.7
Pacific - Urban	39.9	0.0	9.6	3.8	0.0	40.5	6.1
Pacific - Rural	27.0	10.9	5.7	6.5	6.7	36.9	6.2
Pacific - Total	31.9	6.8	7.2	5.5	4.2	38.3	6.2
Central - Urban	35.5	0.0	8.9	10.3	4.6	39.7	1.0
Central - Rural	16.0	25.2	8.5	4.0	8.5	32.2	5.6
Central - Total	21.5	18.0	8.7	5.8	7.4	34.3	4.3
Atlantic- Urban	13.9	4.2	21.6	21.8	5.6	31.8	1.1
Atlantic - Rural	4.9	33.1	23.9	2.2	13.7	21.7	0.5
Atlantic - Total	6.3	28.4	23.6	5.3	12.4	23.4	0.6

Source: 2005 LSMS data

**Table A2 – F10 Nicaragua 2005 - Reason for Not Seeking care for those reporting Diarrhea last month
(Children under 5 years of age)**

	Not serious	Too far	Bad care	No Medicine	Economic Problem	Know of Sickness	Other
All	17.5	17.5	17.6	4.9	6.3	32.6	3.6
Extreme Poor	12.5	33.3	14.3	5.3	11.3	21.7	1.6
Moderately Poor	10.6	14.2	12.1	5.5	3.7	46.4	7.5
Poor	11.5	23.3	13.1	5.4	7.3	34.7	4.7
Non-poor	28.4	6.7	26.0	4.0	4.4	28.8	1.7
Urban	25.9	0.0	23.2	7.5	2.3	37.0	4.0
Extreme Poor	6.8	0.0	11.6	15.0	11.6	55.0	0.0
Moderately Poor	15.4	0.0	10.2	7.4	1.0	52.8	13.2
Poor	13.3	0.0	10.5	9.3	3.5	53.3	10.0
Non-poor	33.8	0.0	31.2	6.4	1.5	26.8	0.3
Rural	12.7	27.3	14.5	3.5	8.5	30.1	3.4
Extreme Poor	13.1	37.4	14.6	4.1	11.3	17.7	1.8
Moderately Poor	8.5	20.6	12.9	4.7	4.9	43.5	4.9
Poor	11.0	29.7	13.8	4.4	8.3	29.6	3.2
Non-poor	19.2	18.1	17.1	0.0	9.2	32.3	4.1
Quintile							
Poorest	13.2	29.9	12.2	6.3	9.3	27.6	1.5
II	11.8	15.9	14.1	5.3	1.7	47.6	3.6
III	13.7	7.6	34.6	2.7	5.2	26.1	10.2
IV	27.4	1.7	17.3	6.9	8.6	37.5	0.5
Richest	49.9	13.3	4.7	0.0	1.4	30.7	0.0
Zone							
Managua - Urban	22.6	0.0	37.0	0.0	0.0	32.2	8.2
Managua - Rural	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Managua	22.6	0.0	37.0	0.0	0.0	32.2	8.2
Pacific - Urban	32.8	0.0	12.4	5.0	0.0	49.8	0.0
Pacific - Rural	30.0	9.7	6.9	3.7	3.4	38.9	7.5
Pacific - Total	31.0	6.2	8.9	4.1	2.1	42.9	4.7
Central - Urban	33.4	0.0	8.3	13.4	6.4	37.1	1.4
Central - Rural	12.0	27.9	9.1	4.5	8.1	33.9	4.4
Central - Total	17.2	21.1	8.9	6.7	7.7	34.7	3.7
Atlantic- Urban	14.9	0.0	19.1	25.3	6.5	33.0	1.2
Atlantic - Rural	4.9	35.2	22.8	2.5	11.3	22.7	0.6
Atlantic - Total	6.5	29.6	22.2	6.2	10.5	24.4	0.7

Source: 2005 LSMS data

**Table A2 – F11 Nicaragua 2005 - Place of Consultation by Poverty group, Quintiles and Geographic Area
(excludes children under 6 years of age reporting diarrhea)**

	Ill (%)	Place of consultation for those consulting for illness					
		Health post/Health Center	Hospital - Public	INSS	Private ¹	Other ²	Patient's House
All	45.7	51.1	13.1	10.8	19.5	3.9	1.6
Extreme Poor	43.9	81.7	8.0	0.6	3.6	6.0	0.2
Moderately Poor	45.3	70.7	11.8	5.4	7.0	4.2	0.9
Poor	44.8	73.6	10.8	4.1	6.1	4.7	0.7
Non-poor	46.4	38.0	14.5	14.6	27.3	3.5	2.2
Urban	44.0	40.8	14.8	16.0	23.1	3.3	2.0
Extreme Poor	37.3	75.8	15.6	0.9	2.7	4.8	0.2
Moderately Poor	40.9	64.4	15.2	10.2	7.4	2.5	0.3
Poor	40.2	66.3	15.3	8.6	6.6	2.9	0.2
Non-poor	45.5	33.5	14.7	18.0	27.9	3.4	2.5
Rural	47.8	66.3	10.6	3.0	14.1	4.9	1.1
Extreme Poor	45.6	83.4	5.7	0.5	3.8	6.3	0.2
Moderately Poor	48.3	75.2	9.4	2.0	6.7	5.4	1.4
Poor	47.3	77.9	8.2	1.5	5.7	5.7	1.0
Non-poor	49.0	50.2	13.9	5.2	25.7	3.7	1.3
Quintile							
Poorest	44.7	80.8	8.6	0.9	4.2	4.8	0.8
II	44.7	70.6	11.4	6.4	6.4	4.4	0.8
III	46.8	58.0	14.5	8.2	14.6	4.0	0.6
IV	47.3	39.8	15.7	16.1	23.0	3.9	1.6
Richest	45.0	25.6	13.3	16.4	38.0	3.1	3.6
Zone							
Managua - Urban	44.6	30.0	13.4	24.9	26.0	3.3	2.3
Managua - Rural	43.0	54.0	7.7	11.8	21.6	3.2	1.7
Managua	44.5	32.3	12.9	23.7	25.6	3.3	2.2
Pacific - Urban	40.8	43.6	13.8	13.4	22.4	4.6	2.3
Pacific - Rural	46.2	62.1	13.2	4.8	14.9	4.4	0.6
Pacific - Total	43.1	51.2	13.6	9.9	19.3	4.5	1.6
Central - Urban	46.3	54.1	16.1	6.4	20.0	2.2	1.2
Central - Rural	48.6	69.1	9.4	1.7	14.2	4.3	1.3
Central - Total	47.7	62.6	12.3	3.7	16.7	3.4	1.3
Atlantic- Urban	47.4	47.7	22.0	7.1	20.0	1.7	1.4
Atlantic - Rural	49.5	70.1	10.0	0.7	10.1	7.6	1.4
Atlantic - Total	48.8	61.9	14.4	3.1	13.8	5.4	1.4

Source: 2005 LSMS data

¹ includes private clinic, private hospital and work place

² includes pharmacy, community health worker, medicine man's house and other

**Table A2 – F12 Nicaragua 2005: Place of Consultation by Poverty group, Quintiles and Geographic Area
(includes all ill excluding children under 6 years of age reporting diarrhea)**

	Place of consultation for those consulting for illness											
	Health Post	Health Center	Hospital public	Hospital private	INSS	Work Place	Pharmacy	Private clinic	Health Community worker	Medicine Man's House	Patient's House	Other
All	8.7	42.4	13.1	1.1	10.8	0.4	1.3	18.0	0.5	0.3	1.6	1.7
Extreme Poor	21.6	60.0	8.0	0.2	0.6	0.1	0.6	3.2	1.9	0.7	0.2	2.8
Moderately Poor	14.3	56.4	11.8	0.0	5.4	0.1	1.1	6.9	0.8	0.6	0.9	1.7
Poor	16.3	57.4	10.8	0.1	4.1	0.1	1.0	5.9	1.1	0.6	0.7	2.0
Non-poor	4.2	33.7	14.5	1.7	14.6	0.6	1.5	24.9	0.2	0.2	2.2	1.6

Source: 2005 LSMS data

**Table A2 – F13 Nicaragua 2005: Place of Consultation by Poverty group, Quintiles and Geographic Area
(includes all ill and children under 6 years of age reporting diarrhea)**

	Place of consultation for those consulting for illness											
	Health Post	Health Center	Hospital public	Hospital private	INSS	Work Place	Pharmacy	Private clinic	Health Community worker	Medicine Man's House	Patient's House	Other
All	8.8	42.4	13.0	1.1	10.7	0.4	1.3	18.1	0.5	0.3	1.6	1.7
Extreme Poor	21.8	60.0	7.9	0.2	0.6	0.1	0.6	3.2	1.8	0.7	0.2	2.8
Moderately Poor	14.5	56.2	11.7	0.0	5.3	0.1	1.1	7.1	0.8	0.6	0.9	1.7
Poor	16.5	57.2	10.7	0.1	4.1	0.1	1.0	6.0	1.1	0.6	0.7	2.0
Non-poor	4.3	33.7	14.4	1.7	14.5	0.6	1.6	25.1	0.2	0.2	2.1	1.6

Source: 2005 LSMS data

Table A2 – F14 Nicaragua 2005: Place of Consultation by Poverty group, Quintiles and Geographic Area (includes all ill and children under 6 years of age reporting diarrhea)

Place of consultation for those consulting for illness						
	Health Post/Health Center	Hospital - Public	INSS	Private ¹	Other ²	Patient's House
All	51.2	13.0	10.7	19.6	3.9	1.6
Extreme Poor	81.8	7.9	0.6	3.5	6.0	0.2
Moderately Poor	70.8	11.7	5.4	7.1	4.1	0.9
Poor	73.7	10.7	4.1	6.2	4.6	0.7
Non-poor	38.0	14.4	14.5	27.4	3.5	2.2
Urban	40.9	14.7	15.8	23.3	3.3	1.9
Extreme Poor	76.0	15.5	0.9	2.7	4.8	0.1
Moderately Poor	64.7	15.1	10.1	7.4	2.5	0.2
Poor	66.6	15.2	8.5	6.6	2.9	0.2
Non-poor	33.5	14.6	17.9	28.1	3.4	2.4
Rural	66.4	10.5	3.0	14.1	4.9	1.1
Extreme Poor	83.4	5.7	0.5	3.8	6.3	0.2
Moderately Poor	75.1	9.3	2.0	7.0	5.3	1.3
Poor	77.8	8.1	1.5	5.9	5.6	1.0
Non-poor	50.4	13.8	5.1	25.5	3.9	1.3
Quintile						
Poorest	80.6	8.5	0.8	4.6	4.8	0.7
II	70.7	11.4	6.3	6.4	4.4	0.8
III	58.3	14.4	8.1	14.5	4.1	0.6
IV	39.8	15.6	16.0	23.1	3.9	1.6
Richest	25.6	13.2	16.3	38.2	3.1	3.6
Zone						
Managua - Urban	30.2	13.3	24.7	26.2	3.3	2.3
Managua - Rural	54.0	7.7	11.8	21.6	3.2	1.7
Managua	32.4	12.8	23.9	25.8	3.3	2.2
Pacific - Urban	43.6	13.7	13.3	22.6	4.5	2.3
Pacific - Rural	62.0	13.2	4.7	15.2	4.3	0.5
Pacific - Total	51.2	13.5	9.7	19.5	4.4	1.6
Central - Urban	54.3	16.0	6.3	20.0	2.2	1.2
Central - Rural	69.1	9.4	1.7	14.1	4.4	1.3
Central - Total	62.6	12.3	3.7	16.7	3.4	1.3
Atlantic- Urban	47.6	21.9	7.0	20.4	1.7	1.3
Atlantic - Rural	70.8	9.8	0.7	9.9	7.4	1.4
Atlantic - Total	62.4	14.2	3.0	13.7	5.3	1.4

Source: 2005 LSMS data

¹ includes private clinic, private hospital and work place

² includes pharmacy, community health worker, medicine man's house and other

Table A2 – F15 Nicaragua 2005: Of those consulting for Illness, time spent waiting for medical attention by facility

Time spent waiting for medical attention last time (hours)								
	All	Health Post	Health Center	Hospital Public	Hospital Private	INSS	Pharmacy	Private Clinic
All	1.0	1.0	1.2	1.0	0.4	0.9	0.2	0.6
Extreme Poor	1.0	0.7	1.2	0.8	*	*	*	1.2
Moderately Poor	1.1	0.9	1.3	1.1	*	0.8	0.1	0.6
Poor	1.1	0.9	1.2	1.1	*	0.8	0.1	0.7
Non-poor	0.9	1.1	1.2	1.0	0.4	0.9	0.3	0.5
Urban	0.9	1.3	1.2	1.0	0.4	0.8	0.3	0.5
Extreme Poor	0.8	1.2	0.8	0.8	*	*	*	*
Moderately Poor	1.1	1.5	1.3	0.9	*	0.7	0.2	0.5
Poor	1.1	1.4	1.2	0.9	*	0.7	0.1	0.5
Non-poor	0.9	1.3	1.2	1.0	0.4	0.8	0.3	0.5
Rural	1.1	0.9	1.2	1.1	0.6	1.5	0.1	0.7
Extreme Poor	1.1	0.7	1.3	0.8	*	*	*	1.3
Moderately Poor	1.1	0.8	1.2	1.4	*	0.9	0.1	0.7
Poor	1.1	0.8	1.3	1.3	*	1.0	0.1	0.8
Non-poor	1.0	1.1	1.1	1.0	0.6	1.8	0.1	0.7
Quintile								
Poorest	1.1	0.8	1.2	0.7	*	*	*	1.1
II	1.1	1.0	1.2	1.2	*	0.8	0.2	0.6
III	1.0	0.9	1.1	1.1	*	1.2	0.2	0.4
IV	0.9	1.4	1.2	0.9	0.6	0.8	0.3	0.6
Richest	0.9	1.0	1.3	1.1	0.3	0.8	0.3	0.5
Zone								
Managua - Urban	1.0	1.8	1.5	1.0	0.3	0.8	*	0.5
Managua - Rural	1.8	*	2.1	*	*	*	*	0.7
Managua	1.0	2.4	1.6	1.0	0.3	0.8	0.5	0.5
Pacific - Urban	0.9	1.1	1.1	1.0	*	0.6	0.2	0.5
Pacific - Rural	1.0	1.2	1.1	1.2	*	0.8	0.1	0.7
Pacific - Total	0.9	1.2	1.1	1.1	0.7	0.7	0.1	0.6
Central - Urban	0.9	1.6	1.1	1.1	*	0.9	0.1	0.5
Central - Rural	1.1	0.8	1.2	1.0	*	3.5	0.1	0.9
Central - Total	1.0	0.9	1.2	1.0	*	1.5	0.1	0.7
Atlantic- Urban	0.8	0.6	1.0	0.8	*	0.8	*	0.4
Atlantic - Rural	0.8	0.6	1.1	1.1	*	*	0.1	0.5
Atlantic - Total	0.8	0.6	1.0	1.0	1.0	0.8	0.1	0.4

Source: 2005 LSMS data

*n < 10

Table A2 – F16 Nicaragua 2005: Of those consulting for illness, cost of round trip transportation for last consultation by facility

	Cost of round trip transportation for last consultation							
	All	Health Post	Health Center	Hospital Public	Hospital Private	INSS	Pharmacy	Private Clinic
All	15.8	2.8	5.1	38.1	37.8	19.6	4.6	28.5
Extreme Poor	5.3	0.4	2.7	16.8	*	*	*	37.8
Moderately Poor	10.8	4.0	5.8	33.1	*	21.4	5.5	19.6
Poor	9.3	2.7	4.9	29.8	*	22.9	5.7	22.3
Non-poor	19.6	2.9	5.2	41.7	36.2	19.0	4.2	29.3
Urban	13.6	3.5	2.6	26.2	32.0	18.4	2.0	10.5
Extreme Poor	2.4	0.5	0.9	4.5	*	*	*	*
Moderately Poor	7.3	2.9	3.5	15.7	*	19.1	0.9	8.8
Poor	6.5	2.4	3.0	13.8	*	19.1	1.1	10.4
Non-poor	15.7	4.4	2.3	29.9	32.2	18.3	2.3	22.7
Rural	19.2	2.6	7.9	62.9	67.4	28.9	10.5	43.8
Extreme Poor	6.1	0.4	3.4	26.4	*	*	*	39.3
Moderately Poor	13.4	4.2	7.6	53.3	*	29.3	10.7	27.9
Poor	11.0	2.8	6.2	47.0	*	35.2	10.4	30.2
Non-poor	30.3	2.1	11.3	75.7	57.9	26.3	10.6	48.1
Quintile								
Poorest	8.2	1.2	5.7	27.9	*	*	*	30.0
II	9.9	4.8	4.2	33.0	*	19.2	6.7	20.9
III	14.9	1.8	5.1	45.2	*	17.4	2.0	25.6
IV	17.1	1.5	5.3	42.7	42.9	17.9	8.2	20.3
Richest	23.9	8.5	5.2	33.4	43.5	21.5	0.9	34.9
Zone								
Managua - Urban	12.1	5.7	3.6	25.1	21.0	16.0	*	10.8
Managua - Rural	14.1	*	5.3	*	*	*	*	27.5
Managua	12.3	4.1	3.9	25.4	22.7	16.3	0.6	12.2
Pacific - Urban	9.9	7.5	1.3	23.4	*	14.0	1.5	16.3
Pacific - Rural	12.1	3.6	3.4	35.7	*	28.6	10.9	21.8
Pacific - Total	10.8	4.6	2.3	28.3	22.8	17.0	4.2	18.0
Central - Urban	10.9	0.7	2.9	26.3	*	15.7	8.1	18.2
Central - Rural	19.3	2.6	8.6	54.5	*	33.6	7.8	53.4
Central - Total	15.6	2.4	6.2	38.5	*	20.2	8.0	35.0
Atlantic- Urban	43.9	0.9	2.6	36.5	*	101.9	*	127.1
Atlantic - Rural	32.1	2.6	18.9	145.2	*	*	19.7	73.8
Atlantic - Total	36.6	2.4	12.4	84.3	161.4	92.5	18.4	102.4

Source: 2005 LSMS data

* n < 10

Table A2 – F17 Nicaragua 2005: Of those consulting for Illness, cost of last consultation by facility

	Cost of last consultation by appointment last month							
	All	Health Post	Health Center	Hospital Public	Hospital Private	INSS	Pharmacy	Private Clinic
All	22.0	1.5	0.8	1.1	172.7	0.0	5	102.1
Extreme Poor	2.0	0.7	0.3	0.1	*	0.0	*	38.7
Moderately Poor	5.2	1.4	0.5	0.1	*	0.0	2.4	64.4
Poor	4.3	1.2	0.4	0.1	*	0.0	2.0	60.6
Non-poor	32.2	2.3	1.1	1.5	173.1	0.0	6.8	107.8
Urban	28.0	1.7	1.0	1.2	185.7	0.0	6.5	110.8
Extreme Poor	1.1	0.0	0.1	0.0	*	*	*	*
Moderately Poor	5.4	1.3	0.4	0.2	*	0.0	0.0	67.8
Poor	47.0	1.0	0.4	0.2	*	0.0	0.0	65.5
Non-poor	35.0	2.2	1.3	1.5	186.8	0.0	8.1	114.2
Rural	12.8	1.4	0.6	0.9	107.3	0.0	3.2	81.8
Extreme Poor	23.0	0.8	0.3	0.2	*	*	*	39.6
Moderately Poor	5.0	1.4	0.5	0.0	*	0.0	5.1	61.7
Poor	4.1	1.2	0.4	0.0	*	0.0	4.1	57.3
Non-poor	24.6	2.3	0.8	1.5	97.8	0.0	2.6	89.6
Quintile								
Poorest	2.5	0.9	0.2	0.1	*	*	*	44.2
II	5.2	1.6	0.5	0.2	*	0.0	2.9	70.3
III	11.5	1.2	0.7	0.2	*	0.0	0.0	74.0
IV	23.5	1.9	1.1	1.4	259.4	0.0	4.4	90.4
Richest	52.0	4.7	1.8	2.4	180.4	0.0	11.1	125.1
Zone								
Managua - Urban	27.2	1.3	1.9	0.3	139.6	0.0	*	96.3
Managua - Rural	16.4	*	2.6	*	*	*	*	71.7
Managua	26.2	2.2	2.0	0.3	131.2	0.0	2.8	94.2
Pacific - Urban	27.3	8.5	0.6	0.2	*	0.0	0.0	113.3
Pacific - Rural	15.5	4.3	0.8	1.6	*	0.0	0.0	94.6
Pacific - Total	22.4	5.4	0.7	0.8	179.5	0.0	0.0	107.3
Central - Urban	31.1	0.0	0.6	2.1	*	0.0	36.5	143.3
Central - Rural	12.3	0.8	0.2	0.3	*	0.0	1.2	78.7
Central - Total	20.6	0.7	0.4	1.3	*	0.0	19.5	112.6
Atlantic- Urban	25.4	0.3	0.5	4.3	*	0.0	*	88.7
Atlantic - Rural	8.6	1.2	0.2	0.8	*	*	14.9	69.2
Atlantic - Total	15.0	1.1	0.3	2.8	447.3	0.0	15.9	79.7

Source: 2005 LSMS data

* n < 10

Table A2 – F18 Nicaragua 2005: Of those consulting for illness, other health expenditures for last consultation by facility

	Other Costs of last consultation							
	All	Health Post	Health Center	Hospital Public	Hospital Private	INSS	Pharmacy	Private Clinic
All	209.6	36.7	73.2	331.1	3049.9	66.2	150.1	440.6
Extreme Poor	28.7	13.6	16.7	86.8	*	*	*	71.5
Moderately Poor	70.1	37.2	40.4	183.9	*	32.0	114.9	207.8
Poor	59.0	28.7	33.6	164.4	*	32.1	105.8	187.6
Non-poor	297.0	54.6	112.3	402.9	3079.0	71.8	166.2	475.4
Urban	241.7	58.3	81.2	282.6	3293.5	67.4	171.5	440.8
Extreme Poor	23.4	24.3	14.8	32.7	*	*	*	155.7
Moderately Poor	60.4	59.4	38.7	120.4	*	25.5	133.3	144.7
Poor	54.3	51.2	34.2	105.4	*	25.0	128.9	145.5
Non-poor	297.5	64.3	107.2	335.9	3319.8	73.2	181.8	462.7
Rural	161.3	31.2	64.1	432.2	1824.9	56.9	100.2	440.2
Extreme Poor	30.3	12.6	17.3	129.6	*	*	*	52.0
Moderately Poor	77.3	32.9	41.7	257.9	*	55.3	94.3	256.7
Poor	61.8	25.1	33.3	228.0	*	55.0	81.8	215.6
Non-poor	295.8	49.2	123.4	598.0	1755.9	57.6	114.4	511.4
Quintile								
Poorest	35.4	17.1	21.3	103.5	*	*	*	113.7
II	62.7	36.7	37.2	166.0	*	24.2	125.2	186.3
III	128.3	55.1	71.0	281.5	*	22.3	75.8	290.9
IV	187.6	53.2	100.4	330.7	842.7	42.2	257.9	333.3
Richest	499.8	65.3	172.6	556.9	5003.2	117.9	105.6	600.9
Zone								
Managua - Urban	315.8	64.5	95.2	286.4	4028.9	57.8	*	466.9
Managua - Rural	155.8	*	44.3	*	*	*	*	546.9
Managua	300.5	45.7	88.0	279.1	3804.9	57.1	215.8	473.7
Pacific - Urban	186.0	104.3	70.6	310.1	*	60.7	112.9	403.4
Pacific - Rural	140.6	52.6	60.8	311.9	*	45.7	106.3	368.5
Pacific - Total	167.2	66.2	65.9	310.8	627.0	57.7	111.0	392.2
Central - Urban	185.0	50.4	77.3	241.3	*	144.9	170.2	412.9
Central - Rural	176.9	24.2	64.5	601.9	*	83.5	80.0	402.8
Central - Total	180.5	27.2	70.0	396.7	*	129.3	126.8	408.1
Atlantic- Urban	235.4	35.3	88.6	297.9	*	82.4	*	523.4
Atlantic - Rural	158.9	36.5	80.6	374.0	*	*	148.9	660.8
Atlantic - Total	187.9	36.3	83.8	331.4	1616.3	84.9	142.4	587.1

Source: 2005 LSMS data

* n < 10

Table A2 – F19 Nicaragua 2005: Of those consulting for illness, total cost of last consultation by facility

	Total cost of last consultation							
	All	Health Post	Health Center	Hospital Public	Hospital Private	INSS	Pharmacy	Private Clinic
All	247.3	41.0	79.1	370.2	3260.4	85.8	160.2	571.1
Extreme Poor	36.0	14.7	19.7	103.7	*	*	*	147.9
Moderately Poor	86.0	42.6	46.6	217.1	*	53.4	122.9	291.8
Poor	72.6	32.5	39.0	194.3	*	55.0	113.5	270.5
Non-poor	348.8	59.7	118.6	446.1	3288.3	90.8	177.2	612.5
Urban	283.3	63.4	84.8	310.0	3511.1	85.8	180.1	573.5
Extreme Poor	26.9	24.7	15.8	37.3	*	*	*	*
Moderately Poor	73.1	63.6	42.6	136.4	*	44.6	134.2	221.4
Poor	65.5	54.6	37.5	119.4	*	44.1	130.0	221.4
Non-poor	348.2	70.9	110.8	367.3	3538.9	91.5	192.2	599.6
Rural	193.3	35.2	72.6	495.9	1999.6	85.7	113.9	565.8
Extreme Poor	38.7	13.7	21.0	156.2	*	*	*	130.9
Moderately Poor	95.7	38.5	49.8	311.2	*	84.7	110.1	346.2
Poor	76.9	29.1	39.9	275.1	*	90.2	96.3	303.1
Non-poor	350.7	53.6	135.6	675.2	1911.7	83.9	127.5	649.1
Quintile								
Poorest	46.0	19.2	27.3	131.5	*	*	*	188.0
II	74.1	43.1	41.9	199.2	*	43.4	134.8	277.4
III	154.7	58.1	76.8	326.8	*	39.7	77.8	390.6
IV	228.2	56.6	106.8	374.8	1145.0	60.0	270.5	443.9
Richest	575.7	78.5	179.5	592.7	5227.1	139.4	117.6	760.9
Zone								
Managua - Urban	355.2	71.5	100.7	311.8	4189.5	73.8	*	574.0
Managua - Rural	186.3	*	52.3	*	*	*	*	646.1
Managua	339.0	51.9	93.9	304.8	3958.9	73.5	219.2	580.1
Pacific - Urban	223.2	120.3	72.5	333.7	*	74.8	114.4	533.0
Pacific - Rural	168.2	60.5	65.0	349.1	*	74.4	117.2	484.9
Pacific - Total	200.5	76.2	68.9	339.9	829.2	74.7	115.2	517.5
Central - Urban	227.0	51.1	80.7	269.7	*	160.6	214.7	574.5
Central - Rural	208.5	27.6	73.4	656.7	*	117.0	89.0	534.9
Central - Total	216.7	30.3	76.5	436.5	*	149.5	154.3	555.7
Atlantic- Urban	304.7	36.6	91.7	338.7	*	184.3	*	739.3
Atlantic - Rural	199.6	40.4	99.7	520.1	*	*	183.5	803.8
Atlantic - Total	239.4	39.8	96.5	418.4	2225.1	177.4	176.7	769.2

Source: 2005 LSMS data

* n < 10

Table A2 – F20 Nicaragua 2005: Reason for not seeking care of those ill last month

	Not Serious	Too Far	Bad Care	No Medicine	Economic Problem	Know Disease	Other
All	28.8	7.9	7.4	8.6	7.4	37.2	2.7
Extreme Poor	22.7	17.2	7.1	10.6	9.2	31.4	1.9
Moderately Poor	25.7	10.2	7.9	12.3	8.6	32.7	2.5
Poor	24.7	12.5	7.6	11.8	8.8	32.3	2.3
Non-poor	33.3	2.8	7.1	5.2	6.1	42.5	3.0
Urban	34.5	0.6	6.1	7.0	6.0	43.0	2.8
Extreme Poor	28.4	1.0	5.6	16.6	7.5	38.7	2.3
Moderately Poor	32.2	1.0	6.3	12.8	6.7	39.3	1.7
Poor	31.5	1.0	6.2	13.5	6.8	39.2	1.8
Non-poor	35.7	0.4	6.1	4.3	5.7	44.7	3.1
Rural	23.5	14.7	8.6	10.1	8.8	31.7	2.6
Extreme Poor	21.7	19.9	7.3	9.6	9.4	30.2	1.8
Moderately Poor	22.3	15.0	8.8	12.1	9.5	29.3	3.0
Poor	22.1	17.0	8.2	11.1	9.5	29.7	2.5
Non-poor	27.4	8.9	9.6	7.3	6.9	37.2	2.8
Quintile							
Poorest	21.8	15.7	7.5	13.4	10.1	29.6	1.9
II	26.8	10.9	7.8	10.2	6.5	35.5	2.3
III	29.3	5.9	8.3	8.6	8.7	36.5	2.7
IV	35.8	2.2	7.0	4.7	6.2	41.9	2.3
Richest	33.5	1.0	5.9	3.5	4.6	46.8	4.7
Zone							
Managua - Urban	36.2	0.5	4.4	3.3	8.1	44.3	3.2
Managua - Rural	43.8	4.9	2.0	5.1	14.1	28.1	2.0
Managua	36.9	0.8	4.2	3.5	8.7	42.8	3.1
Pacific - Urban	38.6	0.6	6.4	4.2	4.6	43.4	2.2
Pacific - Rural	25.7	4.5	9.6	12.2	11.6	33.5	2.9
Pacific - Total	32.1	2.6	8.0	8.2	8.1	38.5	2.5
Central - Urban	28.2	0.6	7.4	11.0	5.0	44.6	3.2
Central - Rural	22.7	15.5	8.0	8.7	7.0	35.5	2.6
Central - Total	24.5	10.7	7.8	9.4	6.4	38.4	2.8
Atlantic- Urban	30.8	0.7	9.2	20.6	4.1	33.2	1.4
Atlantic - Rural	19.7	25.8	9.6	11.2	8.3	23.2	2.3
Atlantic - Total	22.7	18.9	9.5	13.8	7.1	25.9	2.0

Source: 2005 LSMS data

**Table A2 – F21 Nicaragua 2005: Maternal Health by poverty and region
(Women 15-49 years old)**

	Received Pre-natal care (%)	Where Gave Birth									Birth attended by:			
		Health center	Hospital Public	Hospital Private	INSS	Private Clinic	NGO clinic	Midwife's House	Patient's House	Other	Doctor	Nurse	Midwife	Other
All	92.5	7.2	60.6	3.2	7.5	1.4	0.2	1.3	18.2	0.4	78.1	3.2	16.2	2.5
Extreme Poor	83.8	8.9	44.6	0.9	0.0	0.4	0.0	3.3	41.3	0.6	52.2	3.9	38.5	5.4
Moderately Poor	90.9	8.9	61.1	1.0	4.1	0.1	0.4	1.2	22.7	0.5	73.6	4.1	18.8	3.5
Poor	88.6	8.9	55.7	0.9	2.7	0.2	0.3	1.9	28.8	0.5	66.6	4.0	25.3	4.1
Non-poor	96.6	5.5	65.9	5.5	12.7	2.7	0.0	0.7	6.8	0.2	90.3	2.4	6.5	0.8
Urban	96.1	6.0	70.8	4.8	12.0	2.0	0.0	0.6	3.6	0.2	93.6	2.4	3.8	0.2
Extreme Poor	86.1	11.3	63.2	3.0	0.0	1.9	0.0	5.1	15.4	0.0	75.0	4.4	20.2	0.4
Moderately Poor	94.6	9.9	75.7	0.3	8.4	0.0	0.0	0.3	5.1	0.3	92.0	3.0	4.9	0.1
Poor	93.0	10.1	73.4	0.8	6.9	0.4	0.0	1.2	7.0	0.3	88.9	3.3	7.7	0.1
Non-poor	97.7	3.9	69.5	6.8	14.7	2.9	0.0	0.2	1.8	0.2	96.0	1.9	1.8	0.3
Rural	88.0	8.7	48.1	1.2	2.0	0.7	0.3	2.2	36.1	0.5	59.0	4.2	31.4	5.4
Extreme Poor	83.3	8.3	39.9	0.3	0.0	0.0	0.0	2.8	48.0	0.7	60.0	32.5	3.1	4.4
Moderately Poor	87.9	8.1	49.5	1.5	0.6	0.2	0.8	2.0	36.7	0.6	58.9	5.0	29.8	6.3
Poor	86.0	8.2	45.5	1.0	0.3	0.1	0.5	2.3	41.4	0.6	53.7	4.5	35.3	6.5
Non-poor	93.3	10.2	55.0	1.9	6.6	2.0	0.0	2.0	22.0	0.3	73.0	3.7	20.8	2.5
Quintile														
Poorest	84.9	9.4	47.4	0.8	0.3	0.3	0.0	2.6	38.7	0.4	55.6	3.8	35.2	5.4
II	91.3	6.2	63.8	0.9	4.5	0.2	0.5	1.5	21.9	0.4	74.3	3.9	18.3	3.5
III	93.3	11.0	63.8	1.9	6.8	1.0	0.2	0.8	14.0	0.4	82.8	3.3	12.3	1.6
IV	96.9	4.9	65.5	6.2	15.0	1.1	0.0	0.8	6.2	0.4	90.5	2.7	6.1	0.7
Richest	98.7	3.7	65.7	7.7	14.2	5.6	0.0	0.2	2.8	0.0	95.1	1.9	2.8	0.2
Zone														
Managua - Urban	96.3	2.7	65.9	7.8	19.0	3.1	0.0	0.5	1.0	0.0	97.5	1.0	1.5	0.0
Managua - Rural	94.9	23.6	44.8	0.0	22.1	0.0	0.0	0.0	9.5	0.0	90.5	0.0	9.5	0.0
Managua - Total	96.2	4.4	64.1	7.2	19.3	2.8	0.0	0.5	1.7	0.0	96.9	0.9	2.2	0.0
Pacific - Urban	96.5	3.8	78.1	2.3	11.0	1.1	0.0	0.2	3.1	0.3	94.9	1.9	3.1	0.1
Pacific - Rural	94.5	6.6	63.9	1.9	3.5	1.7	0.3	1.1	21.0	0.0	76.1	4.8	17.8	1.3
Pacific - Total	95.7	5.0	72.1	2.1	7.9	1.4	0.1	0.6	10.6	0.2	87.0	3.1	9.3	0.6
Central - Urban	97.2	11.2	75.7	2.2	4.0	1.3	0.0	0.3	4.9	0.4	91.4	3.7	4.5	0.4
Central - Rural	88.2	9.6	51.3	1.0	0.1	0.4	0.3	1.9	35.1	0.3	60.3	4.4	30.0	5.3
Central - Total	91.6	10.2	60.4	1.4	1.5	0.7	0.2	1.3	23.8	0.3	71.9	4.2	20.4	3.5
Atlantic - Urban	91.1	16.5	57.0	4.9	2.3	2.1	0.0	2.6	14.3	0.3	76.2	7.2	15.5	1.1
Atlantic - Rural	79.5	6.7	26.5	1.3	0.3	0.2	0.5	4.3	58.6	1.6	33.0	4.1	52.1	10.8
Atlantic - Total	82.9	9.6	35.5	2.3	0.9	0.8	0.3	3.8	45.6	1.2	45.7	5.1	41.3	7.9

Source: 2005 LSMS data

**Table A2 – F22 Nicaragua 2005: Prenatal care by poverty and region
(Women 15-49 years old)**

	Received Pre-natal care (%)	Average number of pre-natal controls for those who received any care	Non- institutional Birth (%)	Birth attended by Doctor
All	92.5	6.0	19.8	78.1
Extreme Poor	83.8	5.3	45.2	52.2
Moderately Poor	90.9	5.7	24.4	73.6
Poor	88.6	5.6	31.3	66.6
Non-poor	96.6	6.5	7.7	90.3
Urban	96.1	6.5	4.4	93.6
Extreme Poor	86.1	5.8	20.5	75.0
Moderately Poor	94.6	6.0	5.7	92.0
Poor	93.0	6.0	8.5	88.9
Non-poor	97.7	6.7	2.3	96.0
Rural	88.0	5.5	38.9	59.0
Extreme Poor	83.3	5.2	51.5	60.0
Moderately Poor	87.9	5.5	39.3	58.9
Poor	86.0	5.4	44.4	53.7
Non-poor	93.3	5.8	24.2	73.0
Quintile				
Poorest	84.9	5.4	41.8	55.6
II	91.3	5.7	23.9	74.3
III	93.3	6.1	15.3	82.8
IV	96.9	6.4	7.4	90.5
Richest	98.7	6.8	3.0	95.1
Zone				
Managua - Urban	96.3	6.6	1.5	97.5
Managua - Rural	94.9	6.6	9.5	90.5
Managua - Total	96.2	6.6	2.2	96.9
Pacific - Urban	96.5	6.4	3.7	94.9
Pacific - Rural	94.5	5.9	22.1	76.1
Pacific - Total	95.7	6.2	11.4	87.0
Central - Urban	97.2	6.3	5.6	91.4
Central - Rural	88.2	5.4	37.4	60.3
Central - Total	91.6	5.8	25.5	71.9
Atlantic- Urban	91.1	6.4	17.2	76.2
Atlantic - Rural	79.5	4.9	64.5	33.0
Atlantic - Total	82.9	5.4	50.6	45.7

Source: 2005 LSMS data

Table A 2 – F23 Nicaragua 1998-2005: First Pre-natal visit in the First Trimester by poverty and region (Women 15-49 years old)

	First Pre-natal Visit in the 1st trimester (%)		
	1998	2001	2005
All	59.6	64.8	80.3
Extreme Poor	43.1	48.7	75.1
Moderately Poor	63.6	68.3	77.3
Poor	50.4	58.0	76.6
Non-poor	70.6	72.5	84.0
Urban	67.2	71.5	84.2
Extreme Poor	53.3	50.6	79.3
Moderately Poor	68.7	73.1	79.0
Poor	59.9	63.2	79.0
Non-poor	71.7	76.2	86.8
Rural	51.9	56.8	75.1
Extreme Poor	39.7	48.2	73.9
Moderately Poor	57.0	60.5	75.8
Poor	45.3	54.8	75.1
Non-poor	68.2	62.0	75.2
Quintile			
Poorest	45.5	51.4	75.3
II	51.8	64.9	78.3
III	58.7	67.5	80.1
IV	69.9	68.4	82.7
Richest	82.2	77.9	86.7
Zone			
Managua - Urban			85.9
Managua - Rural			80.0
Managua - Total	66.7	69.7	85.4
Pacific - Urban	72.1	75.6	84.1
Pacific - Rural	60.6	66.1	83.5
Pacific - Total	66.5	71.0	83.8
Central - Urban	68.8	73.9	82.4
Central - Rural	50.3	58.7	75.7
Central - Total	55.7	64.5	78.4
Atlantic- Urban	53.1	64.9	81.4
Atlantic - Rural	23.0	28.6	62.4
Atlantic - Total	37.3	44.9	68.5

Source: 1998, 2001, 2005 LSMS data

Note: Women who have had a child in the last 5 years

Table A2 – G01 Nicaragua 2005 Prevalence of Malnutrition by Quintile, Region and Poverty Status Using NCHS Reference 1977 (Children under 5 years of age)

	Underweight (<i>weight-for-age</i>)			Stunting (<i>height-for-age</i>)			Wasting (<i>weight-for-height</i>)			Malnourished
	Severe	Moderate	Total	Severe	Moderate	Total	Severe	Moderate	Total	Total
Total	1.1	7.1	8.2	5.0	12.1	17.1	0.1	0.8	0.9	19.1
Extreme Poor	3.2	11.3	14.5	10.8	21.0	31.9	0.1	1.0	1.1	34.2
Moderately Poor	0.7	7.6	8.3	4.5	12.5	17.0	0.1	1.0	1.1	19.8
Poor	1.5	8.9	10.4	6.7	15.4	22.1	0.1	1.0	1.1	24.7
Non-poor	0.6	5.1	5.7	3.0	8.2	11.2	0.0	0.6	0.6	12.7
Sex										
Male	1.1	6.9	8.1	4.6	11.5	16.1	0.0	0.8	0.9	18.3
Female	1.1	7.3	8.4	5.3	12.7	18.1	0.1	0.9	1.0	20.1
Urban	0.5	5.4	5.9	3.2	9.3	12.5	0.0	0.7	0.7	14.4
Extreme Poor	0.2	9.7	9.8	8.9	16.1	25.0	0.0	0.2	0.2	25.3
Moderately Poor	0.6	8.2	8.8	3.3	13.4	16.6	0.0	0.8	0.8	20.3
Poor	0.5	8.4	9.0	4.2	13.8	18.1	0.0	0.7	0.7	21.1
Non-poor	0.5	3.5	4.0	2.6	6.6	9.2	0.0	0.7	0.8	10.4
Rural	1.8	9.1	10.9	7.0	15.2	22.2	0.1	1.0	1.1	24.4
Extreme Poor	3.9	11.7	15.6	11.3	22.2	33.4	0.1	1.2	1.3	36.3
Moderately Poor	0.7	7.2	7.9	5.6	11.8	17.4	0.2	1.2	1.4	19.3
Poor	2.1	9.2	11.3	8.1	16.4	24.5	0.1	1.2	1.4	26.8
Non-poor	0.9	9.0	9.9	4.1	12.1	16.2	0.1	0.3	0.4	18.2
Quintile										
Poorest	2.4	11.2	13.6	9.8	20.3	30.1	0.1	0.8	0.8	32.1
II	0.5	6.7	7.2	4.9	10.3	15.3	0.1	1.1	1.3	17.7
III	0.9	6.4	7.3	1.8	10.8	12.7	0.0	1.0	1.1	16.2
IV	1.1	4.3	5.4	4.5	8.0	12.5	0.0	0.5	0.5	13.6
Richest	0.0	5.7	5.7	1.8	8.0	9.8	0.1	0.7	0.8	10.8
Zone										
Managua - Urban	0.9	5.5	6.4	4.3	8.4	12.7	0.0	0.4	0.4	15.0
Managua - Rural	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Managua - Total	0.8	5.1	5.9	4.0	7.8	11.8	0.0	0.4	0.4	13.9
Pacific- Urban	0.2	5.3	5.5	1.4	10.2	11.6	0.0	0.8	0.9	13.2
Pacific - Rural	1.6	11.1	12.7	4.4	9.7	14.2	0.0	1.2	1.2	17.3
Pacific - Total	0.8	7.9	8.7	2.8	10.0	12.7	0.0	1.0	1.0	15.0
Central - Urban	0.3	5.4	5.7	3.6	11.6	15.1	0.0	0.3	0.3	16.0
Central - Rural	2.2	8.5	10.7	8.2	19.1	27.3	0.0	0.9	0.9	29.0
Central - Total	1.5	7.4	9.0	6.6	16.5	23.0	0.0	0.7	0.7	24.5
Atlantic- Urban	0.1	4.8	4.9	2.7	5.7	8.4	0.1	2.6	2.7	11.8
Atlantic - Rural	1.6	9.3	10.9	8.3	16.2	24.5	0.4	1.0	1.4	26.9
Atlantic - Total	1.2	8.2	9.4	6.9	13.6	20.5	0.3	1.4	1.7	23.2

*Note: Severe values are less than -3 z-score and moderate values are -2 to -3 z-score
Malnourished is defined as either underweight, stunted or wasted*

Source: 2005 LSMS data

Table A2 – G02 Nicaragua 2005 - Prevalence of Malnutrition by Age Group Using NCHS Reference 1977 (Children under 5 years of age)

	Underweight (<i>weight-for-age</i>)			Stunting (<i>height-for-age</i>)			Wasting (<i>weight-for-height</i>)			Malnourished
	Severe	Moderate	Total	Severe	Moderate	Total	Severe	Moderate	Total	Total
0 - 5 months	0.0	1.4	1.4	1.7	3.6	5.3	0.5	0.2	0.7	6.2
6 - 11 months	0.6	7.0	7.6	1.9	9.9	11.8	0.0	0.5	0.5	14.8
12 - 23 months	0.9	9.8	10.7	4.8	12.4	17.2	0.0	1.8	1.9	20.6
24 - 35 months	2.5	8.1	10.6	5.1	10.0	15.1	0.0	1.2	1.2	17.4
36 - 47 months	0.9	6.8	7.7	6.1	14.5	20.6	0.0	0.7	0.7	22.0
48 - 59 months	1.0	6.7	7.7	7.0	15.8	22.8	0.0	0.3	0.3	24.1
Total	1.1	7.1	8.2	5.0	12.1	17.1	0.1	0.8	0.9	19.1

Note: Severe values are less than -3 z-score and moderate values are -2 to -3 z-score
Source: 2005 LSMS data

Table A2 – G03 Nicaragua 2005 - Percent of Children (0-59 months) Classified as Malnourished by Poverty and Region (Using NCHS Reference 1977)

Level	Underweight (<i>weight-for-age</i>)				Stunting (<i>height-for-age</i>)				Wasting (<i>weight-for-height</i>)			
	Extreme Poor	Moderately Poor	Poor	Non-poor	Extreme Poor	Moderately Poor	Poor	Non-poor	Extreme Poor	Moderately Poor	Poor	Non-poor
Managua - Urban		10.8	9.6	5.2	14.6	23.3	22.3	15.8				0.6
Managua - Rural		0.0	0.0	0.0	0.0	10.2	9.3	9.8				0.0
Managua - Total		9.4	8.3	5.0	13.0	21.5	20.6	15.5				0.6
Pacific- Urban	8.9	8.6	8.6	2.8	20.2	21.4	21.3	9.7	0.0	0.8	0.6	1.1
Pacific - Rural	13.1	8.9	10.1	16.7	24.3	16.7	18.9	17.4	1.6	2.1	2.0	0.0
Pacific - Total	11.6	8.7	9.4	7.9	22.9	19.3	20.1	12.5	1.0	1.4	1.3	0.7
Central - Urban	16.7	6.4	9.2	2.8	46.2	21.1	27.7	11.8	0.0	0.0	0.0	0.6
Central - Rural	18.2	6.7	12.4	4.9	45.2	26.9	36.0	19.6	1.6	0.6	1.1	0.2
Central - Total	17.9	6.6	11.6	3.7	45.3	25.1	34.0	15.2	1.4	0.4	0.8	0.4
Atlantic- Urban	4.8	8.2	7.6	3.3	14.5	14.3	14.3	7.5	1.7	6.1	5.3	1.1
Atlantic - Rural	12.9	9.9	11.4	9.4	36.9	26.3	31.5	22.1	0.7	2.1	1.4	1.3
Atlantic - Total	12.5	9.5	10.8	6.6	35.6	23.7	29.0	15.4	0.8	2.9	2.0	1.2

Note: Malnourished defined as < -2 z-score
Source: 2005 LSMS data

Table A2 – G04 Nicaragua 2005 - Percent of Children (0-59 months) Classified as Malnourished by Poverty and Age (Using NCHS Reference 1977)

Level	Underweight (<i>weight-for-age</i>)				Stunting (<i>height-for-age</i>)				Wasting (<i>weight-for-height</i>)			
	Very poor	Not very Poor	Poor	Non-poor	Very poor	Not very Poor	Poor	Non-poor	Very poor	Not very Poor	Poor	Non-poor
Age Groups												
0 - 5 months	1.0	0.5	0.6	2.3	13.6	3.8	6.7	6.9	0.0	1.5	1.0	0.3
6 - 11 months	14.2	9.9	11.3	3.8	22.2	15.1	17.4	9.1	2.6	0.2	1.0	0.0
12 - 23 months	18.6	10.7	13.5	7.7	35.5	19.1	24.9	18.1	1.3	2.6	2.1	1.6
24 - 35 months	16.2	11.5	13.3	7.5	41.5	25.0	31.0	14.2	1.4	1.0	1.1	1.3
36 - 47 months	16.3	7.0	10.1	4.4	41.4	29.8	33.5	18.2	1.5	0.9	1.1	0.1
48 - 59 months	12.4	7.5	9.2	5.9	46.0	26.8	33.6	14.5	0.0	0.6	0.4	0.3
Total	14.5	8.3	10.4	5.7	37.2	22.4	27.4	14.6	1.1	1.1	1.1	0.6

Note: Malnourished defined as < -2 z-score
Source: 2005 LSMS data

Table A2 – H01 Nicaragua 2005 - Access to Services/Housing by Poverty Group

Access to Services/Housing	All	Extreme Poor	Moderately Poor	Poor
Own house with title	50.5	39.0	44.4	42.9
Main source of water				
Pipes inside	32.3	3.8	13.7	10.9
Pipes outside	32.3	21.9	33.1	29.9
Public source	2.9	6.0	5.1	5.3
Public or private well	16.5	30.0	22.6	24.7
Spring	7.1	18.4	11.7	13.6
River/stream/lake	4.4	14.5	7.1	9.2
Truck/oxcart	0.1	0.0	0.1	0.1
From another house	4.0	4.2	6.0	5.5
Other	0.4	1.2	0.6	0.8
Type of sanitary service				
Latrine/lavatory - Not treated	33.4	44.1	39.2	40.6
Latrine/lavatory - Treated	26.5	28.8	33.6	32.2
Toilet connected to sewage system	21.3	1.0	6.5	4.9
Toilet connected to septic tank	8.0	0.0	3.1	2.3
Toilet discharges into river/stream	0.1	0.0	0.0	0.0
There is none	10.7	26.1	17.6	20.0
Garbage Disposal				
Collected by truck	42.5	4.8	22.4	17.4
Authorized dump/containers	0.5	0.0	0.1	0.1
Burned	30.7	42.7	40.8	41.4
Buried	4.7	6.3	5.1	5.4
Dumped	20.9	45.1	30.6	34.7
Compost	0.7	1.1	1.0	1.0
Other	0.0	0.0	0.0	0.0
Source of Energy				
Electric	73.8	32.1	57.7	50.4
Generator	0.3	0.0	0.1	0.1
Solar panel	0.6	0.6	0.6	0.6
Automobile battery	0.3	0.4	0.4	0.4
Gas	18.7	50.2	31.5	36.8
Candles	4.7	10.0	7.7	83.0
Ocote	1.1	6.1	1.3	2.7
Other	0.1	0.1	0.0	0.1
None	0.4	0.6	0.7	0.6
Mean payment for electricity	168.7	51.1	81.8	76.7
Fuel for cooking				
Firewood	60.1	98.5	87.7	90.8
Butane/Propane	38.3	1.2	11.3	8.4
Coal	0.6	0.3	0.5	0.4
Kerosene	0.4	0.0	0.3	0.2
Electricity	0.5	0.0	0.0	0.0
Other	0.1	0.0	0.2	0.1
Households where at least one member has public hlth insurance	29.7	7.8	17.5	14.7
Households where at least one member has private hlth insurance	0.7	0.0	0.1	0.0
Distance to health post/center (kms)	2.8	4.8	4.0	4.2
Distance to elementary school (kms)	0.9	1.1	1.0	1.1
Minutes to health post/center	36.2	68.9	50.4	55.7
Minutes to elementary school	13.7	21.2	15.6	17.2
Principal access road is paved	52.2	22.8	35.9	32.2
Credit Access				
Households requesting loans last year (%)	28.0	19.7	25.1	23.5
Average amount of loan	7,475.1	3,260.4	5,011.5	4,599.0
Households buying on credit last year (%)				
Average amount of credit				

Source: 2005 LSMS data

Table A2 – H02 Nicaragua 2005 - Access to Services/Housing by Poverty and Urban/Rural

Access to Services/Housing	Urban					Rural				
	All	Extreme Poor	Moderately Poor	Poor	Non-poor	All	Extreme Poor	Moderately Poor	Poor	Non-poor
Own house with title	55.8	50.0	48.3	48.6	57.8	43.0	36.2	41.9	40.0	47.4
Main source of water										
Pipes inside	50.9	14.3	27.8	25.6	57.8	6.3	1.2	4.5	3.4	10.4
Pipes outside	38.6	51.6	53.2	52.9	34.7	23.6	14.7	20.0	18.1	31.3
Public source	0.7	2.7	1.9	2.0	0.4	5.9	6.7	7.1	7.0	4.4
Public or private well	5.2	18.6	6.9	8.8	4.2	32.2	32.8	32.9	32.9	31.2
Spring	0.2	1.2	0.4	0.5	0.1	16.8	22.6	19.2	20.3	11.7
River/stream/lake	0.5	6.1	0.7	1.6	0.1	9.8	16.6	11.2	13.1	5.1
Truck/oxcart	0.1	0.0	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.2
From another house	3.8	4.9	9.0	8.3	2.5	4.4	4.0	4.1	4.0	4.9
Other	0.0	0.5	0.0	0.1	0.0	1.0	1.3	1.0	1.1	0.8
Type of sanitary service										
Latrine/lavatory - Not treated	27.4	52.4	34.6	37.5	24.6	41.8	42.1	42.2	42.2	41.3
Latrine/lavatory - Treated	21.2	35.3	35.7	35.7	17.2	34.0	27.2	32.2	30.4	39.1
Toilet connected to sewage system	36.5	5.0	16.5	14.6	42.5	0.2	0.0	0.0	0.0	0.5
Toilet connected to septic tank	11.8	0.0	7.0	5.9	13.4	2.6	0.0	0.6	0.4	5.7
Toilet discharges into river/stream	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
There is none	3.1	7.3	6.2	6.3	2.2	21.7	30.7	25.0	27.0	13.4
Garbage Disposal										
Collected by truck	72.0	23.4	55.2	49.9	78.0	1.3	0.3	1.1	0.8	2.1
Authorized dump/containers	0.7	0.0	0.3	0.3	0.8	0.2	0.0	0.0	0.0	0.4
Burned	16.8	52.5	29.4	33.2	12.3	50.1	40.3	48.2	45.5	56.7
Buried	2.4	4.2	3.5	3.6	2.1	7.9	6.8	6.2	6.4	10.0
Dumped	8.0	19.9	11.2	12.8	6.7	39.0	51.3	43.0	45.9	29.3
Compost	0.1	0.0	0.1	0.1	0.0	1.5	1.4	1.5	1.4	1.5
Other	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Source of Energy										
Electric	95.5	68.6	91.9	88.0	97.6	43.3	23.1	35.4	31.2	60.6
Generator	0.1	0.0	0.0	0.0	0.1	0.7	0.0	0.2	0.1	1.6
Solar panel	0.1	0.0	0.0	0.0	0.1	1.3	0.7	1.0	0.9	1.8
Automobile battery	0.3	0.4	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.2
Gas	1.3	9.6	3.4	4.4	0.5	43.0	60.2	49.8	53.4	28.2
Candles	2.2	11.1	4.2	5.3	1.3	8.3	9.7	10.0	9.9	6.0
Ocote	0.5	9.7	0.3	1.9	0.1	2.0	5.2	2.0	3.1	0.5
Other	0.0	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.3
None	0.0	0.5	0.0	0.1	0.0	0.9	0.6	1.1	0.9	0.8
Mean paymet for electricity	193.5	61.7	95.0	90.4	216.7	84.2	40.3	59.3	55.3	103.8
Fuel for cooking										
Firewood	35.7	93.1	71.0	74.7	25.0	94.1	99.8	98.6	99.0	87.1
Butane/Propane	61.7	6.0	26.7	23.2	72.2	5.7	0.0	1.3	0.9	12.5
Coal	0.9	0.9	1.1	1.1	0.9	0.1	0.2	0.1	0.1	0.1
Kerosene	0.7	0.0	0.7	0.6	0.7	0.0	0.0	0.0	0.0	0.1
Electricity	0.8	0.0	0.0	0.0	1.1	0.1	0.0	0.0	0.0	0.2
Other	0.2	0.0	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0
Households where at least one member has public hlth insurance	43.2	18.2	31.4	29.2	47.1	10.8	5.2	8.4	7.3	15.9
Households where at least one member has private hlth insurance	1.1	0.0	0.0	0.0	1.4	0.2	0.0	0.1	0.1	0.5
Distance to health post/center (kms)	0.9	0.9	0.9	0.9	0.9	5.4	5.7	6.0	5.9	4.6
Distance to elementary school (kms)	0.5	0.5	0.4	0.4	0.5	1.6	1.3	1.4	1.4	1.8
Minutes to health post/center	14.7	17.9	15.4	15.8	14.4	66.2	81.5	73.2	76.1	52.1
Minutes to elementary school	8.8	10.6	8.7	9.0	8.7	20.7	23.8	20.1	21.4	19.7
Principal access road is paved	76.0	61.6	64.9	64.3	79.2	19.0	13.3	17.0	15.7	23.7
Credit Access										
Households requesting loans last year (%)	30.0	19.2	26.7	25.5	31.2	25.1	19.8	24.0	22.5	28.7
Average amount of loan	7,802.6	2,089.5	3,853.7	3,642.0	8,750.8	6,922.7	3,532.8	5,872.7	5,162.4	8,923.1
Households buying on credit last year (%)										
Average amount of credit										

Source: 2005 LSMS data

Table A2 – H03 Nicaragua 2005 - Access to Services/Housing by Quintile

Access to Services/Housing	Poorest	II	III	IV	Richest
Own house with title	40.5	43.9	47.9	51.7	60.5
Main source of water					
Pipes inside	4.1	13.6	24.4	36.5	60.2
Pipes outside	23.6	34.1	36.5	39.5	27.5
Public source	5.9	5.2	3.2	1.9	0.6
Public or private well	29.6	22.3	19.3	11.9	7.6
Spring	17.4	11.6	7.2	3.3	1.9
River/stream/lake	13.6	7.1	3.3	2.0	0.4
Truck/oxcart	0.0	0.0	0.1	0.1	0.1
From another house	4.6	4.6	5.5	4.6	1.5
Other	1.1	1.1	0.5	0.1	0.1
Type of sanitary service					
Latrine/lavatory - Not treated	42.5	40.1	40.1	33.5	19.9
Latrine/lavatory - Treated	29.8	33.2	32.2	25.7	17.6
Toilet connected to sewage system	1.8	6.1	11.9	25.4	44.1
Toilet connected to septic tank	0.4	2.6	5.8	9.4	15.4
Toilet discharges into river/stream	0.0	0.0	0.0	0.1	0.2
There is none	25.5	17.9	10.0	5.9	2.8
Garbage Disposal					
Collected by truck	6.0	22.6	35.6	51.5	71.4
Authorized dump/containers	0.0	0.2	0.4	0.8	0.6
Burned	43.0	40.6	36.7	28.1	16.1
Buried	6.3	4.9	6.3	4.3	3.0
Dumped	43.6	30.8	19.8	14.9	8.8
Compost	1.1	0.8	1.2	0.4	0.2
Other	0.0	0.1	0.0	0.0	0.1
Source of Energy					
Electric	33.8	58.4	74.6	85.8	94.0
Generator	0.0	0.2	0.3	0.4	0.5
Solar panel	0.6	0.6	0.9	0.5	0.4
Automobile battery	0.3	0.4	0.5	0.5	0.1
Gas	48.8	31.3	17.1	9.2	3.8
Candles	10.1	7.4	5.6	3.0	1.0
Ocote	5.5	0.9	0.6	0.1	0.0
Other	0.1	0.0	0.1	0.1	0.1
None	0.8	0.7	0.3	0.3	0.1
Mean paymet for electricity	54.0	82.9	103.2	138.7	266.2
Fuel for cooking					
Firewood	97.9	89.5	72.5	48.0	23.3
Butane/Propane	1.4	10.0	25.7	49.6	74.7
Coal	0.3	0.5	0.7	1.1	0.3
Kerosene	0.1	0.0	0.3	0.7	0.7
Electricity	0.0	0.0	0.8	0.4	1.0
Other	0.3	0.0	0.0	0.2	0.0
Households where at least one member has public hlth insurance	9.2	16.4	24.6	37.1	46.3
Households where at least one member has private hlth insurance	0.0	0.1	0.1	0.4	2.1
Distance to health post/center (kms)	4.8	4.1	2.9	1.8	1.6
Distance to elementary school (kms)	1.1	0.9	1.3	0.8	0.6
Minutes to health post/center	67.3	49.9	38.4	25.1	18.7
Minutes to elementary school	20.6	15.1	14.1	12.0	10.4
Principal access road is paved	23.7	35.4	47.5	59.9	74.6
Credit Access					
Households requesting loans last year (%)	20.8	24.5	25.6	32.5	31.7
Average amount of loan	3,163.8	4,234.3	6,702.9	6,618.4	11,636.3
Households buying on credit last year (%)					
Average amount of credit					

Source: 2005 LSMS data

Table A2 – H04 Nicaragua 2005 - Access to Services/Housing by Region

Access to Services/Housing	Managua - Urban	Managua - Rural	Managua - Total	Pacific - Urban	Pacific - Rural	Pacific - Total	Central - Urban	Central - Rural	Central - Total	Atlantic - Urban	Atlantic - Rural	Atlantic - Total
Own house with title	51.6	34.2	49.9	55.3	40.0	48.9	63.8	48.6	54.9	56.8	37.6	44.4
Main source of water												
Pipes inside	61.9	16.8	57.3	44.1	7.2	28.7	48.4	5.4	23.2	25.8	3.5	11.3
Pipes outside	35.9	63.7	38.7	46.9	28.0	39.1	39.5	20.8	28.5	17.8	10.4	13.0
Public source	0.0	0.0	0.0	0.3	4.3	1.9	2.1	9.6	6.5	2.6	1.9	2.1
Public or private well	0.0	12.4	1.2	3.1	48.0	21.8	4.2	25.3	16.6	43.8	30.5	35.2
Spring	0.0	1.4	0.1	0.0	2.4	1.0	0.4	21.3	12.7	1.7	33.0	22.0
River/stream/lake	0.1	1.7	0.3	0.1	2.7	1.2	1.1	12.6	7.8	1.6	16.9	11.5
Truck/oxcart	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.0	0.1	0.1	0.0	0.0
From another house	2.1	4.1	2.3	5.3	7.0	6.0	3.9	3.6	3.7	6.6	2.4	3.9
Other	0.0	0.0	0.0	0.0	0.3	0.1	0.2	1.4	0.9	0.0	1.5	0.0
Type of sanitary service												
Latrine/lavatory - Not treated	23.2	54.1	26.3	26.1	40.7	32.2	31.2	39.7	36.2	43.5	44.2	43.9
Latrine/lavatory - Treated	10.5	26.2	12.1	29.0	42.7	34.7	27.0	35.9	32.2	29.6	19.3	22.9
Toilet connected to sewage system	53.8	1.7	48.6	28.3	0.3	16.7	27.4	0.0	11.3	3.2	0.0	1.1
Toilet connected to septic tank	10.2	13.2	10.5	13.6	3.0	9.2	10.6	1.8	5.4	16.8	0.6	6.3
Toilet discharges into river/stream	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2	0.2	0.0	0.1
There is none	2.3	4.8	2.6	3.0	13.3	7.3	3.3	22.6	14.6	6.7	36.0	25.7
Garbage Disposal												
Collected by truck	84.0	1.7	75.7	67.5	4.1	41.1	69.2	0.0	28.7	33.7	0	11.8
Authorized dump/containers	0.5	0.0	0.5	0.8	0.3	0.6	0.5	0.1	0.3	1.3	0	0.5
Burned	8.7	68.3	14.7	20.2	73.6	42.4	18.8	36.8	29.3	40.3	39.4	39.7
Buried	1.1	13.9	2.4	2.8	7.6	4.8	2.7	8.0	5.8	7.5	6.1	6.6
Dumped	5.7	16.1	6.7	8.4	13.9	10.7	8.7	52.7	34.5	16.8	53.1	40.4
Compost	0.0	0.0	0.0	0.1	0.4	0.2	0.1	2.4	1.5	0	1.3	0.8
Other	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.4	0.1	0.2
Source of Energy												
Electric	99.1	94.8	98.6	98.4	70.5	86.8	90.7	32.9	56.8	79.7	9.6	34.2
Generator	0.0	0.0	0.0	0.0	0.4	0.1	0.0	1.0	0.6	0.8	0.7	0.8
Solar panel	0.1	0.0	0.1	0.0	0.3	0.1	0.0	0.5	0.3	0.1	5.0	3.2
Automobile battery	0.4	0.0	0.4	0.4	0.5	0.5	0.1	0.2	0.2	0.5	0.3	0.4
Gas	0.0	0.0	0.0	0.7	22.0	9.5	2.8	56.1	34.0	6.4	58.5	40.2
Candles	0.4	5.2	0.9	0.5	4.9	2.3	4.3	5.2	4.8	11.7	21.5	18.1
Ocote	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.0	2.6	0.1	3.5	2.3
Other	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.1	0.0	0.5	0.2	0.3
None	0.0	0.0	0.0	0.0	1.1	0.5	0.1	1.0	0.6	0.2	0.6	0.5
Mean paymet for electricity	248.1	87.7	235.0	164.0	92.0	142.2	146.1	72.0	123.3	189.5	87.1	170.3
Fuel for cooking												
Firewood	19.9	82.9	26.3	47.5	88.9	64.8	49.5	97.6	77.7	32.9	97.8	75.1
Butane/Propane	77.1	17.1	71.0	50.7	10.7	34.0	49.8	2.4	22.0	58.0	1.9	21.5
Coal	0.7	0.0	0.6	0.1	0.1	0.1	0.0	0.0	0.0	8.1	0.3	3.0
Kerosene	0.8	0.0	0.8	0.4	0.2	0.3	0.6	0.0	0.3	0.9	0.0	0.3
Electricity	1.5	0.0	1.3	0.8	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.5	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0
Households where at least one member has public hith insurance	57.6	30.8	54.9	40.4	17.7	31.0	25.9	5.9	14.2	29.5	5.3	13.8
Households where at least one member has private hith insurance	2.1	0.0	1.9	0.5	0.7	0.5	0.5	0.1	0.2	0.4	0.0	0.2
Distance to health post/center (kms)	1.1	2.5	1.2	0.7	3.0	1.7	0.8	6.2	4.0	0.8	8.0	5.5
Distance to elementary school (kms)	0.5	0.7	0.5	0.4	1.3	0.7	0.5	1.3	1.0	0.4	2.8	1.9
Minutes to health post/center	14.4	34.7	16.5	13.1	39.6	24.1	16.9	77.1	52.2	16.3	91.5	65.1
Minutes to elementary school	9.5	13.7	9.9	7.9	16.9	11.5	8.9	21.1	16.1	8.6	27.7	21.0
Principal access road is paved	84.9	24.1	78.8	83.0	28.8	60.4	67.3	19.9	39.5	27.5	0.4	9.9
Credit Access												
Households requesting loans last year (%)	29.3	32.4	29.7	28.1	27.1	27.7	34.7	28.5	31.1	26.4	11.4	16.7
Average amount of loan	5,261.2	3,580.0	5,066.3	9,011.8	4,125.3	7,030.8	9,822.4	8,033.8	8,872.9	9,514.9	14,079.1	11,491.8
Households buying on credit last year (%)												
Average amount of credit												

Source: 2005 LSMS data

Table A2 – H05 Nicaragua 2005 - Households with Inadequate Walls, Floor, Ceiling, Housing and Overcrowding

	All households					Rural Households Only	
	Household (%) with Inadequate				Over-crowding ⁵	Household (%) with Inadequate	
	Walls ¹	Floor ²	Ceiling ³	Housing ⁴		Ceiling ⁶	Housing ⁷
All	28.7	40.0	4.6	49.9	37.2	8.1	73.2
Extreme Poor	51.9	75.0	14.8	85.6	75.0	16.9	87.9
Moderately Poor	42.3	63.0	7.6	73.6	57.5	9.2	83.6
Poor	45.0	66.4	9.6	77.0	62.4	11.9	85.1
Non-poor	19.1	24.4	1.6	33.9	22.4	2.6	56.1
Urban	16.9	25.4	2.1	33.2	30.3		
Extreme Poor	37.2	71.9	6.1	76.2	73.0		
Moderately Poor	28.7	50.2	5.1	58.2	61.1		
Poor	30.1	53.8	5.2	61.2	63.1		
Non-poor	13.2	17.6	1.2	25.5	21.3		
Rural	45.3	60.4	8.1	73.2	46.9		
Extreme Poor	55.6	75.8	16.9	87.9	75.4		
Moderately Poor	51.2	71.3	9.2	83.6	55.1		
Poor	52.7	72.9	11.9	85.1	62.1		
Non-poor	34.8	42.5	2.6	56.1	25.1		
Quintile							
Poorest	51.2	73.5	14.2	84.7	72.6	15.6	87.5
II	42.6	65.5	7.0	75.6	60.6	8.5	84.7
III	31.3	44.1	3.7	55.2	39.8	6.6	70.2
IV	20.6	28.9	1.5	38.6	29.0	1.2	56.3
Richest	13.2	12.7	1.0	21.2	9.2	0.7	41.1
Zone							
Managua - Urban	15.5	21.7	1.7	30.8	28.3		
Managua - Rural	23.3	44.3	3.4	46.7	29.8	3.4	46.7
Managua	16.3	24.0	1.9	32.4	28.4		
Pacific- Urban	14.0	28.7	3.1	31.9	37.0		
Pacific - Rural	30.7	56.5	7.4	60.8	46.8	7.4	60.8
Pacific- Total	20.9	40.2	4.9	43.9	41.1		
Central - Urban	12.1	30.2	1.8	32.0	25.9		
Central - Rural	38.0	68.5	5.4	75.9	47.5	5.4	75.9
Central - Total	27.3	52.7	3.9	57.7	38.6		
Atlantic- Urban	49.8	17.4	0.6	54.3	27.9		
Atlantic - Rural	91.1	52.6	16.6	94.1	50.9	16.6	94.1
Atlantic - Total	76.6	40.3	11.0	80.2	42.9		

Source: LSMS 2005

¹ Codes 5,6,9 and 10 in q. 5

² Codes 5 and 6 in q. 6

³ Codes 4,5 and 6 in q. 7

⁴ Inadequate walls, floor or ceiling (defined in 3)

⁵ More than 3 persons per room

⁶ Codes 5 and 6 in q. 7

⁷ Inadequate walls, floor or ceiling (defined in 6)

Table A2 – H06 Nicaragua 2005 Households without basic services

	Without Safe Water ¹	Without Latrine Toilet	Without Electricity	Inadequate Walls ²	Dirt Floor ³	Inadequate Ceiling ⁴	Inadequate Housing ⁵	Over-crowding ⁶	Principal Access Road is Paved
All	16.0	10.7	26.2	28.7	40.0	4.6	49.9	37.2	52.2
Extreme Poor	38.4	26.1	67.9	51.9	75.0	14.8	85.6	75.0	22.8
Moderately Poor	25.5	17.6	42.3	42.3	63.0	7.6	73.6	57.5	35.9
Poor	29.2	20.0	49.6	45.0	66.4	9.6	77.0	62.4	32.2
Non-poor	8.3	5.2	12.5	19.1	24.4	1.6	33.9	22.4	64.0
Urban	4.6	3.1	4.5	16.9	25.4	2.1	33.2	30.3	76.0
Extreme Poor	12.7	7.3	31.4	37.2	71.9	6.1	76.2	73.0	61.6
Moderately Poor	10.3	6.2	8.1	28.7	50.2	5.1	58.2	61.1	64.9
Poor	10.7	6.3	12.0	30.1	53.8	5.2	61.2	63.1	64.3
Non-poor	2.8	2.2	3.4	13.2	17.6	1.2	25.5	21.3	79.2
Rural	32.1	21.7	56.7	45.3	60.4	8.1	73.2	46.9	19.0
Extreme Poor	44.5	30.7	76.9	55.6	75.8	16.9	87.9	75.4	13.3
Moderately Poor	35.5	25.0	64.6	51.2	71.3	9.2	83.6	55.1	17.0
Poor	38.5	27.0	68.8	52.7	72.9	11.9	85.1	62.1	15.7
Non-poor	22.7	13.4	29.4	34.8	42.5	2.6	56.1	25.1	23.7
Quintile									
Poorest	36.7	25.5	66.2	51.2	73.5	14.2	84.7	72.6	23.7
II	24.4	17.9	41.6	42.6	65.5	7.0	75.6	60.6	35.4
III	16.6	10	25.4	31.3	44.1	3.7	55.2	39.8	47.5
IV	10.1	5.9	14.2	20.6	28.9	1.5	38.6	29.0	59.9
Richest	4.0	2.8	6.0	13.2	12.7	1.0	21.2	9.2	74.6
Zone									
Managua - Urban	2.2	2.3	0.9	15.5	21.7	1.7	30.8	28.3	84.9
Managua - Rural	7.2	4.8	5.2	23.3	44.3	3.4	46.7	29.8	24.1
Managua	2.7	2.6	1.4	16.3	24.0	1.9	32.4	28.4	78.8
Pacific- Urban	5.5	3.0	1.6	14.0	28.7	3.1	31.9	37.0	83.0
Pacific- Rural	12.6	13.3	29.5	30.7	56.5	7.4	60.8	46.8	28.8
Pacific- Total	8.5	7.3	13.2	20.9	40.2	4.9	43.9	41.1	60.4
Central - Urban	5.8	3.3	9.3	12.1	30.2	1.8	32.0	25.9	67.3
Central - Rural	38.9	22.6	67.1	38.0	68.5	5.4	75.9	47.5	19.9
Central - Total	25.2	14.6	43.2	27.3	52.7	3.9	57.7	38.6	39.5
Atlantic- Urban	10.0	6.7	20.3	49.8	17.4	0.6	54.3	27.9	27.5
Atlantic - Rural	53.8	36.0	91.4	91.1	52.6	16.6	94.1	50.9	0.4
Atlantic - Total	37.4	25.7	65.8	76.6	40.3	11.0	80.2	42.9	9.9

Source: LSMS 2005

¹piped water inside or outside, standpipe or well

²bamboo, cane or palm, wood, residue or rubble, and other

³Dirt and other

⁴Straw or similar, residue or rubble, and other

⁵if inadequate walls, floor or ceiling

⁶More than 3 persons per room

Table A2 – H07 Nicaragua 2005: Households with access to Cable TV, Telephone and member of Farmer's association

	Information Technologies*	Telephone				Farmer's Association Member
		Home	Mobile	Both	None	
All	17.1	7.3	16.2	6.9	69.6	1.5
Extreme Poor	0.5	0.0	1.3	0.0	98.7	1.8
Moderately Poor	4.0	1.0	5.6	0.3	93.1	1.7
Poor	3.0	0.7	4.4	0.2	94.7	1.8
Non-poor	25.4	11.2	23.1	10.9	54.8	1.3
Urban	28.9	12.3	23.5	11.9	52.2	0.5
Extreme Poor	1.7	0.0	4.8	0.0	95.2	0.0
Moderately Poor	9.5	2.3	12.1	0.7	84.9	0.3
Poor	8.3	1.9	10.9	0.6	86.6	0.2
Non-poor	34.6	15.1	27.0	14.9	42.9	0.6
Rural	0.6	0.3	5.9	0.1	93.7	2.8
Extreme Poor	0.2	0.0	0.4	0.0	99.6	2.3
Moderately Poor	0.4	0.1	1.4	0.0	98.5	2.7
Poor	0.3	0.0	1.1	0.0	98.9	2.5
Non-poor	1.1	0.7	12.8	0.2	86.3	3.3
Quintile						
Poorest	0.8	0.0	1.3	0.0	98.7	2.2
II	4.1	0.5	5.5	0.3	93.7	1.3
III	9.3	2.7	13.2	0.8	83.3	1.3
IV	15.8	6.9	22.2	5.4	65.5	1.7
Richest	39.9	18.6	27.8	20.0	33.6	1.2
Zone						
Managua - Urban	26.4	16.8	25.9	17.2	40.0	0.2
Managua - Rural	0.0	2.3	10.3	0.0	87.4	6.5**
Managua - Total	23.8	15.3	24.4	15.5	44.8	0.8
Pacific- Urban	25.3	9.1	25.1	9.1	56.6	0.6
Pacific - Rural	0.4	0.3	12.6	0.3	86.8	1.8
Pacific- Total	14.9	5.5	19.9	5.4	69.2	1.1
Central - Urban	36.6	10.6	18.0	8.1	63.3	1.0
Central - Rural	1.0	0.1	2.5	0.0	97.4	3.7
Central - Total	15.7	4.4	8.9	3.4	83.3	2.6
Atlantic- Urban	33.3	5.7	21.1	5.0	68.2	0.7
Atlantic - Rural	0.6	0.1	2.4	0.0	97.5	1.4
Atlantic - Total	12.0	2.1	8.9	1.8	87.2	1.2

Source: LSMS 2005

* includes cable, satellite and internet

** n<5

Table A2 – H08 Nicaragua 2005: Type of Land Titling and Property Registration - Agricultural Households

	Type of Title			Public Registration?		
	Formal	Informal	None	Yes	No	In Process
All	63.8	15.8	20.4	77.8	17.0	5.1
Extreme Poor	47.2	19.7	33.0	62.8	31.2	6.0
Moderately Poor	58.9	17.7	23.5	75.0	19.5	5.5
Poor	54.8	18.4	26.8	71.1	23.2	5.7
Non-poor	75.4	12.4	12.2	85.1	10.3	4.6
Urban	77.0	9.6	13.4	86.9	8.7	4.3
Extreme Poor	72.9	0.0	27.1	100.0*	0.0	0.0
Moderately Poor	55.2	16.3	28.5	87.9	6.9	5.1
Poor	58.0	13.7	28.3	89.8	5.8	4.3
Non-poor	85.4	7.8	6.8	86.0	9.7	4.3
Rural	61.9	16.7	21.4	76.4	18.3	5.3
Extreme Poor	46.4	20.3	33.2	61.6	32.2	6.2
Moderately Poor	59.2	17.8	23.0	73.8	20.6	5.6
Poor	54.6	18.7	26.7	69.8	24.4	5.8
Non-poor	73.0	13.6	13.5	84.8	10.6	4.6
Quintile						
Poorest	49.5	19.0	31.5	65.0	29.7	5.3
II	60.6	17.2	22.2	76.4	17.4	6.2
III	58.6	19.5	21.9	80.0	15.4	4.5
IV	81.3	9.7	8.9	84.7	7.2	8.1
Richest	84.9	8.4	6.7	87.6	7.2	8.1
Zone						
Managua - Urban	100.0*	0.0	0.0	100.0*	0.0	0.0
Managua - Rural	37.8	28.9	23.3	79.7	13.7	6.6
Managua - Total	44.5	34.7	20.8	82.5	11.8	5.7
Pacific- Urban	76.4	14.8	8.8	88.6	1.9	9.5
Pacific - Rural	58.1	22.2	19.7	81.8	11.1	7.1
Pacific- Total	61.9	20.7	17.5	83.3	9.0	7.6
Central - Urban	79.2	5.7	15.1	89.3	10.7	0.0
Central - Rural	70.8	12.6	16.6	77.4	18.3	4.3
Central - Total	71.7	11.9	16.4	78.7	17.5	3.8
Atlantic- Urban	68.7	9.6	21.7	73.4	23.2	3.4
Atlantic - Rural	52.6	16.3	31.1	68.9	25.6	5.5
Atlantic - Total	53.9	15.8	30.3	69.3	25.4	5.3

Source: LSMS 2005

* n<5

**ANNEX 3 – TECHNICAL DOCUMENT ABOUT TWO ASPECTS RELATED TO DEFINING THE
EXTREME POVERTY LINE BASED ON THE NICARAGUA 2005 LIVING STANDARDS
MEASUREMENT SURVEY (LSMS)**

By Carlos Sobrado and Juan Rocha¹⁰²

1. This document was specifically written to clarify the technical and methodological rationale of two specific aspects that were considered in defining the extreme poverty line, based on data from the 2005 LSMS in Nicaragua: the price of coffee and minimum calorie requirements.

Summary

2. In calculating the extreme poverty line, it was found that data contained in the 2005 LSMS about the price of coffee was not accurate. Given this problem, the decision was made to update the price of coffee in 2001, based on the same changes in prices that were used in the Consumer Price Index (CPI) for ground coffee. In this way, the price of C\$27.72 per pound of ground coffee was obtained.¹⁰³

3. To update the minimum calorie requirements for Nicaragua, it was found that population projections used in the past were not consistent with the results of the 2005 population and housing census. In order to make “fair” comparisons over time, and with an emphasis on the 2001 results, it was recommended that the same requirements from 2001 be used, in other words, 2,187 calories per person per day.

4. It is important to note that the effect of these two modifications on the percentages of poverty estimated for Nicaragua is not statistically significant. In other words, either with or without these changes, the results are exactly the same (statistically speaking).

Introduction

5. Those responsible for conducting and analyzing surveys that are repeated over time utilize a design (for the sample, questionnaire, field work, etc.) that best reflects a country’s conditions and characteristics. As years go by, the conditions in a country change, and the information obtained with the initially designed instrument is not necessarily what was originally being sought. For example, to obtain information about “total spending on services received in the home” in the 1970s, questions about cable television or internet would not have been included, since those services did not exist. For the new millennium, the failure to include questions about these two services would clearly bias the information obtained about “total spending on services received in the home.” It would make sense to adapt the questionnaire and include questions about two new services that hadn’t existed in the past. In fact, their inclusion would be recommendable and even necessary to be able to jointly analyze the data from both periods.

6. In the example mentioned, the solution is relatively easy since the source of change can be clearly determined and there is no confusion about its effects. On many other occasions, however, we encounter situations where such a clear-cut solution is not available, and we generally need to make more difficult decisions. In most cases, those responsible for designing and conducting surveys have a good idea about the modifications that are needed in order to obtain the best possible information available today. They are also aware that these modifications can compromise a survey’s integrity, affecting its ability to make “fair” comparisons over time.

¹⁰² The Poverty Map team from the World Bank includes: Florencia T. Castro-Leal (Task Manager, Nicaragua Poverty Assessment), Carlos Sobrado (Economist and Poverty Map Leader) and José Ramón Laguna (Consultant). The MECOVI-Nicaragua and INIDE Poverty Map team includes: Juan Rocha (Poverty Specialist), Berman Martinez, Eddy Roque and Benito Martinez .

¹⁰³ Compared to the distorted price of C\$55.99 per pound that was obtained with data from the 2005 LSMS.

7. In general, two objectives need to be balanced: improving the quality of information obtained, and maintaining the comparability of data over time. Which of these principles is most important? In reality, there is no obvious answer, since it depends upon which is most important at a given moment, the way that data will be used, and the objectives of the analysis that will be made on the basis of the data obtained.

8. In practice, the first thing one tries to avoid is either of the two extremes: that the data is completely incomparable, or that the most recent results do not reflect the national reality. Fortunately, acceptable solutions can be found on many (most) occasions, even if they are not ideal solutions or do not answer all possible questions. What is important, first and foremost, is that a problem is clearly defined, that available options are examined, and that the impact of different options is evaluated.

Description of the methodology

9. To determine the extreme poverty line, we estimate the value of the “basic basket” of consumer goods, which was defined on the basis of data from the 1998 LSMS. The same amount of each type of food that was included in estimates in 1998 is again utilized, and the updated information is obtained on the basis of new prices (whether these are for 2001 or 2005).

10. To determine the number of pounds of each product analyzed in 1998, we focus on the consumption patterns of the Nicaraguan population (how much they consumed of each product), and then calculate how many pounds would be needed to satisfy the same minimum caloric requirements and thereby maintain the same patterns or proportions. The calculation of minimum calorie requirements was based on the table of minimum requirements produced by INCAP, which specifies the amounts needed according to sex and age. The INCAP table indicates different minimum calorie requirements for men and women, and different minimum requirements according to a person’s age. Using the census projections for the same sex and age groups as those indicated in the INCAP table, we are able to obtain the average per capita minimum calorie requirement in Nicaragua.¹⁰⁴ Following this methodology, it was estimated that the average requirement in Nicaragua was 2,199 calories (Kcal.) per person in 1998.

11. To account for the fact that the population’s composition has changed over time, and therefore its minimum calorie requirement (on average) has changed as well, the calorie requirement based on the new distribution of the population according to age and sex was estimated again in 2001. The new calculation used the identical INCAP table, with the new census population projections, and determined that the minimum calorie requirement for 2001 was 2,187 calories (Kcal.) per day.

12. The change in the minimum average calorie requirement was 12 Kcal. per day, or 0.5 percent (one half of one percent). To satisfy the new requirement, the amount (pounds) of each product used to calculate the extreme poverty line was increased by exactly the same proportion (0.5 percent), using 2001 prices.

Problems encountered

13. The problems that arose were related to two elements that are related to the methodology used for updating the value of the extreme poverty line: prices and census projections of population growth.

14. The problems encountered were the result of unpredictable changes in conditions in Nicaragua. In the first place, consumer preferences for types of coffee have changed: the proportion of instant coffee consumed has increased, while the proportion of ground coffee consumed has decreased. Secondly, the

¹⁰⁴ A simple way to calculate this is by multiplying the calorie requirement of each group according to age and sex by the total number of Nicaraguans who fall into this same age and sex group, and adding up the product of all of these multiplications and dividing the total by the nation’s total number of inhabitants. World Bank Report No.26128-NI Nicaragua, Poverty Report: increasing well-being and reducing vulnerability, December 23, 2003, Appendix 1, page 7.

2005 census was less consistent with population projections than expected. The impact of these changes, along with proposed alternatives and an evaluation of these, were analyzed independently.

15. It is important to mention that the impact being analyzed in this case is strictly related to calculation of the extreme poverty line. These changes have no effect on aggregate consumption, or on the percentages of poverty.

Change in preferences of the type of coffee consumed

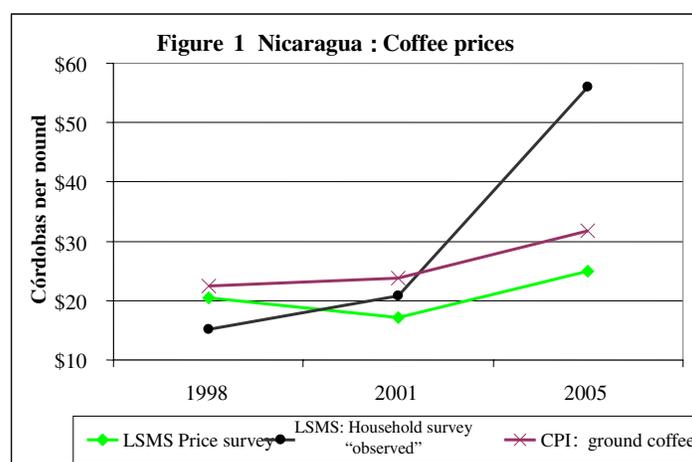
a) Definition of the problem

16. To determine the prices of different products based on information contained in the LSMS, the implicit price of each product is calculated by dividing household spending by the number of pounds consumed.

17. In the original design of the household questionnaire (1998), respondents were asked about the amount (in pounds¹⁰⁵) of coffee they consumed, and the cost of that consumption. The question did not differentiate among types of coffee consumed: either ground or instant. In 1998, the amount of instant coffee consumed in the country was relatively small, and the effect of this was not significant. By 2005, however, the amount of instant coffee consumed had risen to such an extent that the implicit price being calculated is a mix of the price per pound of ground coffee and instant coffee.¹⁰⁶

	1998	2001	2005	% Change 01-05
LSMS: mix	17.79	20.72	55.99	165.4
LSMS: ground coffee	20.50	17.11	24.99	46.1
CPI: ground coffee	22.49	23.77	31.8	33.8
CPI: instant coffee		81.26	108.45	33.5

18. Proof that the problem is a new one can be demonstrated by a comparison between the price of coffee obtained for households from the LSMS, and that obtained from other sources of information where the question is asked in relation to ground coffee, or instant coffee, or both. These comparisons are presented in Table A3.1.



¹⁰⁵ The answer could be according to different unit sizes, such as half pound packages or 100 gram packages, or something similar. Information about the size of the package was also obtained, in order to later transform "consumption" into pounds or kilograms.

¹⁰⁶ In 2001, coffee represented 3.85 percent (C\$8.62) of the total value of the monthly extreme poverty line (C\$ 224).

19. If we compare the evolution of prices that have been obtained from households surveyed in the LSMS, with the price questionnaire, and with the CPI for ground coffee, we see a significant difference (See Figure 1). The fact that the values for 2001 and previous values are very similar (although not equal) is proof that a distorting factor was introduced in 2005 that had not existed previously.

b) Alternatives

20. As a general recommendation, it is suggested that another source of information be used for determining the price of coffee when calculating the extreme poverty line. The two alternative sources of information are the price questionnaire (that is collected jointly with the household surveys) and the CPI. To insure the independence of other sources, and to improve the “transparency” of calculations, the use of CPI data for purposes of estimates is preferred.

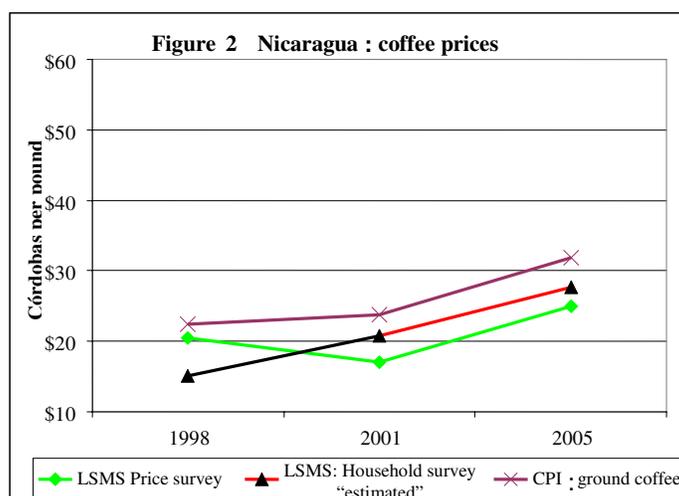
21. The recommended process for estimating the percentage change in the CPI price of coffee between 2001 and 2005 is applying this same increase (in percentage terms) to the price of coffee used in 2001 when calculating the extreme poverty line. In other words, the only thing we have done is update the price (from 2001 to 2005) using the increase reported by the CPI.

22. The last decision that needs to be made is related to which of the two types of coffee reported by the CPI should be used to update prices. Given the fact that the CPI price of ground coffee and the price of coffee used for defining the poverty line in 2001 are very similar (C\$23.77 and C\$20.72 per pound), it is recommended that the CPI price for ground coffee be used for this exercise.¹⁰⁷

23. If the price of coffee used for the poverty line in 2001 (C\$20.72) is updated by the same percentage change for ground coffee reported in the CPI (33.8 percent), we obtain the price of $C\$20.72 * 1.338 = C\27.72 for coffee in 2005.

c) Evaluation of impact

24. In terms of the evolution of coffee prices, the new estimate offers much more reasonable results that are completely consistent with the trends seen in CPI data for Nicaragua and prices from the price survey (collected during the LSMS in commercial establishments). Figure 2 indicates the trends that are obtained from the estimated value for 2005 (the red line with triangular markers).



¹⁰⁷ Given the fact that what is being used from the CPI is the percentage change in the price of coffee, there is almost no difference between either of the two types used, since they are very similar: 33.8 percent for ground coffee and 33.5 percent for instant coffee (See Table A3.1).

25. The values for the poverty line that are calculated with estimated coffee prices will be lower than those obtained on the basis of the original value. Preliminary work indicates that the impact of this factor on estimating poverty at the national level is less than one (1) percentage point.

Change in the minimum required calories

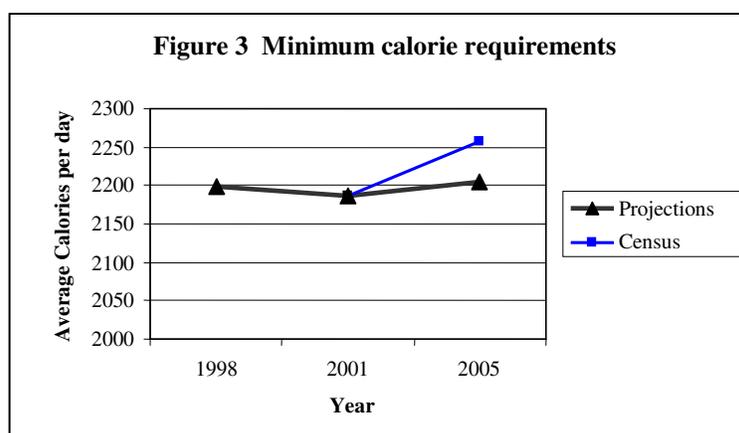
a) Definition of the problem

26. In light of the new housing and population census for 2005, it was found that the census projections for population growth being used were further from reality than expected. The difference was due to the size and composition of Nicaragua's population (groups of people by age and sex). When calculating the value of the extreme poverty line, the change in composition is the only change that is relevant.

27. If we were to be strictly consistent with the methodology, we would be using census population projections again in 2005, since that would insure using exactly the same assumptions as in the past. However, since there is new census data available for 2005, it would be illogical (and to a certain degree it is) to utilize census population projections from 1995 when we have data that has been 100 percent updated. To illustrate how the minimum caloric requirements would change depending upon the use of census projections or the use of real 2005 census data, estimates were made using both information sources and these are presented in Table A3.2.

Table A3.2 Minimum Calorie Requirements for Nicaragua					
		Projections			2005 Census
		1998	2001	2005	
Minimum average calories		2199	2187	2205	2241
Increase in relation to the previous period	Calories		-12	18	71
	Percentage		-0.5	0.8	3.2

28. When we base our estimates on the census data, we find that there is a much larger difference than anticipated: a 3.2 percent increase rather than the 0.8 percent change that was estimated. These numbers are evidence of a problem that was building up over time (it is uncertain since when) and that possibly affected (to a lesser extent) the estimates of minimum calorie requirements in 2001.



29. Figure 3 illustrates the evolution of caloric requirements based on census projections of population growth (in black, with triangular markers), and the value determined by the 2005 population census (blue with square marker). Clearly, the evolution based on census projections changes significantly when we use data from the real census.

2) Alternatives

30. The situation presented here is extremely complex. On the one hand, we do not wish to utilize census projections given that real data is available, and because we know that the projections are not consistent with the reality. On the other hand, the use of real census data signifies a change in the methodology, which would bias the comparisons of poverty done over time.

31. From an analytical viewpoint, the solution would be to first make new projections for 1998 and 2001 using data from both the 1995 and 2005 censuses, or to make inter-census projections, estimating caloric requirements based on the new projections and estimating new poverty lines for 1998 and 2001, and using data from the 2005 census for that same year. The problem with this solution is not related to the methodology, but rather to the “transparency” of the procedure. It would be difficult to convince the audience to simply “forget about previous poverty results,” and refer only to the new poverty results for 1998 and 2001. From the viewpoint of communication, and the public’s perception of the reliability of results obtained in this manner, the danger is enormous and could possibly be a complete failure.

32. Given the problems mentioned previously, another “transparent” alternative is recommended, which has a certain logic for most people: use the exact same calorie requirement that was used in 2001, in other words, 2,187.

3) Evaluation of Impact

33. The recommended option is not only transparent, but is also very reasonable given that for many countries, establishing a minimum calorie requirement and not changing it over time—in other words a fixed minimum requirement—is a normal practice when calculating poverty. In terms of poverty, the impact would be a reduction of around 1.3 percentage points in the extreme poverty rate, and of 1.4 percentage points in Nicaragua’s overall poverty rate.

ANNEX 4 – POVERTY MAP OF NICARAGUA

By Carlos Sobrado and Juan Rocha¹⁰⁸

I. Introduction

1. The main objective of the Poverty Map is to classify Nicaragua's municipalities on the basis of various poverty indicators, including incidence, the depth of poverty, and inequality. This organization or classification gives us a good idea of how poverty is distributed throughout the country, and is a very useful tool for planning policies and programs aimed at more efficiently targeting and distributing poverty reduction resources. Also, having more than one measurement of this type over time allows us to assess changes in poverty in different municipalities, and relate these measurements to the public investments being made.
2. Combining census data with household surveys (that contain information about people's consumption) allows us to take advantage of both the breadth of the census and the detailed information provided in household surveys. This document briefly describes the work that was carried out and reports on its results.
3. This work utilized the methodology of Hentschel et al (2000),¹⁰⁹ since it allows different measurements of poverty to be calculated, while also precisely and reliably determining the results associated with each estimate.¹¹⁰
4. This work has been a joint effort of the Program to Improve Living Standard Measurement Surveys in Nicaragua (MECOVI), the National Institute on Development Information (INIDE)¹¹¹ and the World Bank (WB).

II. The Poverty Map as a Targeting and Evaluation Tool

5. The 2005 Poverty Map of Nicaragua is a reliable tool that provides a detailed description of the spatial distribution of poverty in the country. Those using the poverty map should view it as one of the various pieces of information available about poverty. If interventions/programs are decentralized, information available at the local level should also be utilized, and it is essential that beneficiaries participate in assigning program benefits. Rather than using the poverty map as the sole criterion for targeting, other reliable information about these areas/municipalities should be considered along with the poverty map before any decisions are made.
6. Given that a similar exercise was carried out in Nicaragua in 1995,¹¹² we are able to compare the results of both exercises and identify changes in different poverty indicators at the municipal level. We are also able to understand how municipal poverty has evolved between 1995 and 2005. Since the results of the 1995 poverty map were used to target various programs of the Emergency Social Investment Fund

¹⁰⁸ The Poverty Map team from the World Bank includes: Florencia T. Castro-Leal (Task Manager, Nicaragua Poverty Assessment), Carlos Sobrado (Economist and Poverty Map Leader) and José Ramón Laguna (Consultant). The MECOVI-Nicaragua and INIDE Poverty Map team includes: Juan Rocha (Poverty Map Specialist), Berman Martinez, Eddy Roque and Benito Martinez .

¹⁰⁹ Hentschel J., Lanjouw J., Lanjouw P & Poggi J. Combining Census and Survey Data to Trace the Spatial Dimension of Poverty: A Case Study of Ecuador. The World Bank Economic Review, 14 (1), January, 2000.

¹¹⁰ The correct calculation of the standard error is key to any poverty map, since it is impossible to determine whether the differences observed in the estimates are significant or not without this measurement.

¹¹¹ Previously known as the National Statistics and Census Institute (INEC).

¹¹² The Extreme Poverty Map of Nicaragua, 1995 Census-1998 LSMS, Government of Nicaragua, INEC, March 2001. Nicaragua Poverty Assessment, Report No. 20488 NI, World Bank, February 21, 2001.

(FISE), we can also determine whether these municipal-level expenditures are related to the poverty indicators produced previously.

III. Brief Description and Validation

7. Poverty maps are spatial descriptions of estimates of poverty that are anticipated for small areas, and for which poverty measurements cannot be calculated using only household surveys. Given that the map is an estimate of poverty at a specific moment in time, the period in which the census and household survey were conducted is an important consideration. In 2005, the Government of Nicaragua carried out the Eighth Population Census and the Fourth Home Census, as well as the Fourth Living Standard Measurement Survey of Households (EMNV05, or “LSMS”) during that same year.

8. We believe that the existence of a representative nationwide survey of households that includes detailed information about spending, as in the case of the 2005 Living Standard Measurement Survey, allows resources to be targeted in the best possible way, using the methodology described here to create a Poverty Map of Nicaragua.¹¹³

9. Aside from its methodological logic, this poverty map also allowed us to develop diagnostics for evaluating the relevance and validity of results. As a first diagnostic, we compared our poverty estimates in each of Nicaragua’s seven regions (based on the poverty map exercise) with the results obtained by the 2005 LSMS (EMNV05) (Table A4.1). Our estimates for the 2005 Map are very similar to those obtained by the 2005 LSMS,¹¹⁴ thereby confirming the robustness of this methodology.

	Scope of Extreme Poverty				Scope of General Poverty			
	2005 LSMS		2005 MAP		2005 LSMS		2005 MAP	
	%	SE ¹	%	SE ¹	%	SE ¹	%	SE ¹
Managua	3.4	1.2	3.0	0.5	19.5	2.9	21.4	1.2
Urban Pacific	4.8	0.9	4.4	0.6	35.9	2.8	32.2	1.1
Rural Pacific	17.0	2.3	16.5	1.2	58.2	2.6	62.0	1.2
Urban Central	10.5	2.1	13.4	1.0	37.9	3.0	40.6	1.2
Rural Central	32.9	2.1	35.6	1.2	74.4	1.9	79.5	0.9
Urban Atlantic	7.4	1.7	10.0	1.1	34.8	3.4	40.3	1.7
Rural Atlantic	31.2	2.6	32.7	2.2	74.9	2.3	76.9	1.7

¹ Standard Error per 100

10. As a second diagnostic, we compared the Poverty Map’s estimates for extreme poverty and for general poverty at the departmental level¹¹⁵ with the results obtained by the 2005 LSMS (Table A4.2). The 2005 Map’s estimates are very similar to those obtained by the 2005 LSMS,¹¹⁶ again confirming the

¹¹³ Appendix 1 contains a description of the main poverty measurements used, and Appendix 2 contains a complete description of the methodology used. Information about this and other methodologies may be found in Hentschel et al (2000), Elbers et al (2000) and Alderman et al (2000).

¹¹⁴ Statistically, there is no difference between the regional poverty estimates found in the 2005 LSMS and the 2005 Poverty Map.

¹¹⁵ With 15 departments and two autonomous regions, for a total of 17 divisions or estimates.

¹¹⁶ Statistically, there is no difference between the regional poverty estimates found in the 2005 LSMS and the 2005 Poverty Map.

consistency between the two estimates. Comparisons between poverty estimates at the municipal level cannot be made, since data from the 2005 LSMS is not representative at this level.¹¹⁷

TABLE A4.2 REGIONAL ESTIMATES OF POVERTY IN NICARAGUA									
		Scope of Extreme Poverty				Scope of General Poverty			
		2005 LSMS		2005 MAP		2005 LSMS		2005 MAP	
		%	SE ¹	%	SE ¹	%	SE ¹	%	SE ¹
5	Nueva Segovia	28.3	5.0	29.4	1.60	69.4	3.8	70.2	1.1
10	Jinotega	27.0	3.2	33.1	2.10	66.3	3.5	74.3	1.3
20	Madriz	35.6	5.1	41.0	2.80	69.9	5.1	77.8	1.1
25	Esteli	15.5	3.4	14.9	1.40	49.3	4.9	47.0	1.6
30	Chinandega	11.4	2.8	12.3	0.90	54.2	4.9	50.5	1.6
35	Leon	13.1	3.1	11.9	0.80	49.4	4.0	48.7	1.0
40	Matagalpa	30.2	4.3	32.2	1.70	64.2	4.7	70.5	1.3
50	Boaco	12.8	2.9	16.8	1.90	50.7	6.2	52.9	2.5
55	Managua	3.4	1.2	3.0	0.50	19.5	2.9	21.4	1.2
60	Masaya	3.4	1.2	3.9	0.60	33.0	3.9	33.4	1.8
65	Chontales	8.9	2.6	10.3	1.00	40.8	5.0	41.8	2.0
70	Granada	4.7	2.0	5.8	0.80	39.0	5.2	37.8	1.7
75	Carazo	12.7	3.1	9.8	0.70	39.7	6.2	45.6	1.0
80	Rivas	14.0	3.4	11.1	0.90	50.4	5.4	48.5	1.1
85	Rio San Juan	15.5	2.7	20.8	1.80	59.9	3.5	64.0	1.9
91	RAAN	30.3	3.8	33.1	2.40	68.6	4.1	71.4	1.5
93	RAAS	28.3	2.8	19.4	1.90	56.8	3.9	59.8	1.8

¹ Standard Error per 100

11. Given the theoretical and empirical evidence, we conclude that the Poverty Map of Nicaragua is a reliable and very valuable tool for targeting programs.¹¹⁸

IV. Sources of Information

12. The sources of information were the 2005 Census of Nicaragua (Censo05) and the 2005 LSMS (EMNV05). Only questions that were considered the same or very similar from the 2005 Census and the 2005 LSMS were used. Questions that were included in the Census but were not found in the LSMS (or that were in the LSMS but not in the Census) were not included. Also, the calculations of aggregate consumption and poverty lines made by INEC--with technical support from the World Bank¹¹⁹--were used.

13. The SPSS and STATA statistical programs¹²⁰ were used, and an open access program that is available to the general public (developed by the WB) was also used for the final calculations of the poverty

¹¹⁷ When the comparison is made at the national level, the 2005 LSMS reports 14.9 percent extreme poverty and 46.2 percent general poverty rates, while the Poverty Map reports 15.8 percent extreme poverty and 48.3 percent general poverty rates. The differences between these are not significant ($p \leq 5\%$).

¹¹⁸ A more detailed explanation of the results and the methodological evaluation may be found in Appendix AX.2.

¹¹⁹ Instituto Nacional de Estadísticas y Censos (December 12, 2006). Indicadores Básicos de Pobreza Encuesta de Medición de Nivel de Vida 2005: Principales Resultados.

¹²⁰ The STATA program is exclusively used for conducting the Hausman test and determining whether or not expansion factors need to be used, and to determine the type of distribution for regression residuals from the first stage (see Appendix AX.2 for more information).

measurements.¹²¹ All participating institutions have unrestricted access to all of the sources of information and programs developed as part of this exercise.

V. The 2005 Poverty Map of Nicaragua

14. Tables A4.3, A4.4, and A4.5 present the results of the Poverty Map, by region, department and municipality. These tables include the following columns: Region, Department or Municipality; (1) Population reported in the 2005 Census; for Extreme Poverty: (2) Incidence; (3) Gap Index; (4) Value of the Gap; and (5) Relationship between the value of the individual gap with the value of the national gap; and for General Poverty: (6) Incidence; (7) Gap Index; (8) Value of the Gap; and (9) Relationship between the value of the municipal gap and the value of the national gap.

15. A description of indicators (2) through (10) may be found in Appendix A4.1.

16. Indicator (6), or the Proportion of the National Extreme Poverty Gap, was used to classify each geographic area according to its need for more or fewer resources for closing the Extreme Poverty Gap in relation to the Total National Extreme Poverty Gap. If the total amount of resources needed to close the Extreme Poverty Gap at the national level is 100%, then each region, department and/or municipality will receive their corresponding proportional amount, based on the contribution of the sum of the gaps between each individual's consumption and the extreme poverty line for each geographical area to the national total.¹²²

17. For example, some 0.76% of resources are allocated to San José de Cusmapa—the municipality with the worst extreme poverty (63.4%)—which corresponds to the proportion that this municipality's Extreme Poverty Gap contributes to the total National Extreme Poverty Gap. Meanwhile, extreme poverty in Tuna la Dalia accounts for 45.0% of the population, and this municipality receives 3.6% of resources. One of the reasons why a municipality with a lower percentage of extreme poverty accounts for a greater proportion of the gap is because of the size of its population. Another explanation could be related to how poor the municipality's poor are (in other words, how far they are from no longer being poor).

VI. Comparisons of the 1995 and 2005 Maps

18. Although the methodology used for estimating the Poverty Map has changed in some ways between 1995 and 2005, it is basically the same. This allows us to compare the results obtained from both exercises.¹²³

19. At the regional level, we see a decrease in the incidence of poverty and in the poverty gap index—both for extreme poverty and general poverty—in all regions except Managua, where the changes observed are not statistically significant (Table A4.6).

20. Comparisons at the departmental level indicate a trend toward reductions in the four indicators being compared—extreme and general poverty and the extreme and general poverty indices—except in the Madriz department, where a significant increase in extreme poverty (37.1% to 43.1%) was reported, along with an increase in general poverty from 74.8% to 78.9%. Increases in extreme and general poverty were also reported in the Matagalpa and Managua departments, but these changes are not statistically significant. In the remaining departments, with the exception of Nueva Segovia, we see reductions in extreme poverty. With respect to general poverty, we also find statistically significant reductions in the

¹²¹ This program runs off of a screen in DOS.

¹²² This is the order for deciding the level of investment recommended for each geographic area. The Municipal table is organized according to the Extreme Poverty Gap index.

¹²³ With the exception of two new municipalities that existed in 2005 but not in 1998: San José de Bocay in Jinotega and Mulukuku in the RAAN.

departments of Estelí, Chinandega, León, Boaco, Masaya, Chontales, Granada, Rivas, and Río San Juan and in the RAAS (Table A4.7).

21. To compare the changes in poverty in the 1995 and 2005 poverty map exercises, we have diagramed three relationships between the indicators from both periods: (i) the percentage of extreme poverty; (ii) the percentage of general poverty; and (iii) the organization of municipalities according to the extreme poverty gap index.

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Table A4.3 Indicators of the 2005 Poverty Map of Nicaragua, by Region									
		Extreme Poverty				General Poverty			
Region	(1) 2005 Census Population	(2) Incidence (%)	(3) Gap Index	(4) Value of the Gap (thousands of córdobas)	(5) Proportion of the Gap	(6) Incidence (%)	(7) Gap Index	(8) Value of the Gap (thousands of córdobas)	(9) Proportion of the Gap
Managua	1,254,793	3.0%	0.5%	24,047	3.3%	21.4%	5.5%	476,193	7.7%
Pacific	1,507,456	9.5%	1.8%	101,041	13.9%	44.6%	13.6%	1,414,966	23.0%
Central	1,637,022	27.2%	7.2%	432,317	59.3%	64.7%	26.4%	2,989,211	48.6%
Atlantic	713,208	25.6%	6.5%	171,852	23.6%	65.5%	25.8%	1,270,962	20.7%

Table A4.4 Indicators of the 2005 Poverty Map of Nicaragua, by Department									
		Extreme Poverty				General Poverty			
Department	(1) 2005 Census Population	(2) Incidence (%)	(3) Gap Index	(4) Value of the Gap (thousands of córdobas)	(5) Proportion of the Gap	(6) Incidence (%)	(7) Gap Index	(8) Value of the Gap (thousands of córdobas)	(9) Proportion of the Gap
Nueva Segov.	207,694	29.4%	7.6%	58,265	8.0%	70.2%	28.7%	412,660	6.7%
Jinotega	328,563	33.1%	8.9%	107,984	14.8%	74.3%	31.4%	713,459	11.6%
Madriz	132,046	41.0%	11.5%	56,057	7.7%	77.8%	35.7%	326,080	5.3%
Esteli	200,193	14.9%	3.6%	26,727	3.7%	47.0%	16.7%	231,750	3.8%
Chinandega	376,803	12.3%	2.4%	33,963	4.7%	50.5%	16.2%	423,114	6.9%
Leon	353,966	11.9%	2.4%	30,881	4.2%	48.7%	15.6%	382,761	6.2%
Matagalpa	465,968	32.2%	8.5%	146,757	20.1%	70.5%	30.0%	967,946	15.7%
Boaco	150,243	16.8%	4.2%	23,134	3.2%	52.9%	18.9%	196,758	3.2%
Managua	1,254,793	3.0%	0.5%	24,047	3.3%	21.4%	5.5%	476,193	7.7%
Masaya	288,967	3.9%	0.6%	6,840	0.9%	33.4%	8.3%	166,361	2.7%
Chontales	152,315	10.3%	2.4%	13,393	1.8%	41.8%	13.3%	140,558	2.3%
Granada	166,788	5.8%	1.0%	5,967	0.8%	37.8%	10.3%	118,729	1.9%
Carazo	165,484	9.8%	1.8%	11,163	1.5%	45.6%	14.0%	160,281	2.6%
Rivas	155,448	11.1%	2.1%	12,227	1.7%	48.5%	15.2%	163,720	2.7%
Río San Juan	95,392	20.8%	4.7%	16,502	2.3%	64.0%	23.1%	152,726	2.5%
RAAN	312,426	33.1%	9.1%	105,266	14.4%	71.4%	30.6%	661,986	10.8%
RAAS	305,390	19.4%	4.4%	50,085	6.9%	59.8%	21.6%	456,251	7.4%

Table A4.5 Indicators of the 2005 Poverty Map of Nicaragua, by Region (1 of 3)

Department	Municipality	(1) 2005 Census Pop.	Extreme Poverty				General Poverty			
			(2) Incidence (%)	(3) Gap Index	(4) Value of the Gap (thousands of córdobas)	(5) Proportion of the Gap	(6) Incidence (%)	(7) Gap Index	(8) Value of the Gap (thousands of córdobas)	(9) Proportion of the Gap
Madriz	s.j. de cusmapa	7064	0.634	0.2047	5336.5414	0.7%	0.925	0.494	24140.213	0.4%
Madriz	totogalpa	11861	0.552	0.161	7050.3551	1.0%	0.894	0.4475	36722.107	0.6%
Madriz	las sabanas	4013	0.514	0.1609	2383.1387	0.3%	0.871	0.4297	11930.218	0.2%
Madriz	san lucas	12937	0.55	0.1592	7604.0176	1.0%	0.906	0.4484	40130.935	0.7%
RAAN	prinzipolka	15590	0.491	0.1544	8883.0494	1.2%	0.869	0.4189	45185.414	0.7%
Jinotega	San Jose de Bocay	41884	0.475	0.1403	21695.246	3.0%	0.875	0.4113	119177.67	1.9%
Madriz	telpaneca	19010	0.504	0.138	9681.6914	1.3%	0.892	0.4241	55777.63	0.9%
Matagalpa	rancho grande	26193	0.489	0.1355	13098.148	1.8%	0.9	0.4212	76332.769	1.2%
Nueva Segovia	murra	14812	0.491	0.1324	7235.9492	1.0%	0.906	0.4231	43359.745	0.7%
Matagalpa	tuma-la dalia	56527	0.45	0.1219	25428.277	3.5%	0.871	0.3963	155001.99	2.5%
Jinotega	wiwili	57050	0.425	0.1213	25538.036	3.5%	0.854	0.384	151576.62	2.5%
RAAN	waslala	49219	0.429	0.1201	21825.317	3.0%	0.825	0.3758	127966.76	2.1%
Madriz	s.j. rio coco	21088	0.427	0.1174	9140.8265	1.3%	0.814	0.3724	54329.433	0.9%
RAAN	waspan	47020	0.403	0.1151	19983.444	2.7%	0.811	0.3615	117596.21	1.9%
Nueva Segovia	wiwili de abajo	16332	0.431	0.1147	6917.1193	0.9%	0.85	0.383	43270.04	0.7%
Nueva Segovia	macuelizo	6070	0.436	0.1133	2538.797	0.3%	0.874	0.3896	16360.569	0.3%
Matagalpa	san ramon	30656	0.422	0.1119	12664.109	1.7%	0.843	0.3767	79885.733	1.3%
Nueva Segovia	c. antigua	4865	0.427	0.111	1993.6214	0.3%	0.876	0.3871	13030.232	0.2%
Matagalpa	rio blanco	30580	0.386	0.1079	12181.896	1.7%	0.759	0.3415	72243.399	1.2%
RAAN	siuna	63662	0.377	0.1059	24891.471	3.4%	0.78	0.3428	150993.25	2.5%
Matagalpa	muy muy	14440	0.346	0.0997	5312.5936	0.7%	0.755	0.3265	32622.43	0.5%
Nueva Segovia	quilali	26096	0.348	0.0991	9547.9131	1.3%	0.785	0.3349	60462.948	1.0%
Nueva Segovia	santa maria	4402	0.396	0.099	1608.4703	0.2%	0.857	0.3687	11228.967	0.2%
Matagalpa	matiguas	40980	0.374	0.0983	14861.316	2.0%	0.792	0.344	97528.891	1.6%
Nueva Segovia	mozonte	6785	0.382	0.0982	2460.0959	0.3%	0.792	0.3452	16204.696	0.3%
Jinotega	cua-bocay	43045	0.364	0.0941	14951.577	2.1%	0.824	0.347	103349.96	1.7%
Matagalpa	san dionisio	16270	0.386	0.0937	5625.99	0.8%	0.837	0.3582	40313.997	0.7%
Madriz	yalaguina	9539	0.323	0.087	3062.0607	0.4%	0.755	0.3142	20735.417	0.3%
RAAS	el tortuguero	22306	0.346	0.0868	7143.6338	1.0%	0.812	0.3345	51612.654	0.8%
Jinotega	s.m. de pantasma	37821	0.335	0.0858	11978.633	1.6%	0.788	0.3256	85191.579	1.4%
Leon	sta. rosa del p	9441	0.356	0.0855	2980.7176	0.4%	0.812	0.3378	22061.259	0.4%
Jinotega	s.s. de yali	26828	0.313	0.085	8414.8218	1.2%	0.751	0.3087	57290.313	0.9%
Nueva Segovia	dipilto	5204	0.335	0.0847	1627.0193	0.2%	0.79	0.3255	11719.359	0.2%
RAAN	Mulukuku	29726	0.328	0.0834	9146.2484	1.3%	0.762	0.3144	64655.786	1.1%
Matagalpa	terrabona	12708	0.336	0.0816	3828.0577	0.5%	0.771	0.3214	28256.382	0.5%
Matagalpa	esquipulas	15875	0.327	0.0797	4668.2955	0.6%	0.762	0.3154	34639.766	0.6%
Esteli	san nicolas	6766	0.301	0.0779	1944.5497	0.3%	0.756	0.3018	14124.937	0.2%
Nueva Segovia	el jicaro	25856	0.317	0.0768	7333.119	1.0%	0.771	0.3127	55940.562	0.9%
RAAN	bonanza	18599	0.277	0.073	5010.661	0.7%	0.648	0.2655	34169.1	0.6%
RAAN	rosita	22716	0.273	0.0692	5798.2622	0.8%	0.682	0.2716	42682.471	0.7%
Madriz	somoto	33741	0.264	0.069	8587.9263	1.2%	0.612	0.2525	58939.444	1.0%
Madriz	palacaguina	12793	0.268	0.068	3210.7715	0.4%	0.66	0.2641	23374.163	0.4%
Matagalpa	matagalpa	131308	0.244	0.0669	32428.403	4.4%	0.57	0.2344	212956.3	3.5%
Nueva Segovia	san fernando	8544	0.263	0.0655	2065.319	0.3%	0.673	0.2652	15676.932	0.3%
Rio San Juan	el castillo	19786	0.274	0.065	4749.9951	0.7%	0.728	0.2818	38574.559	0.6%
Jinotega	s.r. del norte	17699	0.266	0.063	4117.2845	0.6%	0.704	0.2738	33531.473	0.5%
Esteli	san juan de limay	13423	0.261	0.0625	3096.4517	0.4%	0.71	0.2729	25340.051	0.4%
Leon	achuapa	13779	0.282	0.0594	3019.9526	0.4%	0.792	0.301	28691.425	0.5%
Jinotega	jinotega	97750	0.225	0.0569	20512.939	2.8%	0.585	0.2285	154500.04	2.5%
Matagalpa	c. dario	40971	0.241	0.0563	8519.8322	1.2%	0.637	0.2464	69837.56	1.1%
RAAS	ayote	12360	0.226	0.0557	2538.9679	0.3%	0.661	0.2455	20997.118	0.3%

Table A4.5 Indicators of the 2005 Poverty Map of Nicaragua, by Region (2 of 3)

Department	Municipality	(1) 2005 Census Pop.	Extreme Poverty				General Poverty			
			(2) Incidence (%)	(3) Gap Index	(4) Value of the Gap (thousands of córdobas)	(5) Proportion of the Gap	(6) Incidence (%)	(7) Gap Index	(8) Value of the Gap (thousands of córdobas)	(9) Proportion of the Gap
Nueva Segovia	jalapa	54241	0.225	0.0548	10970.87	1.5%	0.646	0.242	90799.168	1.5%
Leon	el sauce	27847	0.246	0.0519	5329.7093	0.7%	0.729	0.2705	52122.83	0.8%
Boaco	camoapa	34908	0.193	0.0508	6549.6418	0.9%	0.551	0.2058	49696.779	0.8%
Esteli	condega	28441	0.204	0.0499	5238.6295	0.7%	0.604	0.223	43871.413	0.7%
RAAS	paiwas	31683	0.222	0.0496	5806.2191	0.8%	0.688	0.2487	54503.713	0.9%
Esteli	pueblo nuevo	20605	0.206	0.0489	3721.8198	0.5%	0.635	0.2299	32777.254	0.5%
RAAS	c.r. grande	23281	0.223	0.0484	4156.6585	0.6%	0.71	0.2545	40987.312	0.7%
RAAS	n. guinea	66744	0.208	0.0482	11874.839	0.0%	0.623	0.2284	105460.29	0.0%
Rio San Juan	san miguelito	17004	0.217	0.0482	3024.8794	0.4%	0.664	0.2414	28394.435	0.5%
Matagalpa	sebaco	32068	0.19	0.0479	5668.5663	0.8%	0.547	0.2038	45219.606	0.7%
Boaco	santa lucia	8253	0.194	0.0469	1428.0185	0.2%	0.606	0.2181	12452.751	0.2%
RAAS	el rama	52410	0.205	0.0464	8968.8874	1.2%	0.631	0.2284	82802.753	1.3%
Chinandega	villanueva	25559	0.22	0.0449	4236.6105	0.6%	0.731	0.2591	45813.699	0.7%
Rivas	altagracia	19858	0.219	0.0447	3275.1793	0.4%	0.724	0.2574	35365.812	0.6%
Rivas	cardenas	6980	0.214	0.0446	1148.6381	0.2%	0.679	0.2429	11727.703	0.2%
Chinandega	cinco pinos	6776	0.222	0.0445	1113.1092	0.2%	0.731	0.2595	12165.336	0.2%
Chinandega	s.pedro del n.	4716	0.219	0.0434	755.39081	0.1%	0.737	0.2609	8512.2804	0.1%
Rio San Juan	san carlos	37401	0.192	0.0431	5954.1292	0.8%	0.609	0.2177	56318.507	0.9%
Esteli	la trinidad	20080	0.172	0.0427	3164.7604	0.4%	0.516	0.1886	26195.139	0.4%
RAAS	k. hill	8758	0.191	0.0426	1376.3768	0.2%	0.634	0.2219	13447.627	0.2%
Boaco	boaco	49642	0.168	0.0415	7599.9836	1.0%	0.509	0.1852	63591.075	1.0%
Chinandega	sto. tomas del n.	7097	0.206	0.0407	1065.4376	0.1%	0.722	0.2503	12290.234	0.2%
Rio San Juan	s. juan del norte	1292	0.16	0.04	190.80971	0.0%	0.566	0.192	1716.1097	0.0%
RAAN	pto. cabezas	65894	0.161	0.04	9727.1797	1.3%	0.471	0.1727	78736.922	1.3%
Boaco	s.j. remates	7634	0.174	0.0399	1123.1006	0.2%	0.593	0.2063	10897.57	0.2%
RAAS	desemb. c.r.g.	3583	0.173	0.0395	522.61386	0.1%	0.626	0.2106	5221.0429	0.1%
Rio San Juan	el almendro	13350	0.178	0.0391	1927.0852	0.3%	0.597	0.2082	19224.981	0.3%
Boaco	san lorenzo	23592	0.151	0.0388	3375.8962	0.5%	0.486	0.1721	28087.275	0.5%
Matagalpa	san isidro	17392	0.169	0.0385	2471.338	0.3%	0.543	0.192	23107.102	0.4%
Chinandega	s.fco. del n.	6732	0.199	0.0383	952.69687	0.1%	0.724	0.2478	11543.388	0.2%
RAAS	muelle de b.	21990	0.17	0.038	3082.9848	0.4%	0.569	0.1982	30150.325	0.5%
Leon	el jicaral	10299	0.188	0.0368	1400.7995	0.2%	0.694	0.2347	16724.349	0.3%
Chinandega	somotillo	28927	0.176	0.0357	3808.5337	0.5%	0.632	0.216	43218.482	0.7%
Carazo	la conquista	3770	0.177	0.0354	492.94736	0.1%	0.628	0.2145	5594.4996	0.1%
Chinandega	el viejo	76454	0.166	0.0352	9933.464	1.4%	0.566	0.1956	103460.13	1.7%
Chontales	santo domingo	12138	0.144	0.034	1522.8422	0.2%	0.543	0.1791	15037.798	0.2%
Chontales	el coral	7020	0.139	0.0329	853.43918	0.1%	0.496	0.1663	8076.2886	0.1%
Rivas	tola	21986	0.165	0.0327	2652.1418	0.4%	0.634	0.2105	32015.669	0.5%
Jinotega	la concordia	6486	0.157	0.0324	775.77145	0.1%	0.592	0.197	8841.0583	0.1%
Chinandega	pto. morazan	13213	0.16	0.0321	1566.8827	0.2%	0.621	0.2053	18769.033	0.3%
RAAS	l. perlas	10627	0.151	0.0319	1253.2253	0.2%	0.55	0.1847	13582.387	0.2%
Chontales	la libertad	11381	0.144	0.0317	1330.4632	0.2%	0.552	0.1822	14343.071	0.2%
Boaco	teustepe	26214	0.142	0.0316	3057.1712	0.4%	0.531	0.1766	32032.253	0.5%
Nueva Segovia	ocotal	34487	0.125	0.0312	3966.8598	0.5%	0.42	0.145	34606.907	0.6%
Chontales	acoyapa	16943	0.126	0.0311	1946.9938	0.3%	0.501	0.1629	19095.031	0.3%
Leon	larreynaga	27635	0.156	0.0311	3168.5848	0.4%	0.611	0.201	38430.824	0.6%
Carazo	sta. teresa	16819	0.152	0.0308	1912.6746	0.3%	0.545	0.1842	21435.953	0.3%
Chontales	villa sandinoi	13145	0.131	0.0303	1468.298	0.2%	0.496	0.1632	14843.525	0.2%
Leon	telica	23227	0.15	0.0294	2518.9952	0.3%	0.595	0.1953	31379.15	0.5%
Rio San Juan	morrito	6559	0.139	0.027	654.77272	0.1%	0.587	0.1873	8497.0228	0.1%
Chontales	s.f. de cuapa	5496	0.114	0.0263	532.92562	0.1%	0.463	0.1476	5613.528	0.1%

Department	Municipality	(1) 2005 Census Pop.	Extreme Poverty				General Poverty			
			(2) Incidence (%)	(3) Gap Index	(4) Value of the Gap (thousands of córdobas)	(5) Proportion of the Gap	(6) Incidence (%)	(7) Gap Index	(8) Value of the Gap (thousands of córdobas)	(9) Proportion of the Gap
Esteli	esteli	110878	0.097	0.0234	9560.8825	1.3%	0.35	0.1166	89441.67	1.5%
Chinandega	posoltega	16730	0.119	0.0227	1401.9413	0.2%	0.551	0.1692	19579.966	0.3%
Rivas	belen	16426	0.121	0.0223	1351.0035	0.2%	0.551	0.1712	19455.071	0.3%
Chontales	comalapa	10972	0.112	0.0222	899.70933	0.1%	0.524	0.1605	12185.518	0.2%
Leon	quezalguaque	8591	0.118	0.0217	688.53659	0.1%	0.57	0.1737	10321.229	0.2%
Chinandega	el realejo	8838	0.109	0.0208	677.67155	0.1%	0.515	0.157	9599.1518	0.2%
Carazo	la paz de carazo	4656	0.116	0.0207	356.14913	0.0%	0.551	0.1703	5487.1921	0.1%
RAAS	bluefields	45226	0.089	0.0196	3274.7686	0.0%	0.355	0.1136	35557.389	0.0%
Carazo	diriamba	57370	0.104	0.0192	4067.0234	0.6%	0.486	0.1488	59047.082	1.0%
Rivas	moyogalpa	9341	0.104	0.0185	639.41537	0.1%	0.535	0.1596	10314.099	0.2%
Chontales	sto. tomas	16349	0.082	0.0184	1110.8298	0.2%	0.359	0.1105	12495.093	0.2%
Chontales	juigalpa	51255	0.071	0.0174	3286.3068	0.5%	0.297	0.0923	32726.57	0.5%
Leon	la paz centro	28053	0.095	0.0173	1789.0306	0.2%	0.487	0.1449	28122.141	0.5%
Carazo	san marcos	28906	0.097	0.0173	1842.0278	0.3%	0.475	0.1438	28755.82	0.5%
Rivas	s.j. del sur	14638	0.091	0.0165	889.11602	0.1%	0.44	0.1329	13457.386	0.2%
Chontales	san p. de lovago	7616	0.081	0.0157	440.98211	0.1%	0.384	0.1166	6141.6808	0.1%
Rivas	buenos aires	5415	0.079	0.0146	291.68127	0.0%	0.437	0.1255	4700.826	0.1%
Chinandega	chinandega	120461	0.074	0.0137	6101.8255	0.8%	0.381	0.1117	93059.447	1.5%
Managua	el crucero	13388	0.075	0.0136	673.24158	0.1%	0.405	0.1169	10831.087	0.2%
Carazo	jinotepe	41903	0.073	0.0135	2081.5179	0.3%	0.367	0.1091	31635.28	0.5%
Leon	nagarote	32269	0.074	0.0133	1589.7268	0.2%	0.408	0.1172	26165.803	0.4%
Leon	leon	172825	0.071	0.0132	8394.739	1.2%	0.369	0.1077	128742.13	2.1%
Chinandega	chichigalpa	44679	0.073	0.0126	2075.4816	0.3%	0.43	0.1221	37729.502	0.6%
Rivas	potosi	11900	0.069	0.012	525.42439	0.1%	0.408	0.1151	9475.6743	0.2%
Carazo	el rosario	5316	0.068	0.0114	223.67553	0.0%	0.432	0.1194	4389.5872	0.1%
Granada	nandaime	34227	0.067	0.0112	1411.0033	0.2%	0.435	0.1195	28292.513	0.5%
Managua	s.f. libre	9406	0.068	0.0112	387.19735	0.1%	0.456	0.1239	8059.9596	0.1%
Granada	diriomo	22304	0.067	0.011	908.08375	0.1%	0.441	0.1205	18600.49	0.3%
Granada	diria	6297	0.061	0.0104	242.43961	0.0%	0.404	0.1102	4801.6905	0.1%
Managua	ticuantepe	26828	0.058	0.0103	1019.4989	0.1%	0.338	0.0948	17599.388	0.3%
Masaya	s.j. de oriente	4729	0.058	0.0097	170.13228	0.0%	0.434	0.114	3730.4011	0.1%
Managua	s.r. del s.	42250	0.058	0.0096	1493.6508	0.2%	0.371	0.1015	29676.582	0.5%
Masaya	la concepcion	31910	0.055	0.0096	1125.2633	0.2%	0.42	0.1092	24105.819	0.4%
Granada	granada	103960	0.052	0.0089	3405.0182	0.5%	0.344	0.0932	67034.693	1.1%
Masaya	tisma	10679	0.051	0.0088	344.90888	0.0%	0.402	0.1035	7646.6948	0.1%
Masaya	niquinhomo	14847	0.054	0.0086	472.74718	0.1%	0.438	0.1135	11659.633	0.2%
Managua	tipitapa	99477	0.05	0.0086	3146.527	0.4%	0.337	0.0897	61758.781	1.0%
Rivas	rivas	40925	0.048	0.0085	1289.0831	0.2%	0.302	0.0821	23251.634	0.4%
Carazo	dolores	6744	0.046	0.0075	187.05138	0.0%	0.319	0.0844	3935.6217	0.1%
Managua	villa c.fonseca	27360	0.046	0.0072	722.69397	0.1%	0.356	0.0919	17389.284	0.3%
Masaya	nandasmio	10732	0.043	0.0071	281.09308	0.0%	0.377	0.0938	6962.9886	0.1%
Masaya	masatepe	31493	0.039	0.0062	724.22498	0.1%	0.36	0.0884	19257.263	0.3%
Masaya	masaya	139189	0.036	0.006	3100.0777	0.4%	0.317	0.0786	75718.424	1.2%
Managua	mateare	28740	0.038	0.006	636.40384	0.1%	0.314	0.0794	15783.806	0.3%
Rivas	san jorge	7979	0.035	0.0056	165.81002	0.0%	0.284	0.0717	3955.8077	0.1%
Managua	c. sandino	74838	0.032	0.0051	1421.6732	0.2%	0.265	0.0656	33986.142	0.6%
Chinandega	corinto	16621	0.028	0.0045	273.58589	0.0%	0.268	0.0641	7373.0602	0.1%
Managua	managua	932506	0.023	0.0042	14545.706	2.0%	0.173	0.0436	281108.46	4.6%
Masaya	nindiri	37875	0.023	0.0039	543.62144	0.1%	0.237	0.0555	14547.53	0.2%
RAAS	c. island	6422	0.02	0.0036	85.958974	0.0%	0.186	0.0434	1928.0023	0.0%
Masaya	catarina	7513	0.02	0.0028	78.182378	0.0%	0.235	0.0526	2731.7825	0.0%

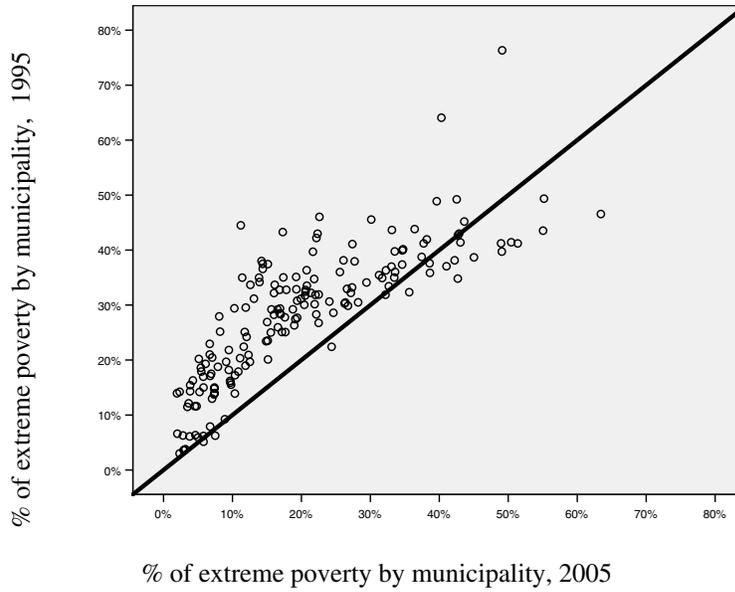
Region	Extreme Poverty				General Poverty			
	Incidence (%)		Gap Index		Incidence (%)		Gap Index	
	1995	2005	1995	2005	1995	2005	1995	2005
Managua	3.6	4.2	0.7	0.9	20.1	22.2	5.7	6.3
Pacific	17.9	9.2	4.5	1.7	53.2	44.1	19.6	13.4
Central	32.2	25.2	9.9	6.6	67.8	62.2	29.9	24.9
Atlantic	36.7	25.4	14.0	6.6	69.7	65.5	33.4	25.7

Department	Extreme Poverty				General Poverty			
	Incidence (%)		Gap Index		Incidence (%)		Gap Index	
	1995	2005	1995	2005	1995	2005	1995	2005
5 Nueva Segovia	33.4	28.6	10.1	7.3	71.5	69.3	31.3	28.0
10 Jinotega	37.2	30.3	12.6	7.8	73.2	72.6	34.0	29.7
20 Madriz	37.1	43.2	11.3	12.6	74.6	78.9	33.7	36.9
25 Esteli	23.4	15.1	6.8	3.5	56.7	48.1	23.2	17.0
30 Chinandega	20.9	12.8	5.5	2.5	57.5	51.0	22.0	16.6
35 Leon	19.0	11.7	4.9	2.3	54.1	48.2	20.4	15.5
40 Matagalpa	31.9	33.7	9.5	9.1	67.9	71.5	29.7	30.9
50 Boaco	32.8	13.5	10.0	3.0	68.2	50.9	30.2	16.9
55 Managua	3.6	4.2	0.7	0.9	20.1	22.2	5.7	6.3
60 Masaya	14.3	3.8	3.4	0.6	48.6	32.7	16.9	8.1
65 Chontales	29.4	10.7	9.2	2.5	62.5	42.0	27.4	13.6
70 Granada	17.0	5.9	4.3	1.0	51.2	37.6	18.8	10.3
75 Carazo	15.5	10.0	3.8	1.9	49.0	46.1	17.6	14.2
80 Rivas	20.3	10.9	5.2	2.1	58.4	48.7	22.0	15.2
85 Rio San Juan	36.3	22.4	12.0	5.3	71.5	65.6	32.9	24.3
91 RAAN	43.7	34.4	20.3	10.0	72.4	72.4	39.0	31.6
93 RAAS	30.8	18.5	9.8	4.3	65.8	58.4	28.9	20.9

22. In the three figures that compare municipalities (Figures A4.1, A4.2 and A4.3), the values corresponding to 1995 are located on the vertical axis and the 2005 values are on the horizontal axis. A 45 degree line has been superimposed onto all three figures for reference purposes: values lying directly on the reference line signify that no changes took place between 1995 and 2005, while values above the 45° line imply a reduction in the municipal indicator and values below the 45° line may be interpreted as an increase in the corresponding municipal indicator.

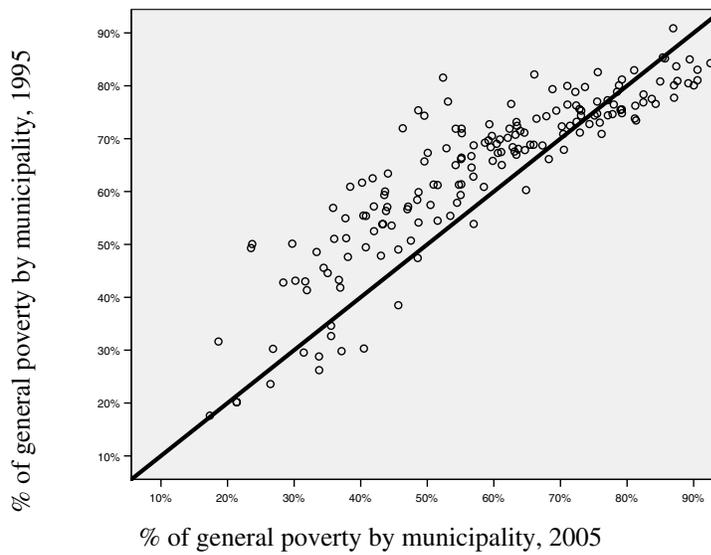
23. In the comparisons of both extreme poverty (Figure A4.1) and general poverty (Figure A4.2) at the municipal level, we find that most of the municipalities are situated above the 45° line, which signifies a trend toward reductions in both types of poverty. In both cases, increases in poverty seem to be concentrated in those municipalities with higher levels of poverty.

Figure A4.1 Relationship between % of extreme poverty in municipalities in 1995 and 2005, Nicaragua



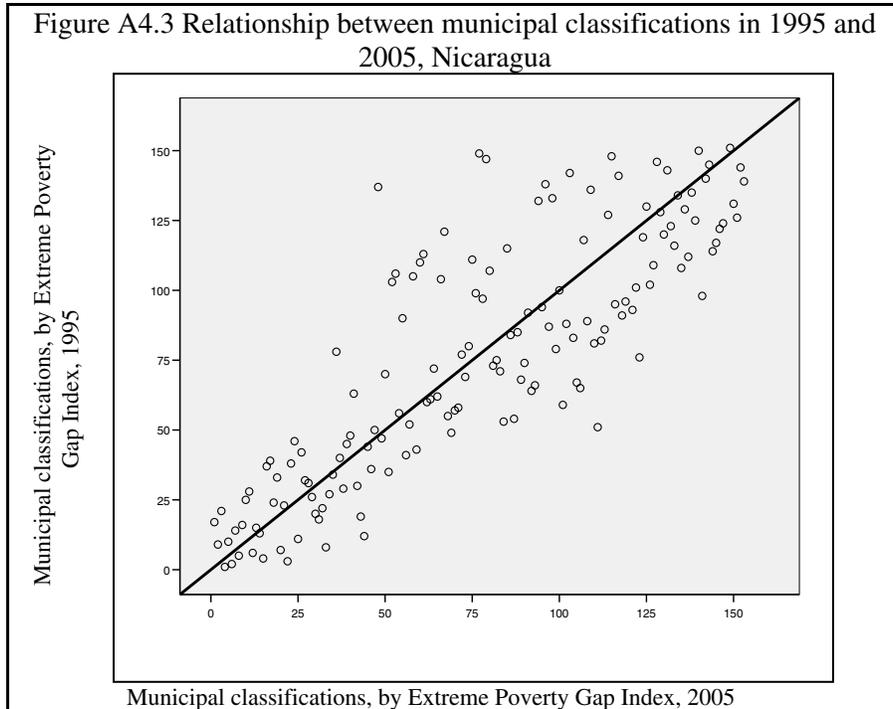
Source: 1995 and 2005 Poverty Maps of Nicaragua

Figure A4.2 Relationship between % of general poverty in municipalities in 1995 and 2005, Nicaragua

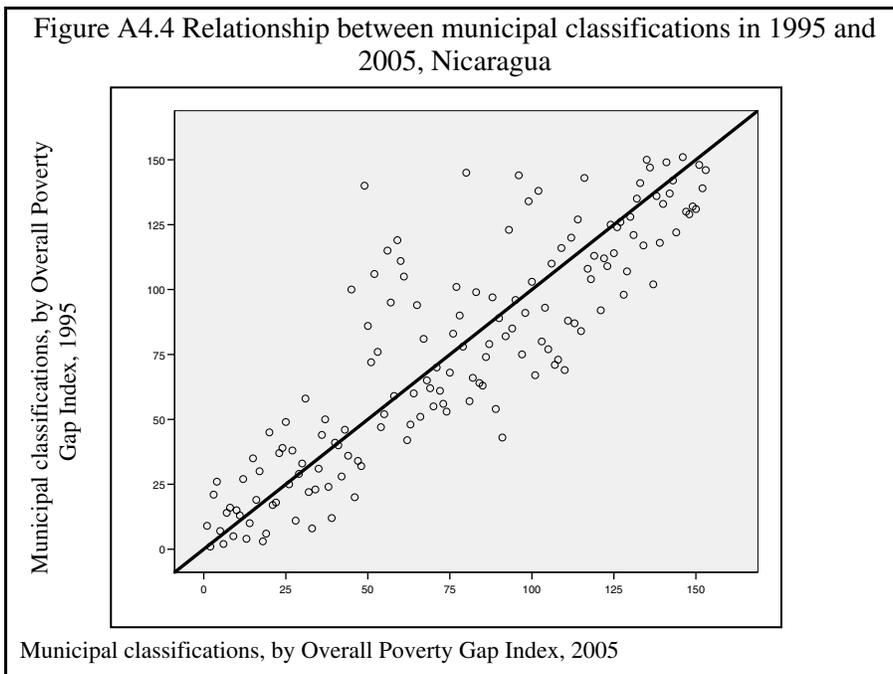


Source: 1995 and 2005 Poverty Maps of Nicaragua

24. Figures A4.3 and A4.4 provide an overall view of how the classification of municipalities has changed between 1995 and 2005, based on the Extreme and Overall Poverty Gap Indexes. We see that although the general trend has been to remain at the same 1995 Poverty Map classification, there have been some significant changes in some of the municipalities.¹²⁴



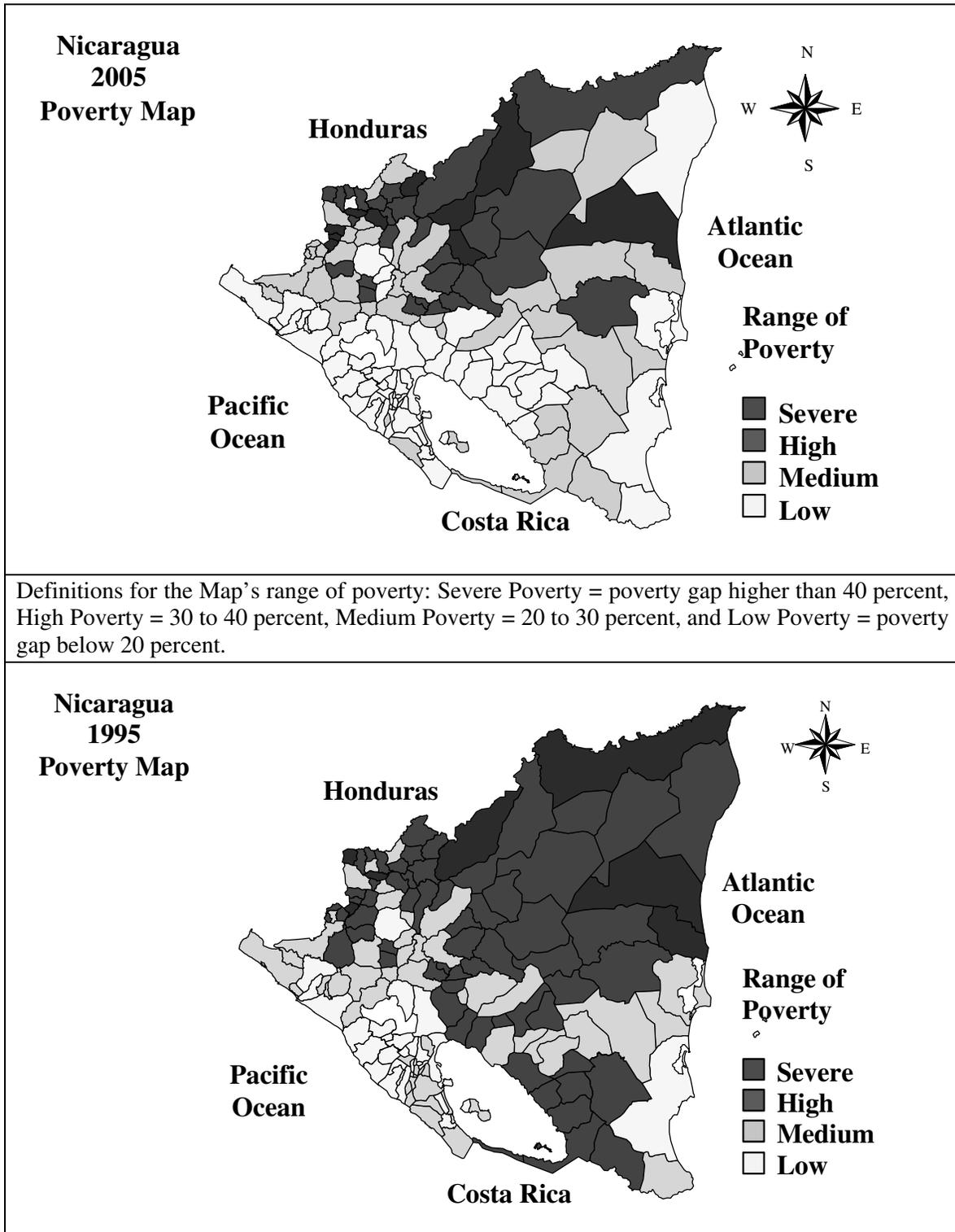
Source: 1995 and 2005 Poverty Maps of Nicaragua



Source: 1995 and 2005 Poverty Maps of Nicaragua

¹²⁴ The magnitude of the change (either increase or decrease) is determined by the distance that each point (municipality) lies from the 45° line.

Figure A4.5. Poverty Map of Nicaragua, 2005



VII. Recommendations

25. We recommend that those responsible for planning policies and programs use the Poverty Map of Nicaragua based on the 2005 LSMS and 2005 Census to target their programs. This map is clear and easy to interpret. The methodology is not based on any great assumptions, nor are there any doubts about the quality of information used. In the absence of a better source of information for helping target programs in Nicaragua, decision-makers can easily justify use of this tool.

26. We also recommend that decisions be made in consideration of the fact that in some cases, the distribution of poverty has changed substantially over the past ten years. Even when the poverty profile by regions has not changed significantly, there may be pockets of poverty in specific communities that are not perceived at the municipal level.

27. This poverty map is based on the characteristics of households that were jointly determined by the 2005 Census and the 2005 LSMS, and their relationship to aggregate consumption that was calculated on the basis of data from the 2005 LSMS. We recognize that the concept of well-being goes beyond the measurement for poverty used here, and recommend that other indicators be used to complement the information obtained in this exercise. Other sources of information may be combined with the results presented in this exercise, as long as they are available for all municipalities of the country. Some specific indicators that may be used include:

- Citizen security: information about criminal or similar activity that reduces the population's quality of life.
- Family violence.
- Any type of risk or vulnerability, whether these are due to weather factors (above all in rural areas among households dedicated to agricultural production), or other factors.
- A household's ability to respond to traumatic events.
- Discrimination based on race, religion, gender, etc.
- Lack of access to state services, including the judicial system.
- The Map of Unsatisfied Basic Needs (UBN).

28. The manner in which the results of this Poverty Map can be combined with other indicators will depend upon the importance assigned to each of these. Regardless of how these sources of information are combined, the methodology used should be "transparent" and easy to explain.

29. When using poverty maps, the qualities of the specific programs to which they will be applied also need to be taken into consideration. Even if a municipality is considered a priority for certain public investments, this does not justify all types of interventions. For example, if a program to improve access to water is being weighed, not only the municipality's level of poverty should be examined, but also the quality of the water distribution network. It is possible that although some municipalities are poor, certain types of investments might not be justified.

30. The poverty map helps us see differences in the conditions of households at the municipal level that are not detected at either the regional or departmental levels. Nonetheless, this is not to say that all households within a given municipality have the same socioeconomic conditions. It will also be necessary to determine which households within each municipality should be beneficiaries and which ones should not, depending on the type of application and program that is utilizing the poverty map as a guide for distributing its resources. Various tools can be used for selecting final program beneficiaries, which range from targeting designs, to conditioned support, to collecting information at the household level.

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APPENDICES

APPENDIX A4.1

POVERTY MEASUREMENTS

The scope of poverty (extension) and the poverty gap are two measures that help us to understand the characteristics of poverty in Nicaragua. The definitions can be applied to both extreme poverty and general poverty. This document uses the following formulas:

INCIDENCE (OR EXTENSION) OF POVERTY

This is the number of poor people as a proportion of the total population

$$E = \frac{q}{n}$$

Where:

q = number of poor

n = size of the population

POVERTY GAP INDEX

$$B = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)$$

Where:

Z = poverty line

Y_i = Per capita consumption. Since this is only added up for “q” households, only poor households are included.

TOTAL VALUE OF THE GAP

The minimum value required for making poverty disappear

$$V = \sum_{i=1}^q (Z - Y_i) = B * n * Z$$

PROPORTION OF THE NATIONAL GAP

The total value of the gap can be used to develop an index composed of the poverty rates and the population or the proportion of the gap. If we consider the problem of assigning a specific amount of available resources for reducing poverty-- RD_{TOTAL} --the estimates of the Poverty Gap-- B_j --in each municipality --j-- can be used. With this value, we can easily calculate the total amount of resources that are needed, in principle, for assisting every extremely poor individual to reach the extreme or general poverty line. Thus, for each municipality --j-- we have the total amount of resources needed -- RN_j :

$$RN_j = B_j * n_j * z,$$

Where:

n_j is the total population of municipality j , and z is the extreme or general poverty line.

Obviously, then, the total amount of resources needed at the national level is the sum of the resources needed by each municipality:

$$RN_{TOTAL} = \sum_{j=1}^k RN_j .$$

In most cases, the available resources – RD – will not be the same as the needed resources – RN . Thus, the contribution that each municipality makes toward closing the Poverty Gap is considered as the basis for allocating available resources. Therefore, the resources assigned to each municipality – j – will be:

$$RD_j = \frac{RN_j}{RN_{TOTAL}} * RD_{TOTAL} \quad \text{where} \quad \frac{RN_j}{RN_{TOTAL}} = \textit{Proportion of the gap}$$

As long as the available funds are assigned within each municipality in the same way (in proportion to each individual's consumption gap in relation to the extreme or general poverty line), then these allocations can help to reduce each individual's poverty gap in the same proportion.

APPENDIX A4.2

METHODOLOGY AND RESULTS FROM THE FIRST STAGE

1. The methodology that was used can be clearly divided into two parts: the estimate of equations in the first stage, using data from the 2005 LSMS household surveys,¹²⁵ and the estimate of poverty measurements throughout the country using the 2005 Census.

FIRST STAGE

2. The first stage exclusively used information from the 2005 LSMS and consisted of a multivariate regression between the natural logarithm of per capita consumption per household ($\ln y_i$) and the different characteristics of the household, based on questions contained in both the 2005 LSMS and the 2005 Census (vector X_i):

$$\ln y_i = X_i \beta + \varepsilon_i \text{ (Equation 1)}$$

3. This estimate was made individually for each of the seven regional groupings included in the 2005 LSMS¹²⁶ and these were evaluated to eliminate or model problems related to the assumptions for normality, homoscedasticity, and fixed effects.¹²⁷

4. To evaluate the assumption for normality, the residual from the regressions was plotted on a graph, and normal and t-student curves with different degrees of freedom were superimposed on them, selecting the curve that could best be adapted to the behavior of the regression residual used in the first stage. In the regression from the second stage, the type of distribution of the residual was indicated.

5. To model the presence of heteroscedasticity, an F test of the multivariate regression was conducted, between the square of the regression residual (dependent variable: $(\varepsilon_i)^2$ estimated) and a series of interaction variables created on the basis of variables selected from the first stage equation (independent variables: X_i).¹²⁸

6. To reduce the impact of problems due to fixed effects, average variables at the level of census segments were incorporated (calculated with the 2005 Census). The selected variables were included as part of the second stage regression for modeling heteroscedasticity.

7. Finally, the Hausman test was applied to each regression in the first stage, to determine whether it was necessary to use sample weights or not.

8. In Table A4.2.1, the general results of each of the regressions that were carried out in the first stage are summarized.

¹²⁵ Due to the fact that the census information is based on households, the 2005 LSMS had to be converted to data based on households.

¹²⁶ Managua, Urban Pacific, Rural Pacific, Urban Central, Rural Central, Urban Atlantic and Rural Atlantic.

¹²⁷ These assumptions are incorporated into the program developed by the World Bank, which was used to calculate poverty estimates.

¹²⁸ Interaction is defined as all possible interactions between the selected variables: $X_1 * X_2, X_1 * X_3, X_1 * X_4, \dots, X_2 * X_3, X_2 * X_4, X_2 * X_5, \dots$, etc.

REGIONS	R ² adjusted	F Test p <	Distribution of Residual	Use of Sampling weights	Number of Cases
1. Managua	0.72	0.000	Normal	Yes	554
2. Urban Pacific	0.64	0.000	Normal	Yes	909
3. Rural Pacific	0.55	0.000	Normal	Yes	704
4. Urban Central	0.70	0.000	Normal	Yes	1,214
5. Rural Central	0.53	0.000	Normal	Yes	1,436
6. Urban Atlantic	0.67	0.000	Normal	Yes	853
7. Rural Atlantic	0.42	0.000	Normal	Yes	1,212

9. The results of the first stage regressions, the estimated β values and their corresponding standard error may be found in Table A4.2.2. It is important to note that these models are not intended to be explanatory, and the individual estimated values should not be interpreted as a measurement that relates household characteristics with levels of consumption.

SECOND STAGE

10. The second stage utilized household characteristics found in the 2005 Census, and estimated the probability of each household being poor (P_i^*) through using the following equation:

$$P_i^* = \hat{E} \left[P_i | X_i, \hat{\beta}, \hat{\sigma} \right] = \Phi \left[\frac{(\ln Z - C_i \hat{\beta})}{\hat{\sigma}} \right] \quad (\text{Equation 2})$$

Where:

Φ = the normal accumulated distribution.

$\ln Z$ = the natural logarithm for the value of the poverty line (general or extreme).

$\hat{\beta}$ = estimated values in the first stage regression.

$\hat{\sigma}$ = standard deviation estimated in the first stage regression.

C_i = values from the census about the characteristics of each household: "i".

11. The other parameters that were calculated are the gap and depth of poverty and the Theil Index, for three different alfa values (0.5, 1 and 2), where the value of 0.5 places more emphasis on the distribution of consumption in the poorest households, and the value of 2 places more emphasis on the distribution in the wealthiest households (alfa values=1 deal with all households equally, regardless of level of consumption). The calculation of the proportion ($\gamma = 0$), the gap ($\gamma = 1$) and the depth ($\gamma = 2$) of poverty can be expressed in the following equation:

$$P_\gamma = \frac{1}{n} \sum_{i=1}^{i=q} \left[\frac{z - y_i}{z} \right]^\gamma \quad (\text{Equation 3})$$

Where:

H_q = the poor household with greater consumption.

Z = the poverty line.

y_i = each household's consumption.

n = the total number of observations (poor and non-poor).

12. The results of the Poverty Map include the extension (incidence) of general and extreme poverty at the regional, departmental and municipal levels. For the rest of the parameters, see the

SPSS archive “result_all.sav”, which includes all of the parameters at all levels of aggregation that were calculated.

13. In addition, and in response to the needs of the Government of Nicaragua, the general and extreme poverty gaps were also calculated. These calculations were made at all levels of aggregation, but without distinguishing between urban and rural areas.¹²⁹

¹²⁹ The standard deviation of the new measurement is: $\sqrt{(Var X) + (Var Y) + 2COV_{XY}}$ where VAR X is the square of the standard deviation of the rural gap, which was averaged. Since the estimates are generated by different models, the covariance between both measurements is zero.

Table A42.2 Results of the First Stage Regressions – Beta Parameters of the Initial Regressions with the 2005 LSMS¹

	Variable	Managua	P. Urban	P. Rural	C. urban	C. Rural	A. Urban	A. Rural
	Constant	9.14	8.64	7.73	8.93	8.97	9.40	8.62
		(0.1804)	(0.1125)	(0.1248)	(0.1038)	(0.1336)	(0.0666)	(0.1039)
Home							-0.095	
	Gypsum, <i>nicalit</i> or wood						(0.0286)	
	FLOOR	-0.122	-0.128	-0.138	-0.088		-0.150	
	Dirt floor	(0.0399)	(0.0334)	(0.0331)	(0.0296)		(0.0369)	
	WATER_A				0.175	0.147		
	Pipes within the home					(0.0287)		
	WATER_B					0.073		
	Pipes outside of home or well					(0.0255)		
	ROOF_B				-0.071			
	Clay roof tiles, cement tiles				(0.0326)			
	TOILET			0.326	0.095		0.094	
	Any type of toilet			(0.0893)	(0.0277)		(0.0412)	
	ELECTRICITY			0.095	0.221			0.227
	Electricity or solar panel			(0.0351)	(0.0437)			(0.0417)
	GAS_ELEC			0.115		0.173		0.322
	Kitchen with gas or electric stove			(0.0577)		(0.0949)		(0.1000)
	GARBAGE	0.099						
	Collected, garbage dump, or pay to remove	(0.0436)						
	HOME_TYPE		0.136	0.132	-0.198			
	House, farm or apartment		(0.0541)	(0.0484)	(0.0777)			
PROPERTY TENURE			-0.071		0.124		0.174	
Formal			(0.0306)		(0.0217)		(0.0263)	
Equipment	ASSETS1			0.046	0.060	0.110		0.115
	Small equipment			(0.0160)	(0.0140)	(0.0128)		(0.0195)
	ASSETS2	0.160	0.209		0.153	0.204	0.124	0.136
	Medium and large equipment	(0.0216)	(0.0171)		(0.0148)	(0.0239)	(0.0177)	(0.0295)
	ASSETS3	0.123	0.177	0.254	0.155	0.145	0.241	
	Telephone, cable TV, internet	(0.0208)	(0.0229)	(0.0459)	(0.0285)	(0.0722)	(0.0198)	
	KITCHEN						-0.097	
	With exclusive room for cooking						(0.0364)	
	Record player							0.194
	With recorder							(0.0431)
Health	HO_HEALTH					-0.040		
	Hours to health center					(0.0113)		
	KM_HEALTH	0.015	-0.035			0.006		
		(0.0060)	(0.0146)			(0.0017)		
Size	N_5		-0.104		-0.036		-0.061	-0.055
	# people 0-5		(0.0153)		(0.0146)		(0.0196)	(0.0134)
	N6_15		-0.060	-0.074				
	# people 6-15		(0.0102)	(0.0115)				
	N16_59							0.031
	# people 16-59							(0.0111)
	N60_M		-0.136	-0.100				
	# people 60 or more		(0.0238)	(0.0273)				
	N_TODOS	-0.081			-0.103	-0.077	-0.068	-0.063
	# total people	(0.0061)			(0.0053)	(0.0038)	(0.0062)	(0.0072)
AGE	0.010	0.009	0.015					
	(0.0017)	(0.0020)	(0.0019)					
	Average age in the household							

	Variable	Managua	P. Urban	P. Rural	C. Urban	C. Rural	A. Urban	A. Rural
Education	LITERACY			0.319	-0.153			
	% literacy > 9 years			(0.0644)	(0.0663)			
	LITERACY 1							0.089
	Head of household (HoH) is literate							(0.0248)
	EDUCA	0.056			0.047		0.031	
	Average years of education >15	(0.0082)			(0.0049)		(0.0051)	
	EDUCA1		0.012			0.023		
	HoH: years of education		(0.0038)			(0.0040)		
	STUDIES			0.097				-0.131
	% of students < 15 years			(0.0433)			(0.0404)	
	HAS_U1	0.179	0.172	0.559				
	HoH with university degree	(0.0613)	(0.0519)	(0.1022)				
Other	ETHNICITY1			-0.275				0.193
	Ethnicity of HoH			(0.1130)				(0.0421)
	BORN_MUN1					-0.091		
	HoH born in this municipality					(0.0231)		
	LIVED5M1							-0.194
	HoH lived same place 5 years							(0.0538)
Employment	HOURS_WORK	0.004						
	Average hours worked > 15	(0.0011)						
	TYP1_WORK1	-0.083					-0.178	
	HoH is employee or laborer	(0.0320)					(0.0342)	
	TYP2_WORK1				-0.247		-0.399	
	HoH is day laborer				(0.0677)		(0.0751)	
	TYP5_WORK1				-0.046	-0.289	-0.158	
	HoH has own business/ cooperative/other				(0.0270)	(0.0372)	(0.0363)	
	AREA1_WORK1				0.134		0.111	
	HoH works in agriculture				(0.0374)		(0.0411)	
	AREA2_WORK1				0.112		0.137	
	HoH works mid-level: 4, 6, 7 or 8				(0.0278)		(0.0394)	
	OCU1_WORK1					0.362		
	HoH works in agriculture/fishing					(0.0401)		
	OCU5_WORK1				0.137			
	HoH unskilled laborer/military				(0.0387)			
	OCU6_WORK1					0.319		
HoH works in personal services, artisan production, construction, mechanics, graphic arts, manufacturing.					(0.0651)			
OCU7_WORK1			0.205		0.420	0.098	0.218	
HoH works in commerce			(0.0497)		(0.0646)	(0.0455)	(0.0671)	
Emigration	ANYONE_E	-0.140						
	Has someone in household emigrated?	(0.0555)						
	E_5YEARS							-0.070
	# of emigrants past 5 years							(0.0309)
	E_SEX		0.081	-0.149				
	Proportion males		(0.0408)	(0.0760)				
	E_EDUCA					0.022	0.015	
	Years of education > 15 years					(0.0059)	(0.0044)	
	E_EDU_MAX			0.027				
	Maximum education > 15 years			(0.0060)				
	E_COSTAR						-0.063	
	# emigrated to Costa Rica						(0.0259)	
	E_USA	0.132			0.118			0.204
# emigrated to USA	(0.0361)			(0.0233)			(0.0730)	

	Variable	Managua	P. Urban	P. Rural	C. Urban	C. Rural	A. Urban	A. Rural
Departments	DEPART10					0.124		
	Jinotega					(0.0274)		
	DEPART20					-0.083		
	Madriz					(0.0393)		
	DEPART25					0.176		
	Estelí					(0.0420)		
	DEPART30		0.060					
	Chinandega		(0.0305)					
	DEPART40				-0.125			
	Matagalpa				(0.0267)			
	DEPART50				0.133	0.284		
	Boaco				(0.0437)	(0.0375)		
	DEPART60		0.202	0.189				
	Masaya		(0.0334)	(0.0373)				
	DEPART65					0.418		
	Chontales					(0.0462)		
	DEPART70			0.252				
	Granada			(0.0490)				
	DEPART91							-0.159
RAAN							(0.0298)	
DEPART93						-0.070		
RAAS						(0.0276)		
Census Averages	WATER_A_1	-0.382						
	Pipes within the home	(0.1709)						
	WATER_B_1							0.120
	Public water post, well, other							(0.0453)
	FAN_1	0.317			0.268			
	Has fan	(0.1347)			(0.0688)			
	RADIO_1							0.397
	Has radio							(0.0992)
	BIC_1					0.239		
	Has bicycle					(0.0673)		
	CELL_1		0.484					
	Has cell phone		(0.1056)					
	LITERACY_1					-0.506		
	% literate > 9 years					(0.1044)		
	BIRTH5_1		-0.969					
	# of births in past 5 years		(0.3077)					
	OCU1_T_1							-0.220
	HoH works in agri. or fishing							(0.0550)
	WORK_T_1				0.286			
	% working >15 years				(0.1101)			
SEX1_1						-0.261		
Sex of HoH						(0.1310)		
¹ Standard errors in parentheses. Cells without information correspond to variables that were not used for the corresponding region.								

