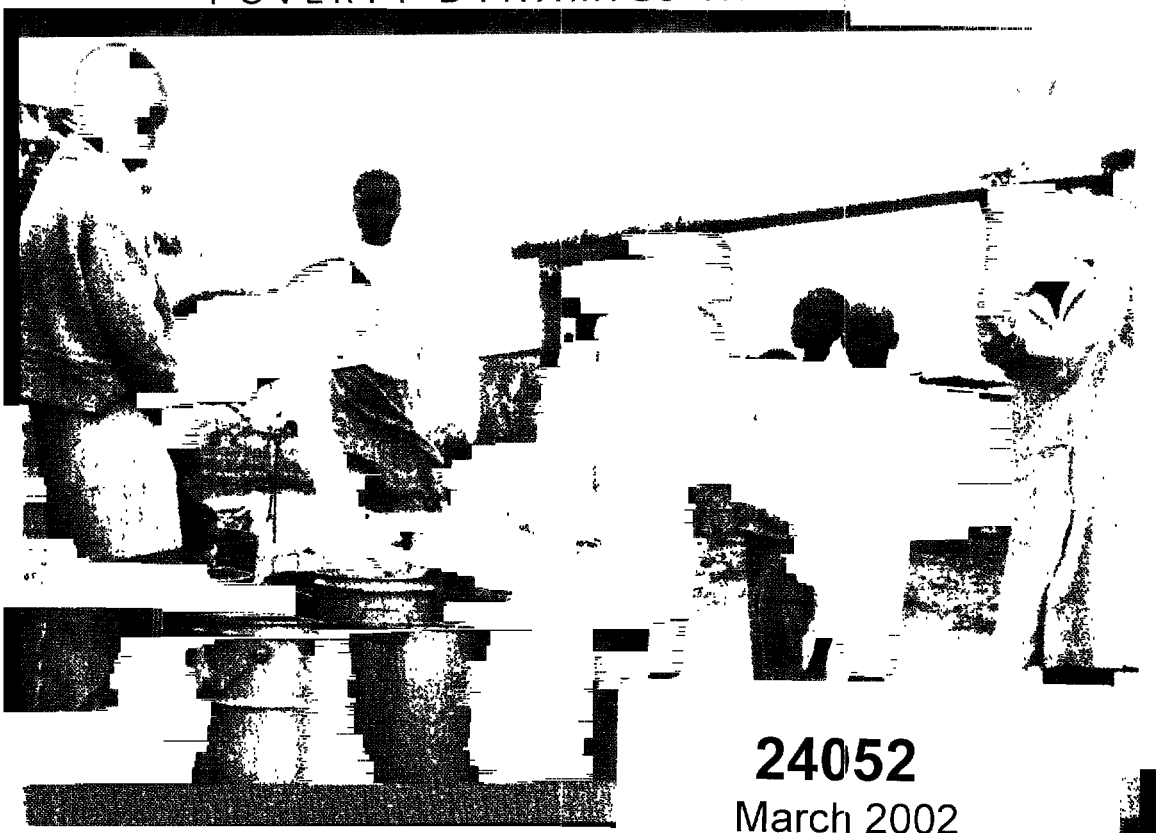
POVERTY DYNAMICS IN AFRICA



Why Has Poverty Increased in Zimbabwe?

Jeffrey Alwang, Bradford F. Mills, and Nelson Taruvinga

THE WORLD BANK

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POVERTY DYNAMICS IN AFRICA SERIES

This volume is one of a series of studies completed under the Poverty Dynamics in Africa initiative, which is organized by the Africa Region of the World Bank. This initiative has received support from several bilateral donors: Italy, the Netherlands, Switzerland, the United Kingdom, and the United States. The motive for the series, launched in 2002, was to make use of the vastly improved household survey data in Africa and to enhance understanding of poverty trends on this continent during the 1990s. The goal is to provide a more secure empirical basis on which to assess past progress in poverty reduction in Africa, and to frame more effective policies for the future.

The countries selected for investigation are those in which the household survey data are robust and can sustain comparisons over time. Many of the studies focus on income (or consumption) poverty and seek to link poverty outcomes to wider economic change in the countries concerned, including economic policy reforms. Other studies use demographic and health surveys, which have provided invaluable information about the well-being of African people—especially the children. Further information can be obtained from the Poverty Reduction and Economic Management (PREM) unit in the Africa Region of the World Bank.

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THE WORLD BANK
Washington, D.C.

1818 H Street, NW
Washington, DC 20433

 Published March 2002
Manufactured in the United States of America
1 2 3 4 05 04 03 02

Cover design: Naylor Design, Inc., Washington, DC
Cover photo credit: Curt Carnemark; Zimbabwe

ISBN 0-8213-5033-1

Library of Congress Cataloging-in-Publication Data has been applied for.

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Abbreviations and Acronyms

AFC	Agricultural Finance Corporation
CSO	Central Statistical Office
ESAP	Economic Structural Adjustment Program
GDP	Gross domestic product
GMB	Grain Marketing Board
ICES	Incomes Consumption and Expenditure Survey
SDF	Social Development Fund

Abstract

Poverty in Zimbabwe increased unambiguously during the first half of the 1990s. This text sheds light on the sources of this increase using several analytical techniques. The changes in standard descriptive statistics are examined first. Then changes in the entire distribution of well-being are examined using nonparametric methods, and the results show a broad-based decline in well-being. Using density-reweighting techniques, shifts in well-being are then decomposed. The decompositions suggest that declines in well-being between 1990 and 1995 derive from general declines in returns on assets; however, the declines would have been greater had significant investments in human and physical assets not been made by families. Regression-based decompositions follow up these findings and examine the role changes in returns to specific household assets have played in increasing poverty. The results indicate that the increase in poverty is primarily the result of declines in returns to human assets.

The results also call into question the efficacy of the Economic Structural Adjustment Program as it was implemented during the early 1990s. As of 1995, the Zimbabwean economy was not creating the types and quantities of jobs needed to reward continued investments in human capital. In rural areas, the two droughts that the country suffered between 1990 and 1995 had major short-term impacts on poverty, and ownership of physical assets has not yet recovered to pre-1991 levels. However,

declining returns on human and physical assets in rural areas would have raised poverty levels even without drought conditions. Serious structural changes to the economy are needed to create labor market conditions conducive to long-term, broad-based growth.

Introduction

By most indicators of performance, Zimbabwe's economy is on shaky ground. Real economic growth was negative for most of the 1990s and prospects for the near future are not good. Studies using household data from two nationally representative sources in the mid-1990s showed that more than 60 percent of Zimbabweans lived in households whose consumption expenditures fell below the national poverty line (CSO 1997a). Inequality was also high; Zimbabwe's Gini coefficient, the most widely used measure of inequality, in 1996 was .56, giving it one of the most unequal distributions of well-being in the world.

The decade of the 1990s saw steadily worsening conditions and increasing poverty as the country was buffeted by a number of forces. Although the postindependence government always placed poverty reduction among its highest priorities, poverty grew substantially, partly as a result of the government's inability to manage macroeconomic crises. Forces associated with the economic downturn include (a) economic liberalization, which derived from the Economic Structural Adjustment Program (ESAP) launched in 1991; (b) the government's inability to achieve any of ESAP's fiscal targets; (c) increasing uncertainty about property rights; (d) changes in governance, such as decentralization; and (e) recurring droughts.

The purpose of this text is to shed light on the sources of the increase in Zimbabwean poverty during the first half of the 1990s. We use several

analytical techniques. First, changes in standard descriptive indexes of poverty are explored. Second, shifts in the entire distribution of household well-being are examined using nonparametric techniques. We find a pronounced leftward shift in the distribution of well-being during the period of study. Third, shifts in the distribution of well-being are decomposed using semiparametric density-reweighting techniques. These decompositions suggest that declines in well-being between 1990 and 1995 resulted from the poor performance of the economy in general, and that these declines would have been even greater had significant investments in assets not been made by families in Zimbabwe. Regression-based poverty decompositions follow up these findings and examine the role that changes in returns to specific household assets have played in increasing poverty. The results indicate that the increase in poverty was primarily due to sharp declines in returns to assets (human and physical). The findings call into question the efficacy of ESAP, as it was implemented, in reducing poverty.

CHAPTER 1

Country Overview

Zimbabwe achieved its independence in 1980, and the new government inherited a relatively modern and diversified economy, especially by sub-Saharan African standards. Still, independent Zimbabwe faced the same problems as did many of the poorest countries in the world. Extreme dualism in agriculture, enforced by nearly a century of legislation, mirrored the divisions throughout society. In rural areas, where approximately 77 percent of the population lived, small-scale farming on communal lands was characterized by arid conditions, poor soil quality, and low productivity. By contrast, approximately 4,600 Europeans held the most productive lands, where large-scale commercial farming and ranching predominated. Modern input suppliers and a well-developed public support system served these commercial farming areas. In urban areas, whites, who represented less than 1 percent of the population, held most high-paying jobs, and private sector management was almost entirely white. Social divisions also reflected the pattern of urban settlements: low-density suburbs were almost exclusively white, whereas the majority black population resided in high-density areas characterized by poor infrastructure, limited access to high-quality public services, and overcrowding.

Following independence, the government embarked on a program of centralized economic planning and socialist-oriented policies. Priority was given to poverty reduction, and government spending was focused

on social sectors. Social sector spending rose from 25.7 percent of the total government budget in 1980–81 to 34.9 percent by 1990–91 (CSO 1998a). Rural infrastructure was expanded and agricultural programs were reoriented to address the needs of poor communal farmers. An ambitious land resettlement program was established in 1981 with a goal of resettling 162,000 families between 1982 and 1985 (Rukuni 1994). Immunization programs were expanded to cover most children; health services, particularly primary care services, were subsidized, so coverage became widespread; and primary school enrollment became almost universal (Marquette 1997). By the end of the 1980s, social indicators for Zimbabwe were far better than were those for countries at comparable levels of economic development, and productivity gains in communal agriculture had increased incomes in rural areas and reduced inequality.

However, by the start of the 1990s, imbalances between government expenditures and revenues compromised the sustainability of the poverty reduction and public investment programs. Macroeconomic performance began to stagnate by the mid-1980s, and government revenues grew much more slowly than did expenditures. Estimates of poverty showed that the structural problems of high poverty and inequality persisted, despite aggressive government programs. Also, many of the government programs never achieved their stated goals. For instance, rural resettlement stalled after an initial period of action. Before 1984, more than 35,000 households had been resettled, but between 1985 and 1994, only an additional 22,000 families were added to resettlement areas. Mounting central government debt began to crowd out private investment, and the government recognized that long-term efforts to reduce poverty required a strong economy with broad-based growth. The government began a dialogue with donors—including the European Union, the Japanese government, and the World Bank—and designed an adjustment program to address the macroeconomic imbalances.

ECONOMIC STRUCTURAL ADJUSTMENT PROGRAM

Zimbabwe officially began ESAP in December 1991. The program sought to promote higher growth by moving the economy toward

greater reliance on market forces and less reliance on government management and interventions. The main objectives of the program were (a) to reduce the central government's fiscal deficit; (b) to promote liberalization of international trade and finance; and (c) to deregulate domestic markets, including the elimination of price controls. A principal ESAP target was the reduction of the fiscal budget deficit from nearly 10 percent of gross domestic product (GDP) at the end of the 1980s to 5 percent by 1994–95. The government was to achieve this target by privatizing and cutting subsidies to parastatals, reducing the size of the civil service, and increasing cost recovery in government services, including cost recovery in health and education. The adjustment was intended to be pro-poor and recognized the important roles of the health and education sectors in addressing the needs of the poor. As a result, government policy was to protect these budgets to the greatest extent possible.

ESAP was accompanied by a Social Dimensions of Adjustment program, which provided food subsidies for low-income urban consumers, exemptions from health and education fees for poor households, enterprise loans for retrenched civil servants, and a variety of training programs. Liberalization of agricultural markets, one of the focal points of ESAP, was also expected to improve conditions among the rural and urban poor. In rural areas, removing implicit taxation on agricultural products and allowing rural decisionmakers to allocate resources in line with their comparative advantages were expected to improve incomes. In both rural and urban areas, price decontrol and the elimination of other market controls were expected to benefit the poor by enabling them to switch to cheaper sources of maize and other foods.

ESAP was successful in liberalizing the domestic economy and in reducing restrictions on international trade (see table 1). Price controls were gradually eliminated; untargeted food subsidies disappeared, along with subsidies to major parastatal enterprises; foreign exchange restrictions fell; and the exchange rate was allowed to float. ESAP was also fairly successful in reducing civil service employment. Substantial budgetary reallocation among ministries occurred. For example, the education and health ministries maintained their budget shares, but the agriculture ministry's share declined (see figure 1).

Table 1. Evolution of Zimbabwean Policies, Fiscal Years 1990–96

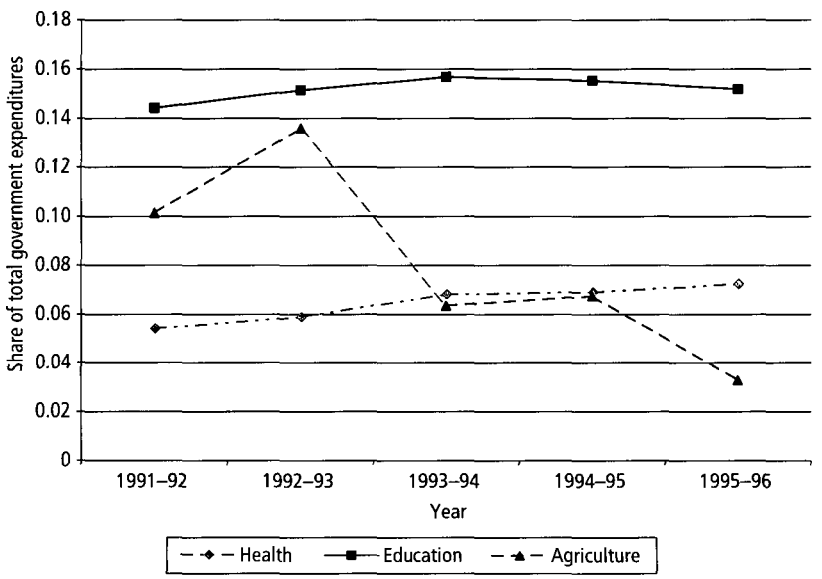
Year	Key events	Agricultural price policy[a]	Macroeconomic policy[b]	Poverty, health, and education policy
1991	ESAP Severe drought begins	• Phased elimination of controls on trade between smallholder areas	• Budget targets announced	• Social Development Fund (SDF) established
1992	Severe drought	• Government continues to intervene in maize markets • Price controls lifted on all but two fertilizers; government continues to manage imports through permits • Subsidies to marketing boards grow	• Fiscal deficit grows to 9.6% of GDP	• Increased user fees at government health facilities (fees not retained by collecting unit) • School fees established • School and health fee assistance for low-income families begin under SDF • Supplementary feeding program and grain loan scheme introduced
1993	ESAP reforms	• Grain Marketing Board (GMB) monopoly seller status restricted to large mills • High official producer price announced to promote planting • Maize meal subsidies removed • Subsidies to marketing boards fall by 83% (from Z$786 to Z$135) • Consumer prices decontrolled • Cotton marketing board eliminated	• Residential Foreign Currency Accounts introduced • Fiscal deficits remain high during remainder of period	
1994	Second drought begins	• GMB monopoly seller status eliminated	• Exchange control regulations relaxed; by end of year, exporters allowed to retain 100% of export earnings	

Table 1. (continued)

Year	Key events	Agricultural price policy[a]	Macroeconomic policy[b]	Poverty, health, and education policy
			• Market-determined exchange rate formally adopted	• Government articulates Poverty Alleviation Action Plan (coordinated by Ministry of Public Service, Labour, and Social Welfare)
1995	Second drought	• All fertilizer price controls ended • Subsidies to marketing boards eliminated		• Fees at rural health facilities abolished

a. Main source: Townsend 1999.
b. Main source: IMF 2001.

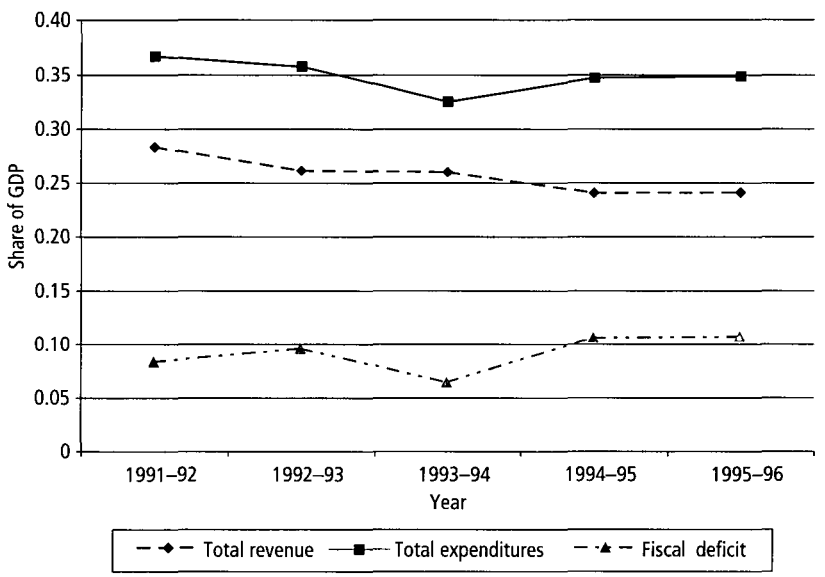
Figure 1. Allocation of Central Government Budget, by Ministry



EFFECTS OF THE DROUGHT OF 1991–92

The main ESAP failure was its inability to achieve fiscal targets (see figure 2). The drought of 1991–92 was partly responsible for this failure; it necessitated increased spending at the same time that tax revenues were declining because of drought-related reductions in incomes. The drought put pressure on the entire government budget and caused the reallocation of some expenditures from base programs to drought relief. Since the drought, the government has responded to a number of short-term crises by implementing unbudgeted programs, which have further exacerbated the fiscal deficit (Johnston and Stout 1999). While government expenditures as a share of GDP fell gradually, revenues fell more quickly and the deficit remained high. The failure to lower the budget deficit (figure 2) resulted in excessive monetary growth, inflation, and continued high interest rates (IMF 2001). These factors, in turn, slowed investment and placed particular hardship on the poor because of limited job creation and increased food prices.

Figure 2. Evolution of Central Government Budget



The 1991–92 drought was one of the most severe in recent memory across all of southern Africa (Scoones and others 1996). In Zimbabwe, all provinces experienced below-average rainfall during the 1991–92 agricultural year, especially during the critical months of October and November, when soil moisture is needed for seed germination, and during February, when maize, the main food source, begins to tassel. The drier provinces of Masvingo and Matabeleland South were hardest hit, while Mashonaland West was least affected. Agricultural production decreased dramatically; maize yields on all farms fell to about one-third of "normal" levels, and agriculture's share of total production fell from about 14 percent to below 7 percent (CSO 1998b). Overall, real GDP per capita shrunk by almost 12 percent in 1992 (CSO 1998a). During the drought, substantial portions of the budget were reallocated to drought relief, and the delay in the implementation of ESAP created a deeper fiscal hole for the government. A subsequent drought, in 1994–95, was more localized and was especially severe only in eastern Zimbabwe. Coming on the heels of the earlier drought, however, this disaster may have increased poverty, especially among the vulnerable in drought-prone areas.

The twin effects of adjustment and drought in rural areas were further compounded by generally unfavorable global commodity price trends between 1990 and 1996 (table 2). While global prices for cotton lint (a principal agricultural export) remained strong, prices of flue-cured tobacco, sugar, and beef, all of which are important Zimbabwean exports, fell in real terms (Townsend 1999; World Bank 1995). In fact, the agricultural barter terms of trade fell by an average of 1.9 percent per year between 1990 and 1996, and over the same period, the agricultural export price divided by the world fertilizer price fell by 3.8 percent annually (Townsend 1999). The smallholder sector was also squeezed by a credit shortage, which was exacerbated by drought and government fiscal deficits. Access to formal agricultural credit, provided by the parastatal Agricultural Finance Corporation (AFC), began to tighten as central government fiscal deficits began to average more than 10 percent of GDP in the late 1980s. Credit access then fell dramatically as a consequence of ESAP austerity, so by 1992–93, fewer than 30,000 farmers could obtain new loans from the AFC (World Bank 1995).

Table 2. Key Economic Trends in Zimbabwe, 1990–96

Factor	Percent real change in prices
Commodity	
Maize (producer)	8
Maize (consumer)	70
Tobacco	–2.5
Cotton	13.8
Fertilizer (urea)	22
Inflation	
All goods	370
Foods	449

Source: CSO 1997a; IMF 2001.

CHAPTER 2

Economic Change and Poverty in the 1990s

The drought and economic restructuring were associated with a serious economic decline between 1990 and 1996. Official estimates show that real household consumption fell by 24.2 percent during this period (CSO 1997a, 1998b). Poverty also increased substantially (CSO 1998a), but the sources of this increase are being debated. In the subsequent analysis, alternative explanations for this poverty increase are examined.

The analysis uses real per adult-equivalent consumption expenditures as the indicator of household welfare.[1] In Zimbabwe, because of seasonal fluctuations and the inherent difficulty in measuring agricultural incomes, consumption is preferred over income as a consistent measure of household welfare. Evidence shows that in most countries, consumption expenditures are preferred (Deaton 1997; Ravallion 1992). Data were obtained from surveys conducted by the Central Statistical Office (CSO), specifically the Incomes Consumption and Expenditure Surveys (ICESs) of 1990–91 and 1995–96. For simplicity, the 1990–91 data are referred to as 1990 data, and the 1995–96 data as 1995 data. Appendix A provides a more thorough description of the data. Note that throughout the analysis, we use a monetary measure of well-being, which does not take into account the qualitative dimensions of poverty.

Using per adult-equivalent consumption expenditures as the measure of welfare, mean well-being declined by about 29 percent and the median

fell by 24 percent between the 1990 and 1995 survey periods (table 3). Households in urban areas were the hardest hit by these declines. Even though urban households had higher levels of consumption and slightly higher levels of inequality than did rural households for both survey periods, per adult-equivalent real expenditures in urban areas fell by far more in both absolute and relative terms than did such expenditures in rural areas during the 1990s. This steeper decline in urban areas occurred at both the mean and the median of the distribution. Mean urban expenditures in 1995 were about 64 percent of their level in 1990, whereas rural levels were about 78 percent of their earlier level. On the other hand, the distribution of well-being was more equal in 1995 than it was earlier.

Table 3. Adult-Equivalent Consumption Expenditures and Their Distribution, 1990 and 1995

Distribution	Mean (1990 Z$/month)	Median (1990 Z$/month)	Gini coefficient
All Zimbabwe			
1990–91	116.91	67.70	0.676
1995–96	83.26	51.78	0.639
Urban residence			
1990–91	223.27	143.76	0.598
1995–96	143.28	94.77	0.586
Rural residence			
1990–91	69.60	50.51	0.583
Communal areas	65.54	47.46	0.558
Small-scale commercial farms	93.15	67.24	0.601
Large-scale commercial farms	99.21	71.07	0.578
Resettlement areas	57.51	41.94	0.546
1995–96	54.29	40.57	0.566
Communal areas	50.17	37.98	0.530
Small-scale commercial farms	65.95	51.32	0.514
Large-scale commercial farms	76.85	54.67	0.404
Resettlement areas	46.47	38.64	0.598

Source: ICES 1990–91 and ICES 1995–96.

Consistent with the evidence on declining real levels of well-being, there was an unambiguous increase in poverty in Zimbabwe between 1990 and 1995. For "reasonable" levels of the poverty line (that is, real consumption expenditures in 1990 between Z$30 and Z$80 per adult-equivalent per month [all dollar amounts are in Zimbabwean dollars]), the prevalence of poverty increased substantially. In fact, first-order stochastic dominance tests indicate that the decline in well-being was widespread across the distribution of adult-equivalent consumption. Thus, the finding of an increase in the prevalence of poverty does not depend on the choice of poverty line. Because of this dominance, the subsequent analysis focuses on a single poverty line—the CSO's minimum food needs poverty line. This poverty line was created by measuring the cost of a minimum-needs basket of food. The basket provides minimum caloric levels given typical expenditure patterns of the poor for food in Zimbabwe. It was priced using the official CSO price series (see CSO 1998a for more details on the poverty line), yielding a value in 1990 of approximately Z$30 per person per month. The poverty line does not include the cost of such nonfood subsistence expenditures as housing and transportation; people below the line are thus deemed "extremely poor."

Extreme poverty increased dramatically in Zimbabwe during the 1990s. The prevalence of the poorest people rose by about 9 percentage points, representing about a 35 percent increase in the percentage of households below the poverty line (table 4). The depth and the distribution-sensitive measure (the severity index) increased by proportions similar to those of the prevalence measure. The depth measure reflects the average distance of poor households below the poverty line. That the proportional increase in the depth measure was similar to the change in the prevalence measure means that the average shortfall below the poverty line grew proportionately to the change in the poverty head count. The slightly lower than proportional increase in the severity index means that the welfare of the poorest of the poor did not decline by as much as would have been expected given the overall increase in poverty. That is, the distribution of well-being among the poor became slightly less unequal. This finding is consistent with the decrease in inequality noted above.

Table 4. Distribution of Poverty Indexes, by Year

Item	1990	1995	Percent change
All Zimbabwe			
Prevalence	25.8	34.9	35.4
Depth	8.8	11.8	34.0
Severity	4.2	5.4	29.4
All urban areas			
Prevalence	3.4	7.9	133.2
Depth	0.8	1.9	144.9
Severity	0.3	0.7	150.0
All rural areas			
Prevalence	35.8	48.0	34.1
Depth	12.4	16.6	33.9
Severity	5.9	7.7	30.1

Note: "Prevalence" is the percentage of people in households whose consumption expenditures per capita are below the poverty line as a proportion of total population. The poverty "depth" and the "severity" indexes are the Foster, Greer, and Thorbecke $\alpha = 1$ and $\alpha = 2$ measures, respectively.
Source: ICES 1990–91 and 1995–96.

By examining the entire distributions of well-being, more information is gained about the sources of the increase in poverty. The distribution of real per adult-equivalent consumption expenditures, displayed in the nonparametric density estimates in figure 3a,[2] shows a significant ($p = .01$ in a Komolgorov Smirnov test) and broad-based leftward shift between 1990 and 1995. The slight compression reflects the slight decrease in inequality. Compare the 1990 and 1995 differences in densities at specific expenditure levels in figure 3b, and a large increase can be seen for households with per capita consumption expenditures below the poverty line (about Z$30 per person per month in 1990). The increased densities below the poverty line were offset by large decreases in the density of households above Z$100 per month.

Welfare changes in urban areas (see figures 4a and 4b) differed from those in rural areas (see figures 5a and 5b) in that in the latter, almost the entire increase in density occurred below the poverty line. In contrast, although the urban density showed an unambiguous leftward shift, there was an increase in density both below and above, but near, the poverty

Figure 3a. All-Zimbabwe Welfare Densities

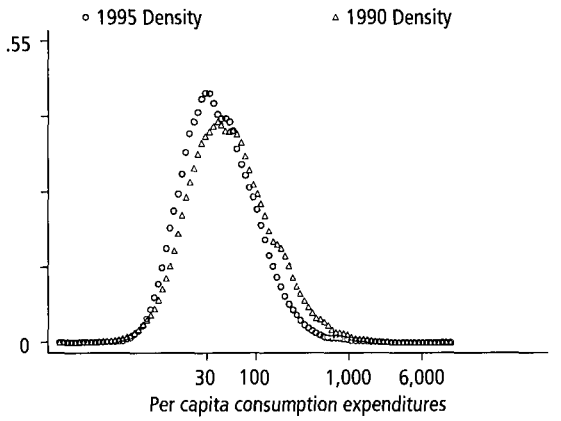
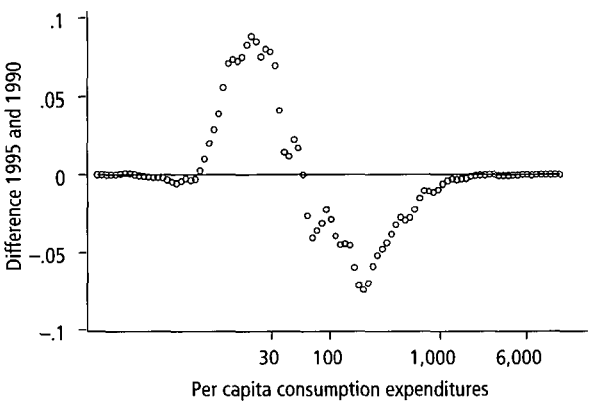


Figure 3b. All-Zimbabwe Welfare Differences



line. The urban density shift was also more pronounced than the rural shift. In 1995, poverty remained more widespread, deeper, and more severe in rural areas than in urban areas, but urban poverty rose dramatically between 1990 and 1995 (see table 4). In 1990, virtually no poverty existed in urban areas, whereas by 1995 urban poverty was recognized as a pressing social problem. In fact, several social programs designed to address the dislocations associated with ESAP retrenchments had an

urban focus, in tacit recognition of a growing urban poverty problem. In urban areas, the household head's education and his or her main source of employment or earnings were closely associated with poverty status (CSO 1997b, 1998b). Job creation in urban Zimbabwe has been uneven, and the current investment climate is best characterized as uncertain. Part

Figure 4a. Urban Welfare Densities

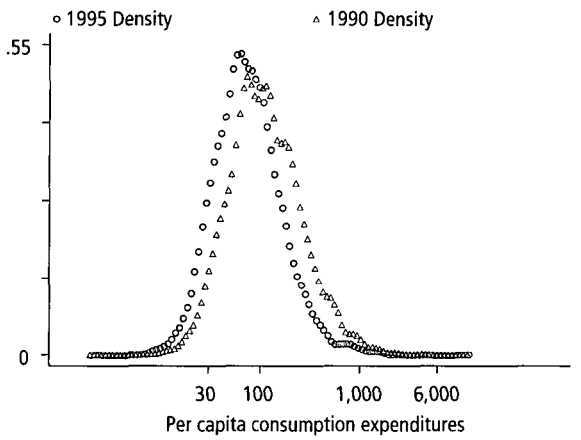
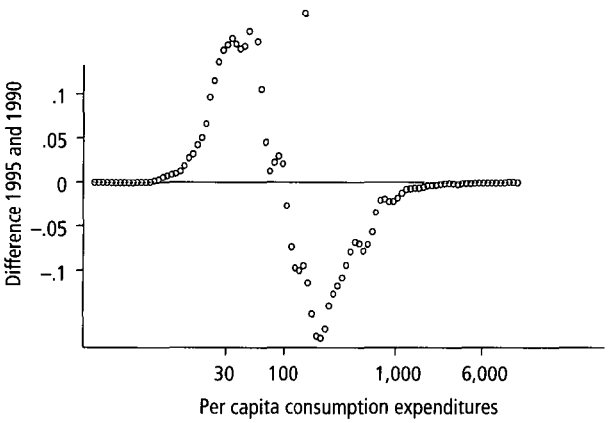


Figure 4b. Urban Welfare Differences



of this increase in poverty may be attributable to employment losses, especially in sectors in which rates of return to education are traditionally high (see table 5 for observed changes in urban employment). However, poverty increased for all groups of urban households, regardless of the household head's sector of employment (table 6).

Figure 5a. Rural Welfare Densities

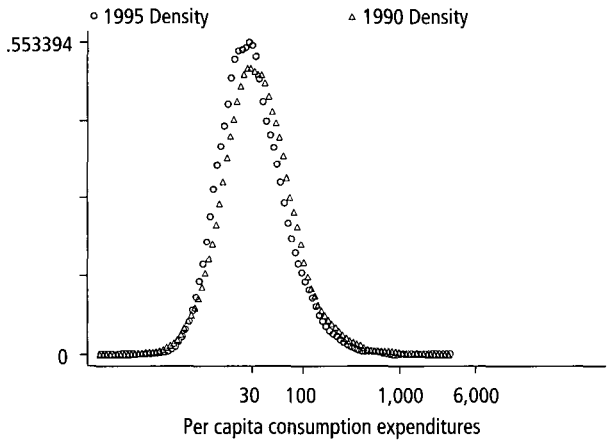


Figure 5b. Rural Welfare Differences

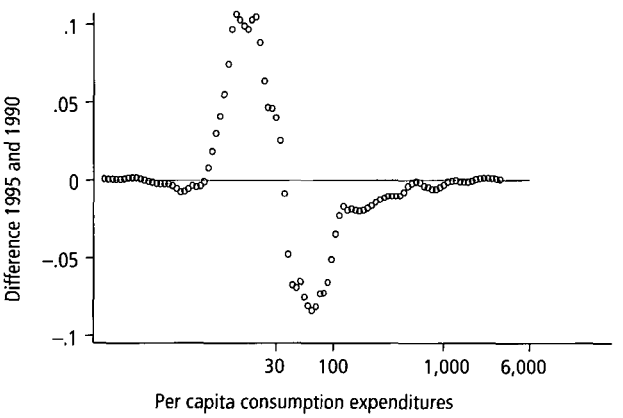


Table 5. Employment Status of Urban Household Heads, Percent per Sector per Year

Employment status	Year 1990 (percent)	Year 1995 (percent)	Total (percent)	t-test of differences
Unemployed	15.8	25.3	21.6	12.63
Employed				
Private formal sector	44.3	43.2	43.6	0.28
Informal sector	11.8	9.9	10.6	4.12
Government	18.1	16.4	17.0	4.62
Parastatal or cooperative	10.0	5.2	7.1	9.55
Total (percent)	100.0	100.0	100.0	
Total (number of observations)	4,689	7,411	12,100	

Source: ICES 1990–91 and 1995–96.

Table 6. Urban Poverty Indexes and Changes, by Sector of Employment of Household Head

Sector	1990	1995	Percent change
Government employee			
Prevalence	0.8	3.5	313.1
Depth	0.2	0.8	320.0
Severity	0.1	0.3	342.8
Parastatal			
Prevalence	0.4	4.8	971.1
Depth	0.1	1.2	1,036.4
Severity	0.0	0.5	1,600
Cooperative			
Prevalence	0.0	4.3	NA
Depth	0.0	1.0	NA
Severity	0.0	0.4	NA
Formal private sector			
Prevalence	3.1	6.2	98.7
Depth	0.7	1.7	140.0
Severity	0.3	0.7	153.8

Table 6. (continued)

Sector	1990	1995	Percent change
Informal private sector			
Prevalence	5.7	17.6	207.7
Depth	1.0	3.4	239.4
Severity	0.23	1.01	339.1
All others			
Prevalence	9.0	11.4	25.9
Depth	2.3	2.7	19.8
Severity	0.9	1.0	12.2

Source: ICES 1990–91 and 1995–96.

The largest absolute increase in prevalence, depth, and severity of poverty occurred among people residing in households whose heads' main sources of employment were the urban informal sector, which includes enterprises that are not officially registered, such as street vending. The prevalence of poverty among such people increased almost 14 percentage points, and the depth and severity of poverty grew in similar fashion. Thus, although the informal urban sector was growing and replacing formal sector sources of employment, families with household heads in the informal sector were increasingly likely to live in poverty. Increases in the urban poverty problem can, therefore, be traced to low returns in the informal sector and few opportunities in the formal sector economy. The private formal sector—that is, nongovernmental and nonparastatal firms that are officially registered—underwent radical restructuring during ESAP, but it did not generate significant employment opportunities by the mid-1990s, and this failure contributed to the increase in poverty. The fiscal deficit and consequent high interest rates are widely considered to be responsible for this failure. The informal sector appears to have absorbed much of the excess labor, but its returns were subpar. Thus, not only did the urban economy generate few relatively good sources of employment during the early 1990s, but jobs that were "good" in 1990 were, by 1995, no longer a guaranteed escape from poverty.

The forces underlying urban sector shifts, particularly the decline in well-being within the sector of employment, and those underlying general declines in predominantly agricultural areas must still be identified. Several explanations emerge for the observed increase in poverty during the 1990s. These include (a) inadequate investments in physical and human assets and (b) lower rates of return to existing assets. Poverty is closely related to the quantity and quality of household assets, including past investments in human capital and ownership of physical assets. In rural areas, poverty varies according to land use,[3] with commercial farms having the lowest indexes of poverty and communal and resettlement farming areas having the highest. Within communal and resettlement areas, poverty is related to landholding size, land quality, and rainfall. These findings were all well documented in Zimbabwe's most recent poverty profile (CSO 1998a). The remainder of the text explores the contributions both of inadequate investments in physical and human assets and of lower rates of return to existing assets to observed changes in poverty and in the entire distribution of well-being.

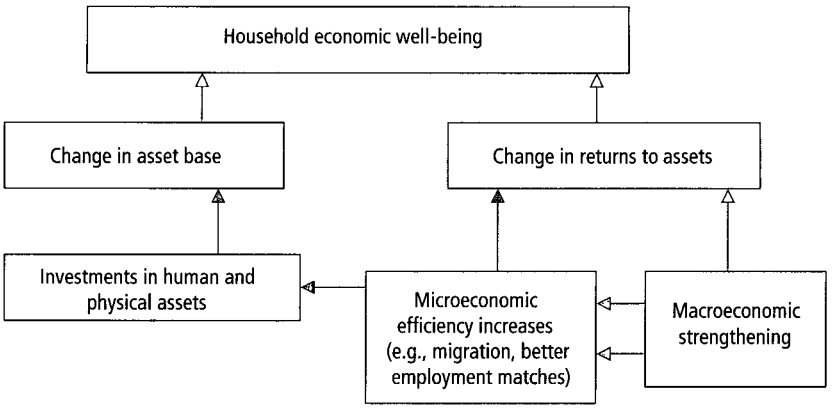
CHAPTER 3

Nonparametric Decompositions

In theory, there are two major channels by which economic change should affect household well-being through its influence on income or earnings possibilities. These are (a) changes in assets held and accessed by the household, including physical and human capital assets, and (b) changes in rates of return on specific assets (see figure 6). Macroeconomic conditions affect the household by changing returns to their assets; such changes may in turn induce further investments in specific assets with improved returns. At the microeconomic level, efficiency improvements—such as migration (a response to differential returns on assets) or better employment matches—increase returns and induce asset investments.

We use two complementary analytical techniques to investigate the roles that changes in household asset bases and in rates of return on assets have played in the observed shifts in household welfare. First, we present generalized decompositions of the entire distribution of well-being. Using nonparametric density-reweighting techniques, we visualize shifts in the densities of households within specific per adult-equivalent expenditure ranges, as well as below the poverty threshold (see figures 3–8 and the surrounding discussion). Specifically, the 1995 distribution of well-being is reweighted to show how welfare might have changed had employment patterns, human and physical assets, rural-to-urban migration, and rainfall remained at 1990 levels. The reweighting techniques have the dual advantages that they allow for visualization of the entire distribution and they

Figure 6. Factors Influencing Household Well-Being



impose no underlying functional form. Poverty measures can easily be computed by integrating the area below the poverty threshold in the reweighted densities. The main weakness of the density-reweighting technique is that the change in returns on assets is left as a part of the residual.

The second technique involves a regression-based decomposition of the determinants of well-being to distinguish the impacts of changes in physical and human assets from those of changes in returns to assets. The regression-based technique also directly measures the influence of rainfall on well-being and can be used to compute counterfactual poverty indexes. The regression-based and nonparametric techniques complement each other by providing structural estimates of the sources of the increase in poverty while also allowing us to visualize the entire distribution. This visualization provides key information about which types of households experienced increases and which types experienced decreases in economic well-being during the 1990s.

NONPARAMETRIC DENSITY REWEIGHTING

Nonparametric density-reweighting techniques are used to identify the contribution of underlying factors to shifts in the distribution of per adult-equivalent expenditures from 1990 to 1995 (see DiNardo, Forton, and Lemieux 1996 for an example of these methods). Four experiments are con-

ducted. Experiment 1 examines the contribution of changes in states of urban employment to the shift in urban well-being. Experiment 2 investigates how changes in human capital and other individual attributes affect well-being through their impact on employment states in urban areas. Experiment 3 examines the contributions of rural-to-urban migration and changes in human capital and other individual attributes to the shift in the distribution of well-being across rural and urban areas. Experiment 4 shows the contributions that changes in rainfall patterns have made to shifts in the distribution of well-being in rural areas. In all cases, the associated counterfactual distribution and the shift in density around the poverty line are shown. The experiments are developed more formally in appendix B.

Experiment 1: Employment states in urban areas

For each period, the probability density function of well-being can be derived as a frequency-weighted aggregation of the density functions of well-being in five mutually exclusive states of employment of the household head. Between 1990 and 1995 the urban frequencies of employment in these states shifted significantly away from government and parastatal employment toward the unemployed category (table 5). ESAP contributed to this shift because retrenchment of government sector employees was a major component of the adjustment package. Adjustment was supposed to counter the negative impacts of public sector retrenchments by fostering private sector job creation through the liberalization of product markets and of investment policies. However, private formal and informal sector employment also decreased as a percentage of total employment of household heads from 1990 to 1995; thus, increases in private sector jobs had not emerged by 1995.

The first reweight asks the question: What would be the distribution of 1995 well-being if urban employment patterns remained at their 1990 levels but remuneration rates within employment states were at 1995 levels? A counterfactual density is created to answer this question. This counterfactual reweights the 1995 distribution of well-being by replacing the relative frequency of the sector of employment of the household head with 1990 frequencies (see appendix B for details). The reweighting captures the change in frequency of sector of employment but explicitly

assumes that the distribution of well-being within each sector is held at its 1995 level. The reweighted 1995 density is presented in figure 7a. Surprisingly, the adjusted density is virtually identical to the unadjusted density, meaning that the change in the sectoral distribution of urban employment explains only a very small proportion of the overall observed leftward shift in well-being. This similarity is demonstrated in figure 7b by subtracting the reweighted 1995 density from the actual 1995 density. There is only a very small increase in density at the low end of the distribution following the reweight. Thus, the difference does not match the pattern of actual change (the 1990 density subtracted from the 1995 density), which is also shown in figure 7b. If the urban employment pattern in 1995 had been the same as it was in 1990, except with levels of remuneration that existed in employment states in 1995, urban poverty would still have grown substantially during the period. Although real changes occurred in the distribution of states of urban employment (see table 6), employment changes account for only a little of the leftward shift in well-being and of the increase in urban poverty.

Figure 7a. Experiment 1: Reweighted 1995 Probability Density Functions for Urban Well-Being, Adjusted for 1990 Employment Distribution Levels

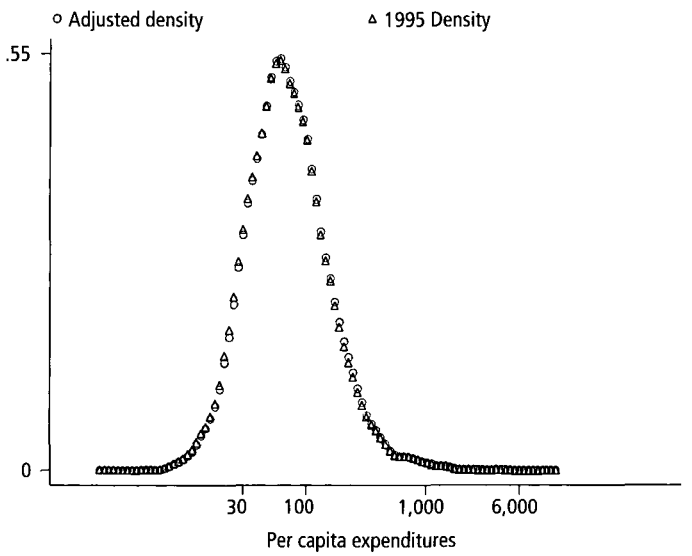
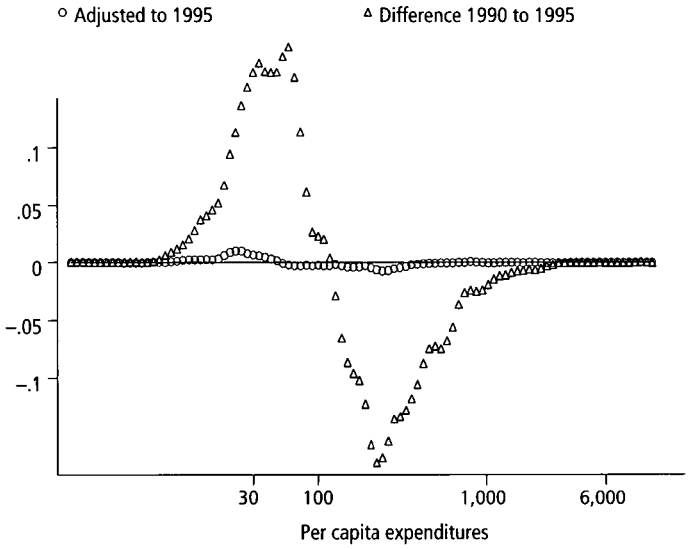


Figure 7b. Experiment 1: Difference between Actual 1995 Density and Reweighted 1995 Density



Experiment 2: Shifts in employment patterns and changes in individual attributes

The lack of influence of employment shifts on changes in well-being (experiment 1) appears to stem from the fact that rates of remuneration showed large declines across all employment states. Thus, well-being losses from changes in remuneration within states dwarf the impact associated with sectoral shifts in employment. Some of the changes in remuneration might have been the result of changes in household and individual attributes between 1990 and 1995 (see, for example, table 8 in chapter 4). To account for the impact on urban well-being of changes in household and individual attributes, a counterfactual density adjusting the structure of employment distribution to its 1990 condition and individual and household attributes to 1990 levels is generated for the 1995 distribution. The adjustment is described in detail in appendix B (the multinomial logit statistical results that produced the reweighted densities are available upon request from the authors).

The simulated 1995 density of urban well-being with the structure of employment decisions and levels of individual attributes adjusted to 1990 levels is presented in figure 8a. Surprisingly, this adjustment produces a slight leftward shift in the 1995 distribution. When compared to unadjusted density shifts from 1990 to 1995, the adjusted density shows an opposite shift from the one that actually occurred over the period (see figure 8b). Urban households would have been far worse off in the 1995 distribution of well-being given 1990 levels of human capital and the 1990 structure of employment than they actually were. Improvements in human capital attainment over the period, if coupled with the 1990 association between human capital levels and well-being, should have resulted in positive shifts (rightward) in the distribution of well-being. The large residual leftward shift in well-being from 1990 to 1995 is attributable to a change during that period in the conditional distribution of adult-equivalent consumption expenditures given individual and household attributes; that is, the downturn in household well-being is explained by a deterioration in the relationship between human capital and other household attributes and household well-being. The results strongly suggest that urban labor markets in 1995 were not providing the types of jobs and levels of remuneration for human capital that were present in 1990.

Changes in urban employment states appear to have had only a minor influence on overall shifts in well-being. However, individual investments in human capital have continued despite deteriorating economic conditions, and these investments have helped to offset or counteract the negative effects of labor market deteriorations. Conditions in urban Zimbabwe would have been worse had such investments in human assets not been made. This latter effect may be viewed as a positive "incentive effect" of ESAP, although it is more likely the result of lags from intensive state investments in education in the previous decade.

Now consider the relationship between deteriorating urban conditions and rural-to-urban migration. Between 1990 and 1995, Zimbabwe saw a dramatic movement of individuals from rural to urban areas. The urban population was an estimated 26 percent of the total in 1990, but it had increased to 31 percent by mid-decade (CSO 1997b). The droughts and economic crisis in rural Zimbabwe are associated with the increased migration to urban areas. Migration may have mitigated some of the ill

Figure 8a. Experiment 2: Reweighted 1995 Probability Density Functions for Urban Well-Being, Adjusted for 1990 Structure of Employment Patterns and 1990 Individual and Household Attributes

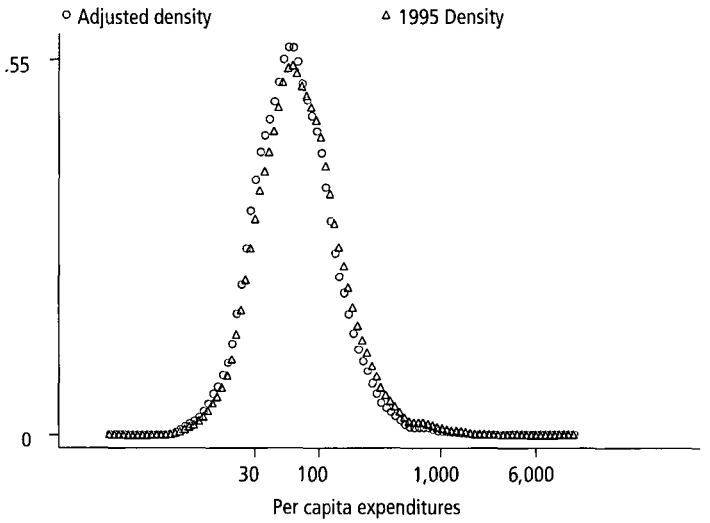
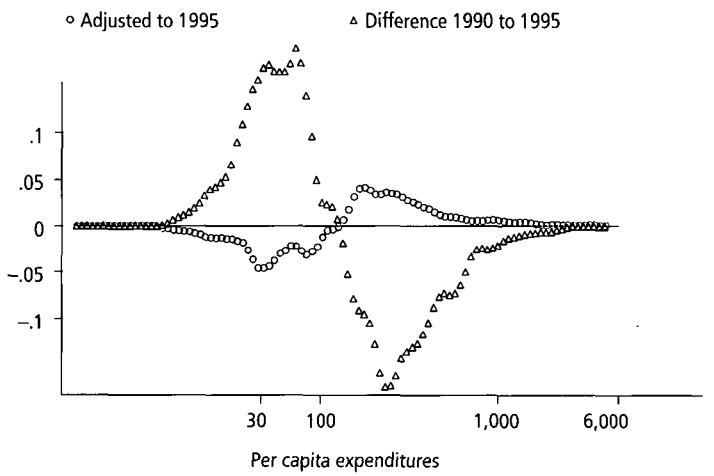


Figure 8b. Experiment 2: Difference between Actual 1995 Density and Reweighted 1995 Density



effects of the crisis because poverty levels were generally much lower and well-being higher in urban areas for both survey years (CSO 1998a). However, rural-to-urban migration may also be associated with a general decline in well-being in urban areas through the in-migration of families with generally lower levels of economic well-being and thus the creation of downward pressures on urban wages. The counterfactual distribution in experiment 3 is generated to examine the impact of rural-urban residence location on 1990–95 shifts in national well-being.

Experiment 3: Shifts in residence location and changes in individual attributes

Experiment 3 demonstrates the contributions to shifts in national well-being of changes in the structure of rural-urban residence location decisions and changes in individual attributes. The 1995 national density of well-being is simulated with the location decision structure adjusted to 1990 levels. Because rural-to-urban migration may also have influenced the distribution of assets in the two areas, household assets are also set at 1990 levels. This adjustment produces a clear leftward shift in the distribution of per capita consumption expenditures (see figure 9a). The result indicates that the economic decline that occurred during the period 1990–95 was strongly counteracted by changes in the structure of residence location decisions (that is, the propensity to migrate) and human capital attainments. Despite declines in economic well-being for all Zimbabwean households (see figures 3a and 3b), households made investments in human and geographical capital (through migration decisions) to better themselves. Again, had these decisions and investments not been made, national well-being in 1995 would have been much worse.

Figure 9b compares the unadjusted shift between 1990 and 1995 to the difference between the actual 1995 density and the 1995 density adjusted for 1990 location decisions and individual and household attributes and assets. The unadjusted shift shows a large increase in density occurring mostly below the Z$30 poverty line, with the corresponding decrease in density between Z$80 and Z$1,000. The reweighted shift follows a pattern that is almost exactly the opposite of this actual shift—a decrease in density below the poverty line and an increase above it. This reweight indicates that shifts

in location and human and physical capital in 1995 helped mitigate losses in economic well-being of households, but, again, these effects appear to be overwhelmed by general declines in returns to household assets.

Figure 9a. Experiment 3: Reweighted 1995 Welfare Density for All Zimbabwe, Adjusted for 1990 Structure of Residence Location Decisions and 1990 Individual and Household Attributes

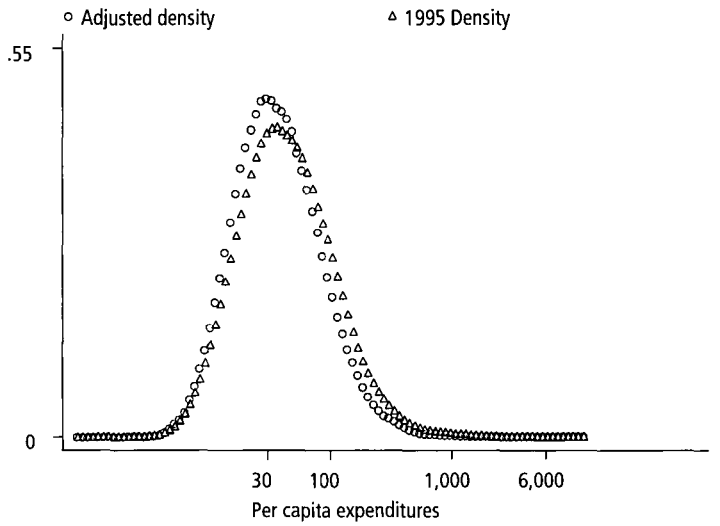
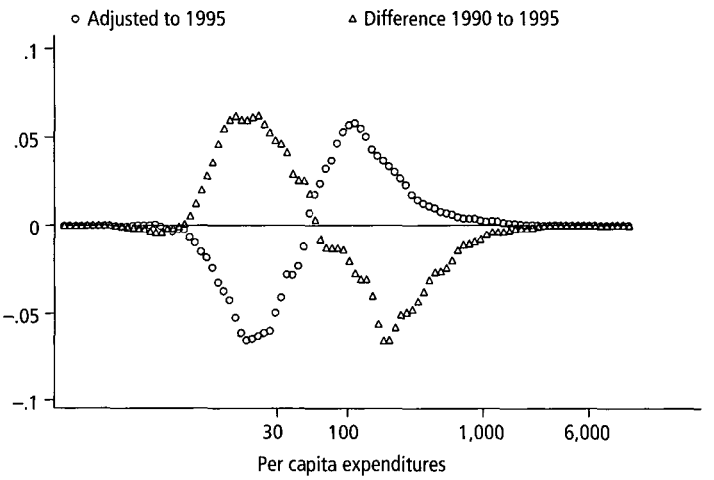


Figure 9b. Experiment 3: Difference between Actual 1995 Density and Reweighted 1995 Density



Experiment 4: The impact of rainfall on rural well-being

Because of the high dependence of rural Zimbabwe on rain-fed agriculture, poor rainfall might be responsible for a significant leftward shift in the distribution of rural well-being.[4] The impact of rainfall on welfare shifts is examined by reweighting the 1995 rural sample of households for rainfall patterns that occurred in the earlier survey period (see below). Rainfall data were taken from the Zimbabwe Meteorological Office weather stations and converted into percentages of normal for each province in the country for the crucial three-month period (December, January, and February) for agricultural production. Table 7 shows that the growing season for 1995–96 was characterized by much greater dispersion in rainfalls. A higher percentage of households in 1995–96 experienced very poor rainfall, but also a higher percentage experienced above-average rainfall compared with 1990.[5] The 1995 distribution of well-being was reweighted using the ratio of the relative frequency of the observed state (that is, very low, low, normal, above-average rainfall) in 1990 to the relative frequency of the observed state in 1995. The reweight follows the same procedure as that used in experiment 1 (see appendix B for details on the weights).

The results, comparing the actual estimated 1995 density to the 1995 density reweighted for 1990 rainfall deviations from normal, are shown in figure 10a. The reweighted 1995 distribution indicates that there would have been a slight rightward shift in well-being had 1995 rainfall followed the earlier (slightly more favorable) pattern. However, poor rainfall conditions in 1995 explain only a small portion of the observed leftward shift in rural well-being (compared to the actual differences in densities between 1990 and

Table 7. Percentage of Sample in Each Rainfall Class, by Year

Rainfall amount	Growing season	
	1990–91	1995–96
Very low : <2 standard deviations below normal	7.73	16.22
Low: 1–2 standard deviations below normal	47.81	29.20
Normal: 1 standard deviation below to 1 standard deviation above normal	33.92	11.34
Above average: >1 standard deviations above normal	10.53	43.25

Note: "Normal" rainfall is figured on 50-year averages by month.
Source: Zimbabwe Meteorological Office.

1995, shown in figure 10b). Had rainfall patterns in 1995 been the same as those in 1990, there would have been a slight decrease in density well below the Z$30 poverty line and an increase near and above the poverty line. It is also worth noting that shifts in rainfall patterns are likely to have a cumulative effect over time, and rainfall's contribution to the leftward shifts in well-being over time may be larger than those measured here for a single year.

Figure 10a. Experiment 4: Reweighted 1995 Rural Well-Being Density, Adjusted for 1990 Rainfall Patterns

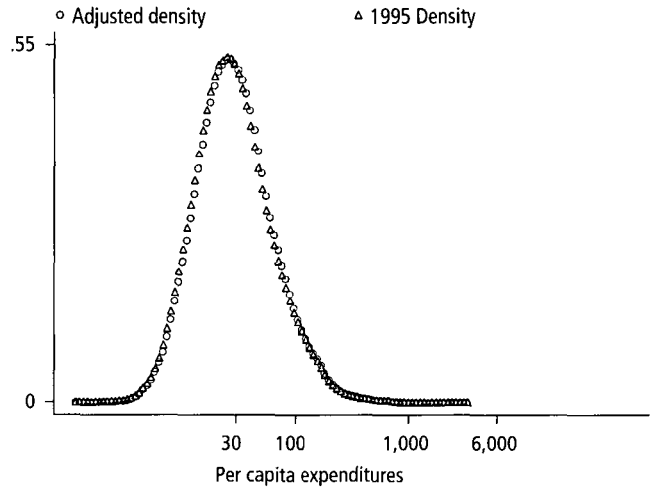
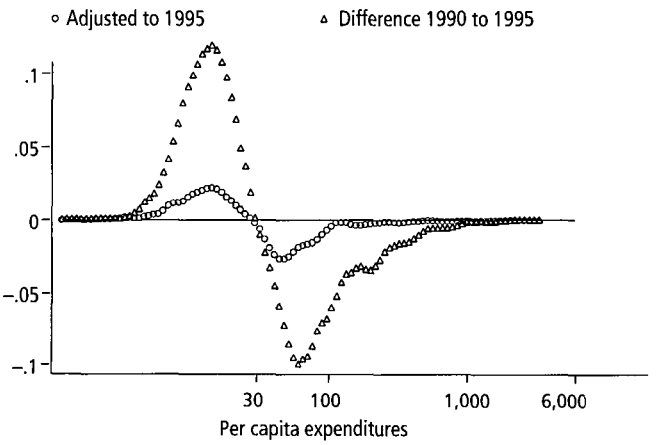


Figure 10b. Experiment 4: Differences between Actual 1995 Density and Reweighted 1995 Density



SUMMARY OF NONPARAMETRIC REWEIGHTING EXERCISES

The nonparametric techniques employed in the four experiments provide important insights into the nature of the shifts in the distribution of well-being. They show that changes in the urban sector of employment, individual assets, migration, and negative rainfall shocks do not account for a significant portion of the observed leftward shift in the distribution of well-being. However, investments in human and locational assets have, to some extent, offset the large leftward shift in well-being. Poverty clearly would have been worse had these investments not been made. The decline in returns to these assets was left as a residual during the analysis.

CHAPTER 4

Parametric Methods

The parametric methods decompose changes in poverty into changes attributable to changes in stocks (ownership or possession) of assets and changes in returns to assets. Begin with a simple parameterization of welfare, such as the following:

$$\ln W_{it} = X_{it}\beta_t + u_{it} \tag{1}$$

where ln is the natural logarithm, W_{it} is the measure of welfare for household i at time t, X_{it} is a vector of variables associated with well-being, and u_{it} is a random error term. The set X_{it} contains household fixed assets such as its demographic and age structure, past investments in human capital, and purchased assets.

Define a poverty measure $P_t(W_t;Z_t)$, where Z_t represents the minimum level of W, below which an individual or household is deemed poor. The Foster, Greer, and Thorbecke (1984) indexes are examples of such an index. Changes in the poverty index between 1990 and 1995 can be decomposed as follows:

$$P_{95} - P_{90} = P(X_{i95}\beta_{95};\ Z_{95}) - P(X_{i90}\beta_{90};\ Z_{90}) + \text{residual} \tag{2}$$

where 90 refers to the 1990 and 95 to the 1995 time period. The residual in equation 2 results from usual regression errors embodied in the static

welfare regressions (equation 1). If levels of well-being are measured in constant dollars and there has been no change in social conceptions about what constitutes a minimum level of well-being, then equation 2 can be further decomposed as the following:

$$(3) \qquad P_{95} - P_{90} = [P\{ X_{i90}\beta_{95} \} - P\{ X_{i90}\beta_{90} \}] + [P\{ X_{i95}\beta_{95} \} - P\{ X_{i90}\beta_{95} \}] + \text{residual.}$$

The first component of equation 3, $(P\{ X_{i90}\beta_{95} \} - P\{ X_{i90}\beta_{90} \})$, shows the portion of the overall change in poverty that would have resulted if asset ownership and human capital had stayed at 1990 levels while setting returns to these assets at their 1995 levels. The second component, $(P\{ X_{i95}\beta_{95} \} - P\{ X_{i90}\beta_{95} \})$, is the asset ownership effect. It shows how cumulative investments (or disinvestments) in human capital and physical assets have affected the poverty measure; or how poverty would have changed had the asset level been allowed to change but returns been held at their 1995 levels. The residuals in equation 3 result from the regression errors and the choice of the base for the decomposition.

In table 4 and figures 3–5, we document a decline in levels of well-being and an overall increase in poverty between 1990 and 1995. In order to investigate the source of this decline, we first ask whether the relationship between assets that produce well-being and well-being itself has shifted. The semiparametric density reweights strongly suggest such a shift (that is, through the unexplained residual components). To examine differences in welfare-producing regression coefficients in 1990 and 1995, we estimate the general model (equation 1), where W_t is our per adult-equivalent consumption expenditures, then test hypotheses about the b vectors. Descriptions and summary statistics for the variables used in the welfare regression are shown in table 8. We then simulate shifts in poverty levels associated with shifts in X_t and β_t (assets and returns, respectively). The advantage of these simulations is that they parameterize shifts in poverty due to changes in rates of return on assets. The disadvantage is that they assume that the shifts (in returns) have the same proportional influence on households across the distribution. Inference is based on the assumption of a normally distributed conditional mean (of $\ln W_t$) and conformance with other classical statistical assumptions.

Table 8. Summary Statistics for Model Variables

Variable	Description	Rural				Urban			
		1990		1995		1990		1995	
		Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Infants	No infants	.983	1.070	.884	.986	.662	.865	.607	.790
M6–11	Male children 6–11 years old	.557	.792	.474	.727	.331	.635	.288	.585
F6–11	Female children 6–11 years old	.561	.800	.475	.736	.332	.630	.305	.596
M12–17	Male children 12–17 years old	.460	.728	.435	.710	.257	.561	.276	.577
F12–17	Female children 12–17 years old	.436	.704	.425	.684	.303	.598	.319	.612
Msch0	Male adults with no education	.862	.993	.353	.606	.444	.707	.122	.347
Msch1	Male adults with primary school education	1.244	1.152	1.551	1.352	.829	.934	.898	1.029
Msch2	Male adults with some secondary school education	.422	.724	.391	.675	.854	.959	.768	.887
Msch3	Male adults with secondary school diploma or higher education	.004	.075	.022	.149	.033	.187	.140	.368
Fsch0	Female adults with no education	1.003	1.114	.502	.740	.467	.767	.142	.406
Fsch1	Female adults with primary school education	1.392	1.259	1.838	1.470	.840	1.017	.971	1.160
Fsch2	Female adults with some secondary school education	.330	.659	.343	.637	.710	.886	.679	.839
Fsch3	Female adults with secondary school diploma or higher education	.001	.038	.010	.099	.013	.118	.102	.326
Meld	Number male elderly	.097	.297	.096	.296	.032	.177	.036	.188

(Table continues on the following page.)

Table 8. (continued)

Variable	Description	Rural				Urban			
		1990		1995		1990		1995	
		Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Feld	Number female elderly	.097	.301	.098	.303	.019	.140	.027	.166
Laeq	Log adult-equivalent household size	1.266	.674	1.198	.663	1.038	.710	1.037	.664
Hdsch1	Head has primary school education	.623	.485	.604	.489	.472	.499	.437	.496
Hdsch2	Head has some secondary school education	.126	.332	.161	.368	.447	.497	.383	.486
Hdsch3	Head has secondary school diploma or higher education	.004	.066	.027	.162	.032	.175	.139	.345
Rdum1	Dummy = 1 if rainfall >70% and < 85% of normal	.478	.500	.292	.455	.334	.472	.105	.306
Rdum2	Dummy = 2 if rainfall >85% of normal	.339	.474	.113	.317	.142	.349	.043	.202
Cattle	Number of cattle owned	4.021	9.693	2.561	22.602	n.a.	n.a.	n.a.	n.a.
Scart	Dummy = 1 if owns scotchcart	.220	.414	.177	.381	.009	.094	.001	.026
Wheelb	Dummy = 1 if owns wheelbarrow	.263	.440	.234	.424	.097	.296	.062	.241
Commun	Dummy = 1 if in communal area	.627	.484	.6191	.4856	n.a.	n.a.	n.a.	n.a.
Resettle	Dummy = 1 if in resettlement area	.054	.226	.054	.2265	n.a.	n.a.	n.a.	n.a.
MHH	Dummy: Male head of household	.623	.485	.640	.480	.822	.383	.796	.403

n.a. Not applicable.

REGRESSION RESULTS

Regression results using the 1990 and 1995 survey data are presented separately for urban and rural areas in tables 9 and 10, respectively. *F*-tests reject the null hypothesis that 1990 and 1995 parameter estimates are not statistically different in both urban ($F_{26,12038} = 14.17$) and rural ($F_{30,19527} = 13.25$) areas of Zimbabwe. Regression results for urban and rural areas are discussed separately.

Urban areas

Urban area regression results reinforce earlier findings that a decline in returns to human assets occurred between 1990 and 1995 (table 9). For instance, in 1990, an urban household headed by a person with some secondary school education (Hdsch2 = 1) has levels of well-being that are 76 percent greater, on average, than a household headed by someone with no formal education (the deleted category). For both survey periods, higher levels of the head's education are associated with increased household well-being (the coefficients for Hdsch1–3 are progressively larger). Notably, there is a substantial decline in the coefficients for each level of the head's education between 1990 and 1995. For instance, the welfare premium of a household head with secondary school education compared with one having no education declined by 40 percentage points between 1990 and 1995, to 36 percent in 1995. The presence in an urban household in the 1990 sample of adult males with little education (Msch0 and Msch1) was associated with lower levels of household well-being. By 1995, this effect had disappeared. These findings provide evidence that rates of return to higher levels of educational attainment had fallen from 1990 to 1995, whereas returns to lower levels may actually have been increasing. For instance, well-being in a 1990 urban household rose by almost 112 percent (the dummy variable coefficients were reduced from .868 to .231) when the education of the household head rose from primary school to the highest levels. In 1995, such an increase in education was associated with a much smaller, 69 percent, increase (from .645 to .198) in household well-being. Given the higher mean well-being in 1990, this difference also represents a substantial decline in the absolute returns to higher levels of education in urban areas.

Table 9. Urban Area Welfare Regressions

Variable	Sample	
	1990	1995
Intercept	5.008 (74.28)	4.468 (92.22)
Infants	.049 (1.82)	−.056 (−4.81)
M6–11	.109 (4.29)	.038 (1.84)
F6–11	.023 (0.93)	.012 (0.64)
M12–17	−.009 (−0.37)	.024 (1.36)
F12–17	−.080 (−3.65)	−.013(−0.76)
Msch0	−.124 (−4.45)	−.025 (−0.99)
Msch1	−.076 (−3.22)	−.021 (−1.15)
Msch2	−.020 (−1.10)	.018 (1.40)
Msch3	.173 (1.71)	.195 (5.35)
Fsch0	−.088 (−3.45)	−.062 (−2.94)
Fsch1	.017 (0.83)	.029 (1.93)
Fsch2	.177 (9.95)	.114 (8.62)
Fsch3	.474 (5.02)	.447 (16.80)
Meld	−.064 (−1.12)	.003 (0.10)
Feld	.259 (3.63)	.139 (3.09)
Laeq	−.548 (−13.40)	−.625 (−20.66)
Hdsch1	.231 (4.33)	.198 (4.77)
Hdsch2	.564 (10.09)	.310 (7.13)
Hdsch3	.868 (6.89)	.643 (11.35)
Rdum1	−.006 (−0.27)	−.121 (−4.62)
Rdum2	−.214 (−6.63)	.094 (2.54)
Scart	.103 (1.00)	−.011 (−0.04)
Wheelb	.627 (18.23)	.366 (12.12)
MHH	.114 (3.75)	.084 (3.77)
Matabeleland North or South	.212 (4.16)	−.347 (−13.89)
Masvingo	−.525 (−17.87)	−.261 (−7.03)
Jan	−.107 (−2.20)	−.133 (−3.53)
Feb	−.146 (−3.17)	−.326 (−8.44)
Mar	−.181 (−3.92)	−.317 (−8.38)
Apr	−.079 (−1.66)	−.414 (−10.90)

Table 9. (continued)

Variable	Sample	
	1990	1995
May	−.068 (−1.49)	−.403 (−10.92)
June	−.145 (−3.24)	−.346 (−9.27)
July	.095 (1.87)	.038 (1.13)
Aug	.139 (2.88)	−.088 (−2.58)
Sep	−.079 (−1.64)	−.143 (−4.22)
Oct	−.070 (−1.44)	−.107 (−2.99)
Nov	.020 (0.42)	−.273 (−7.58)
N	4688	7390
R^2	.430	.412

Note: Dependent variable = ln(real adult-equivalent consumption expenditures); t-statistics are in parentheses.

The coefficients on children of different age classes also reflect increased hardship for Zimbabwean households. In 1990 the addition of young children to the urban household generally had a positive impact on household well-being, but by 1995 this impact had become either insignificant or negative. This finding reflects the additional strain children placed on families already struggling to make ends meet. The returns to young females (ages 12–17 years old) increased over time, reflecting increased workforce participation of this age group as households responded to economic stress. The larger "drag" on household resources in 1990 from the presence of teenage females very likely indicates that they were not as frequently engaged in remunerative economic activity as they were later in the decade. While school enrollment rates actually increased during the first half of the 1990s, so did participation by school-age children in the informal economy.

Several other changes occurred in the urban welfare-generating regimes. The welfare differential between male- and female-headed households declined over time, likely reflecting the substantial decrease in formal sector employment among male household heads. By 1995 although male-headed households were still better off than were female-headed households, the "headship premium" declined dramatically. Regional shifts in relative well-being also occurred during the first half of the 1990s.[6]

Evidence from urban areas is consistent with a stagnant economy, which was not generating jobs that provided returns to the (relatively high) levels of education found in urban Zimbabwe. While levels of education were improving in urban areas over time, returns to this educational improvement were diminishing. Again, had these investments in education not taken place, urban poverty in 1995 would have been far worse than it actually was.

Rural areas

Similar to the results in urban areas, the rates of return to human and physical assets generally declined for rural areas between 1990 and 1995 (table 10). Returns to rural secondary and higher adult education fell steeply. In 1990, households headed by someone with some secondary education and by someone with completed secondary or higher education were 84 percent and 319 percent better off, respectively, than were those headed by someone with no education. By 1995, the estimated coefficients fell dramatically (to .215 and .756, respectively), indicating, for example, that a household head educated at the secondary, or higher, level was associated with only a 113 percent improvement in household well-being compared with a household head lacking any education. Returns to more-educated household heads declined substantially after controlling for returns to other assets. The difference in the estimated intercept terms suggests that mean levels of well-being, after controlling for changes in human and physical capital and other factors, have not changed much over the survey periods in rural areas.

The coefficients on the land use dummy variable also changed between samples. The results show that compared with the deleted category (small- and large-scale commercial farms), resettlement and communal areas were far worse off for both survey years. However, conditions in communal areas had not worsened substantially between 1990 and 1995 relative to commercial farms (holding assets and rainfall constant), and significant improvements had occurred in resettlement areas. In 1990, households in resettlement areas had mean levels of well-being that were 46 percent lower than were those on commercial farms, but by 1995 the difference fell to 23 percent. In contrast, well-being in communal

Table 10. Rural Area Welfare Regressions

Variable	Sample	
	1990	1995
Intercept	4.537 (129.60)	4.085 (139.08)
Infants	−.009 (−0.67)	−.021 (−2.85)
M6–11	−.025 (−1.95)	−.000 (−0.04)
F6–11	−.050 (−3.89)	−.002 (−0.13)
M12–17	−.025 (−1.90)	.000 (0.02)
F12–17	−.050 (−3.68)	−.015 (−1.21)
Msch0	−.002 (−0.18)	−.007 (−0.55)
Msch1	.007 (0.56)	−.004 (−0.38)
Msch2	.025 (2.08)	.034 (3.04)
Msch3	.143 (0.83)	.205 (2.28)
Fsch0	−.006 (−0.47)	−.024 (−2.34)
Fsch1	.036 (3.14)	.030 (2.82)
Fsch2	.127 (10.19)	.102 (8.88)
Fsch3	.377 (1.99)	.418 (4.88)
Meld	−.039 (−1.67)	−.017 (−0.84)
Feld	−.100 (−4.39)	−.082 (−4.12)
Laeq	−.580 (−22.45)	−.631 (−27.39)
Hdsch1	.159 (8.26)	.086 (4.84)
Hdsch2	.612 (22.39)	.215 (9.14)
Hdsch3	1.433 (6.87)	.756 (7.67)
Cattle	.007 (9.07)	.000 (1.03)
Rdum1	.177 (9.43)	.202 (15.34)
Rdum2	.042 (1.93)	.130 (7.16)
Scart	.107 (5.87)	.139 (8.27)
Wheelb	.172 (10.22)	.238 (15.66)
MHH	−.053 (−3.11)	.010 (0.60)
Resettle	−.382 (−12.47)	−.210 (−7.73)
Commun	−.236 (−14.86)	−.257 (−18.80)
Matabeleland North or South	−.197 (−10.13)	−.110 (−7.41)

(Table continues on the following page.)

Table 10. (continued)

Variable	Sample	
	1990	1995
Masvingo	−.477 (−24.06)	−.254 (−15.13)
Jan	−.181 (−5.79)	.034 (1.18)
Feb	−.242 (−7.92)	.006 (0.17)
Mar	−.159 (−5.21)	.039 (1.38)
Apr	−.151 (−4.86)	.022 (0.81)
May	−.092 (−2.99)	.004 (0.17)
June	−.104 (−3.45)	.083 (3.02)
July	.048 (1.30)	.005 (0.20)
Aug	.084 (2.52)	.054 (2.02)
Sep	−.105 (−3.56)	−.008 (−0.29)
Oct	−.090 (−3.02)	.056 (2.07)
Nov	−117 (−3.91)	.054 (1.95)
N	9438	10135
R^2	.463	.452

Note: Dependent variable = ln(real adult-equivalent consumption expenditures); t-statistics are in parentheses.

areas declined relative to that on commercial farms during the same period. Resettlement households seemed to have weathered the poor rainfall and economic changes better than did those in other areas. This finding is consistent with Kinsey, Burger, and Gunning (1998), and may be partially explained by the liberalization of restrictions on earnings opportunities for resettlement area residents.

Returns to ownership of physical assets and rural well-being varied depending on the asset in question. The coefficients for scotchcarts and wheelbarrows increased slightly, but the coefficient for cattle ownership decreased fairly substantially between 1990 and 1995. Rainfall is thought to be a significant determinant of rural well-being, and a lack of rain is often blamed for Zimbabwe's economic malaise. Sufficient rainfall in the early growing season is an important determinant of well-being in rural areas. The rainfall coefficients are relatively small but are statistically significant and of similar magnitude for the two survey years. The net impor-

tance of rainfall shortfalls, changes in returns to asset ownership, and asset ownership levels in explaining poverty changes are discussed in the next section, "Decomposing Shifts in Poverty."

Overall, the picture in rural areas was one of declining returns to human capital investments and no significant improvement in the generally positive relationship between physical asset ownership and well-being. Thus, many of the small improvements in rural human capital attainments were not being rewarded in rural (primarily agricultural) markets. It is tempting to conclude that since drought should not affect returns to assets, the results provide further evidence that structural adjustment has not benefited agriculturalists in rural areas. There is little evidence from the data that shows positive impacts of adjustment (except in the somewhat better position of resettlement farms), but part of the failure may be explained by the timing of the survey. Liberalization measures generally have a positive effect over the medium-to-long run (De Janvry, Sadoulet, and Fareix 1991). By 1995 liberalization had not yet had a major impact on price signals to rural producers because government (during the droughts and recovery from them) maintained fairly tight controls over input and output markets (see table 1). Thus, at the time of the survey, liberalization would not have had a major impact on producer incentives. On the other hand, the results indicate that the 1994–95 drought alone cannot be blamed for the dramatic observed increase in rural poverty.

DECOMPOSING SHIFTS IN POVERTY

The regression coefficients are then used to decompose observed shifts in the prevalence of poverty between 1990 and 1995. These shifts in poverty can be decomposed into returns on assets ($P\{X_{90}\hat{\beta}_{95}\} - P\{X_{90}\hat{\beta}_{90}\}$) and asset ownership ($P\{X_{95}\hat{\beta}_{95}\} - P\{X_{90}\hat{\beta}_{95}\}$) components and a residual (see equation 3 for details). The results of this decomposition are shown in table 11. The results show that the increase in poverty in Zimbabwe between 1990 and 1995 was largely the result of declining returns to human capital assets. For all areas, the difference in poverty indexes based on changing returns was positive, indicating that the change in returns alone would have led to substantial increases in poverty, holding asset

ownership at its 1990 levels. In resettlement areas and small-scale commercial farms, this effect was reinforced by a deterioration of the asset base. In urban areas, communal areas, and large-scale commercial farms, improvements in the asset base partially offset the poverty-increasing impact of the shift in returns. In all cases, except for small-scale commercial farms, the quantity of assets effect was relatively small compared to the major shift caused by deteriorating returns to ownership and possession of human and physical assets. This relatively small effect from the quantity of assets owned compared to the returns effect helps to explain the findings from the nonparametric experiments, in which the residual included all effects from changed returns from assets. The impacts of declining returns to assets are most strongly felt in the rural areas of the country, where investments in education are clearly not paying off. Even in urban areas, however, if asset bases had stayed at their 1990 levels but returns to these assets had been at 1995 levels, then the prevalence of poverty among the people would have increased by about 1 percentage point.

In rural areas, the rainfall coefficients, together with the observed rainfall patterns in 1994 and 1995, indicate that the 1994–95 drought does not explain a large portion of the poverty increase observed in 1995. If the 1994 and 1995 rainfall patterns were replaced with normal patterns, then

Table 11. Decomposition of Poverty Changes, Using Regression Results

		Rural areas				
Item	Urban areas	All rural areas	Communal areas	Resettlement areas	Large-scale commercial farms	Small-scale commercial farms
Actual change	.045	.122	.135	.036	.111	.157
Poverty change from						
Δ Returns	.008	.190	.218	.119	.102	.076
Δ Assets	−.002	−.011	−.004	.054	−.027	.097
Residual	.039	−.057	−.079	−.137	.036	−.016

Note: Elements show the change in the head count of poverty among people that would have emerged had asset levels or returns to assets remained constant.

the prevalence of poverty among rural people would have fallen by only 3.2 percentage points. This result is related to the fact that the ICES spanned two growing seasons. For the 1995 portion of the ICES, December 1994 rainfall, which was below normal, is relevant. For the 1996 portion, December 1995 rainfall, which was above average for almost the entire country, is relevant. Because the survey spanned two growing seasons, the 1994–95 drought and its subsequent impact appear modest. The impact shown here probably understates the true impact of weather-related losses on poverty. For example, when drought-year (1991–92) rainfall patterns are substituted for actual 1994–95 patterns, we estimate that the incidence of poverty would have increased by 15.3 percentage points, as a result of the drought.

The results also show that people were compensating in some ways for declining returns to their human assets. Some of the asset investment effect results from the smaller household sizes (in adult equivalents) in both years of the survey (see table 7). One form of adjustment to hardship may have been sending family members to alternative places, resulting in smaller households.[7] The nonparametric results strongly suggest that household investments in location capital (as reflected by the choice to live in rural or urban areas) helped to reduce poverty, compared with the levels that would have existed without such choices. But other forms of human asset investments are visible. People continued to invest in education through the first half of the decade, and these investments paid off in the sense that households were better off than they would have been had they not made such investments. In the longer term, declining returns to human capital investments slow such investments; we already observed, for example, reduced propensities for poor families to enroll their children in secondary schools.

CHAPTER 5

Conclusions

Poverty in Zimbabwe increased significantly during the 1990s. This increase occurred in all sectors of the economy, although the relative position of urban areas declined compared with rural areas. There are competing stories behind the increase in poverty, with some 45 saying that it is the result of ESAP and others that ESAP's effectiveness has been hampered by recurring drought. This book sheds some light on the validity of these claims. The methods employed build a convincing case that the entire distribution of well-being has shifted leftward, with the major source of this shift coming from declining returns to human and physical assets.

The story in Zimbabwe is one of increased poverty being closely tied to the poor performance of the economy and to the economic restructuring that characterized the 1990s. Although individuals continued to invest in human capital, the economy did not create the types and quantities of jobs to reward these investments. Returns to human investments declined substantially, whereas the relationship between physical asset ownership and well-being remained relatively constant through the middle of the decade.

In urban Zimbabwe, the economy failed to create jobs in the formal private sector, and retrenchments lowered the availability of public sector jobs. Remuneration in formal sector jobs lagged behind inflation, and

employment in them no longer prevented people from being poor. Reduced remuneration was a significant contributor to increased poverty. Thus, poverty increased among people in households with a formal sector employee even as the percentage of households with formal sector jobs decreased. The welfare-enhancing effects of secondary education also declined during the 1990s, indicating that the economy was not generating the types of jobs that reward higher levels of education. Although 1995 appears to be a slight aberration in the sense that secondary school enrollments recovered from a drop in the early 1990s, there is reason for pessimism about the future demand for secondary and higher levels of education as long as lower returns persist.

In rural areas, similar patterns of declining returns to educational investments in the face of increased stocks of human assets emerged. Short-run impacts of droughtlike rainfall patterns are associated with increases in rural poverty, but the 1994–95 drought was not a significant contributor to the observed increase in poverty in 1995. Ownership of physical assets has, however, been slow to recover in the post-1991–92 drought period.

Policymakers should be most concerned about the impact of economic change on lowered returns to investments in education. Although drought increases poverty, it is clear that measured poverty in Zimbabwe would have increased even without drought conditions. Serious structural changes to the economy are needed to create conditions in labor markets that will be conducive to long-term, broad-based growth. Although ESAP reforms attempted to move the economy toward these conditions, the high fiscal deficits and consequent high interest rates continued to crowd out investments and prevent the country from reaping benefits from the reforms.

APPENDIX A

ICES Data and Deflators

The ICESs are conducted by the Central Statistical Office (CSO) of Zimbabwe mainly as inputs into national income accounts and to create weights for the consumer price index (CSO 1998b). The ICES is a national probability sample that was designed to be representative at the provincial level, and by land use within provinces. The ICES collects information on sociodemographic characteristics, asset ownership, incomes, economic activities, and expenditures on 251 food and 341 nonfood items. Households are visited weekly over an entire month. Daily expenditures are recorded in a diary and reported weekly. Imputed expenditures on own-account production items, gifts, transfers, and in-kind payments are also recorded. The second ICES was conducted from July 1990 through June 1991, and the third version of the survey went to the field during July 1995 and lasted through June 1996. The consumption portions of the questionnaires for the second and third ICESs are virtually identical and permit construction of a consistent measure of consumption expenditures. Our measure of consumption expenditures includes the value of all goods and services that are consumed or destroyed by use in the previous month. Thus, the values of all foods and directly consumed services are included, as are flows of consumption values from ownership of assets, the value of housing services for owner-occupied housing,[8] and imputed values of gifts,

transfers, and remittances received. Both data sets were processed in a similar manner.

The parallel construction of the survey instruments and the use of similar surveying methodologies ensured that the consumption expenditure variables for 1990 and 1995 were similar constructs. However, price inflation meant that nominal values had to be deflated by an appropriate price index to ensure comparability. We used a poverty-specific price deflator to adjust the per adult-equivalent consumption expenditures. Raw prices from regional markets,[9] used to create the national consumer price index, were obtained from the CSO. The prices of the 23 items that were used to create the Zimbabwean food poverty line (see CSO 1998b) were weighted using the food poverty line weights.[10] The ratio of this price index to a base value was used as an implicit deflator. This index (the poverty datum line deflator) has the desirable property that it reflects changes in the costs of obtaining goods and services faced by the poorest consumers, and also varies by month and province.

Because CSO prices are only collected in urban centers, it was not possible to adjust for differences in costs of living across urban and rural areas. It was possible to calculate rural unit values using the 1995 surveys. These unit values could have been used to create a price deflator, but since the 1990 survey did not contain information on quantities consumed, it was impossible to compute changes in unit values over time. It is possible to compute a rural–urban price differential using the unit values from the 1995 survey and assume that the differentials did not change over time. Such an assumption is, however, implausible because one of the chief goals of ESAP was to stimulate rural growth through changes in the rural–urban terms of trade. Price liberalization almost certainly changed relative rural–urban prices.

APPENDIX B

Density-Reweighting Exercises

The counterfactual densities that underlie the four experiments in the text were derived by reweighting the 1995 densities of well-being (as measured by adult-equivalent consumption expenditures). The process for reweighting for each experiment is described here.

EXPERIMENT 1: EMPLOYMENT STATES IN URBAN AREAS

The procedure for reweighting is as follows. Let $f(w,z)$ be the joint distribution of well-being, w, and the states of employment of the household head, z, in domain Ω_z. The 1995 distribution of well-being, t_w=1995, with the 1995 distribution of employment states, t_z=1995, can be written:

$$(A1)\quad f(w;t_w = 1995,t_z = 1995) = \int_{z \in \Omega_z} f(w|z,t_w = 1995)dF(z|t_z = 1995).$$

Assume that the conditional density of 1995 well-being $f(w|z,t_w = 1995)$ is structurally invariant to the distribution of the employment states $F(z|t_z = t)$. The counterfactual density for the distribution of 1995 well-being with employment states set to 1990 levels can then be expressed as:

$$\begin{aligned}(A2)\quad f(w;t_w = 1995,t_z = 1990) &= \int f(w|z,t_w = 1995)dF(z|t_z = 1990) \\ &= \int f(w|z,t_w = 1995)dF(z|t_z = 1995)\Psi_z\end{aligned}$$

where $\Psi_z(z) = dF(z|t_z = 1990 / dF(z|tz = 1995)$.

For each observation, Ψ_z is simply estimated as the ratio of the relative frequency of the observed state in 1990 to the relative frequency of the observed state in 1995. The estimated counterfactual density by the weighted-kernel method is then:

$$\text{(A3)} \qquad \hat{f}(w;t_w = 1995,t_z = 1990) = \sum_{i \in S_{95}} \frac{1}{h}\hat{\Psi}_z(z_i)\kappa\left(\frac{w - W_i}{h}\right).$$

EXPERIMENT 2: SHIFTS IN EMPLOYMENT PATTERNS AND CHANGES IN INDIVIDUAL ATTRIBUTES

Household and individual attributes showed significant changes between 1990 and 1995 (see, for example, table 6). To account for the impact of these changes on urban well-being, a counterfactual density adjusting individual and household attributes and the sectoral distribution of employment frequencies with 1990 individual and household attributes is generated for the 1995 distribution of per capita expenditures as follows:

$$\begin{aligned}\text{(A4)} \quad & f(w;t_w = 1995,t_{z|x} = 1990,x = 1990) \\ & = \iint f(w|z,x,t_w = 1995)dF(z|x,t_{z|x} = 1990)dF(x|t_x = 1990) \\ & = \iint f(w|z,x,t_w = 1995)dF(z|x,t_{z|x} = 1995)dF(x|t_x = 1995)\Psi_{z|x}\,\Psi_x\end{aligned}$$

where by Bayes' rule $\Psi_x = dF(x|t_z = 1990) / dF(x|t_x = 1995)$

$$= \left(\frac{\Pr(t_x = 1990|x)}{\Pr(t_x = 1995|x)}\right)\left(\frac{(\Pr(t_x = 1995)}{(\Pr(t_x = 1990)}\right).$$

The probability of being in sample period t given attributes x, $\Pr(t_x = t|x)$ is estimated by regressing the binary variable signifying whether the observation comes from the 1990 or 1995 sample on individual, household, and area attributes.[11] A probit model is used in the estimation. $\Pr(t_x = t)$ is simply the number of observations in sample year t divided by the number of observations in both sample years.

EXPERIMENT 3: CHANGES IN RURAL–URBAN RESIDENCE AND INDIVIDUAL ATTRIBUTES

Experiment 3 examines how changes in the structural relationship between rural and urban residences and individual and household attributes, as well as changes in the attributes themselves, contributed to the 1990–95 shift in well-being. The procedure is similar to that employed in the previous experiment. Weights are created using the following decomposition:

$$
\begin{aligned}
\text{(A5)} \quad &= f(w|t_w = 1995, t_{l|x} = 1990, x = 1990) \\
&= \iint f(w|l,x,t_w = 1995)\,dF(l|x,t_{l|x} = 1990)\,dF(x|t_x = 1990) \\
&= \iint f(w|l,x,t_w = 1995)\,dF(l|x,t_{l|x} = 1995)\,dF(x|t_x = 1995)\,\Psi_{l|x}\,\Psi_x.
\end{aligned}
$$

The variable l is a dummy variable representing urban and rural location, and $dF(l|x,t_{l|x} = 1995)$ represents the 1995 conditional probability of being in location l given the set of family characteristics and rainfall patterns, x, prevailing in 1995. The weight Ψ_x is computed in the same manner as that in equation A4 using a probit (probit results are available upon request from the authors). To compute the weight $\Psi_{l|x} = dF(l|x,t_{l|x} = 1990) \,/\, dF(l|x,t_{l|x} = 1995)$, the 1995 conditional density function $l|x = 1995$ is estimated by regressing the observed 1995 state of residence (urban or rural) by probit on household demographic variables. A similar probit estimate is performed with the 1990–91 ICES to recover structural relationships for the period $l|x = 1990$. The weight is then the predicted probability of being in that area (urban or rural) in 1990 divided by the predicted probability of being in that area in 1995, given 1995 household and individual attributes.

EXPERIMENT 4: EFFECTS OF RAINFALL LEVELS ON RURAL WELL-BEING

The reweight for experiment 4 applied the same reweighting scheme as that used in experiment 1. The Z, in this case, is defined as the different rainfall categories for each sample period.

Notes

1. The Latham scale (see Dercon 1998) was used to create an adult-equivalent household size.
2. The basic kernel density estimator can be written

$$\hat{f}(x) = \frac{1}{nh} \sum_{i=1}^{n} K\left(\frac{w - W_i}{h}\right)$$

where n is the number of observations, W_i are sample observations on household per capita expenditures, h is the bandwidth of the kernel estimator, and K denotes the kernel. The choice of bandwidth is crucial in density estimation. Since the number of observations in the 1990 and 1995 ICES samples is different, the bandwidth for initial density estimates is calculated using a robust measure of spread for the pooled samples. The Epanechnikov kernel is used to estimate the densities, since it is optimal among nonnegative kernels in minimizing the integrated mean square error (Silverman 1986).

3. That is, large- and small-scale commercial farms, communal areas, and resettlement areas are the four productive rural land use types (other rural land uses exist, such as national parks, but their populations are so low that they are ignored in government statistics).
4. Farm income as a share of total household income in communal areas of Zimbabwe is between 60 and 70 percent; almost all communal agriculture is rain fed (Delgado 1997).
5. December, January, and February rainfall is the most critical determinant of maize growth. For the 1995 (1990) portions of the sample (July to December), December 1994 (1989) and January and February 1995 (1990) rainfalls were used; and for the 1996 (1991) portions, December 1995 (1990) and January and February 1996 (1991) rainfalls were used. A reviewer suggested

that given the timing of the growing season, it might be more appropriate to use rainfall for the previous growing seasons for the early months of each year (January, February, March). Thus, January 1996 outcomes would be determined by rainfall during December 1994, and January and February 1995. We did model rainfall effects in this way because we determined that by January 1996, the households would have a good sense of expectations with regard to yields in that crop year and thus might borrow or dissave based on such expectations. Additionally, rural employment opportunities, which also affect well-being, are more likely to be determined by perceptions regarding current-year harvests. Thus, we used 1995–96 growing season rainfall for the 1996 sample observations. We also tested our results using 1994–95 growing season rainfall and found neither improvement nor substantive change in the results.

6. The coefficient on the dummy variable for Matabeleland (includes both Matabeleland North and South) shifted from a strong positive sign to a strong negative one. This shift is explained by the reclassification of the city of Bulawayo. In 1990, Bulawayo was considered to be part of Matabeleland North, but in the latter period was reclassified as one of two (the other is Harare) independent cities. Both major cities have mean levels of well-being well above the other urban areas in Zimbabwe.
7. The ICES cannot be used to identify such phenomena, because there is no information on "absent" household members.
8. The value of owner-occupied housing was computed using a hedonic regression for houses for which rents were reported. Predicted rents were obtained by regressing observed rents on housing characteristics (correcting for sample selectivity). Predicted rents were then used to impute housing values for the two survey years.
9. Because of changes in collection procedures, collection areas had to be matched as well as possible. For instance, in 1990, prices for Mashonaland East were collected in Harare alone. Since then, the CSO began to collect separate price series for the province and the city. Mashonaland East prices are collected in Marondera, whereas Harare prices are collected in formal establishments (supermarkets) around Harare.
10. These weights represent the expenditure patterns of households whose total expenditures provide them, given the expenditure patterns and prevailing prices, the minimum per person caloric requirement (see CSO 1998a for details).
11. Regressors include the number of people in different age and sex classes, the number of adults by sex according to level of education achieved, head's education, head's sex, and rainfall variables. The probit model results are available from the authors upon request.

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Why Has Poverty Increased in Zimbabwe? is one of a series of studies completed under the Poverty Dynamics in Africa Initiative, which is organized by the Africa Region of the World Bank. The motive for the series was to make use of the vastly improved household survey data in Africa, to enhance understanding of poverty trends in the region, and to frame more effective poverty-reducing policies for the future.

Poverty in Zimbabwe increased significantly during the 1990s, and it increased in all sectors of the economy. In the middle of the decade, more than 60 percent of Zimbabwean households fell below the national poverty line. There are competing reasons for this: some say it was the result of the government's instituting the Economic Structural Adjustment Program (ESAP), and others say that ESAP's effectiveness was hampered by recurring drought. This volume sheds light on the sources of the increase in Zimbabwean poverty with the use of nonparametric and parametric statistical methods. These techniques support the conclusion that the drought, though harmful, does not entirely explain the increase in poverty. The deteriorating economic environment, reducing the returns to both human and physical assets, also had profound effects on household well-being. What are the prospects for improvement in the near future? Only serious structural changes to the economy can create labor market conditions conducive to long-term, broad-based growth.

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ISBN 0-8213-5033-1