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Not Separate, Not Equal: Poverty and Inequality in Post-Apartheid South Africa

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Introduction

Apartheid in South Africa officially came to an end with the democratically held elections in 1994, and in its wake left a population with vast inequalities across racial groups.[1] Using a poverty line of R322 (in 2000 prices), at least 58 per cent of all South Africans, and 68 per cent of the African population, was living in poverty in 1995, while poverty was virtually non-existent for whites.[2] The Gini coefficient of expenditures was 0.56, making South Africa one of the most unequal countries in the world. The country also inherited vast inequalities in education, health, and basic infrastructure such as access to safe water, sanitation, and housing. For instance, while only a quarter of Africans had access to piped water in their houses, Asians and whites had universal access to this service.

Many other aspects of the South African economy are equally challenging. Crime is so prevalent that it leads to the emigration of South African professionals of all ethnic groups (Dodson 2002), and possibly also discourages investment and stifles growth. The broad unemployment rate is estimated to be between 30 per cent and 40 per cent and has been steadily increasing since 1995, making South Africa's unemployment rate one of the highest in the world. Many communities in the former homelands have little economic activity to speak of – mean unemployment rates in these communities approach 75 per cent.[3] The proportion of the workforce in the informal sector is no more than approximately 15 per cent in South Africa, a figure that is remarkably small when compared with, say, Latin American countries (Rama 2001; Kingdon and Knight 2004). According to UNAIDS, HIV prevalence increased from 10.5 per cent in 1995 to 22.8 per cent in 1998.[4] The Human Sciences Research Council (HSRC) projected that more than 375 000 South Africans would die from HIV/AIDS in 2003, a 30 per cent increase from the estimated number of deaths in 2000.[5]

Faced with these enormous challenges, the new government introduced the Reconstruction and Development Programme (RDP) in 1994, which described itself as an integrated, coherent socio-economic framework. The RDP set ambitious goals, such as job creation through public works programmes, redistribution via land reform, and major infrastructure projects in housing, services and social security. The Growth, Employment and Redistribution (GEAR) programme of

1996, which presented a formal macroeconomic framework for growth, followed the RDP and aimed to increase growth and stimulate job creation. It was an export-led macroeconomic strategy that included '…anti-inflationary policies, including fiscal restraint, continued tight monetary policies and wage restraint'.[6] Under this programme, the average annual GDP growth rate was to increase from a base projection of 2.8 per cent to 4.2 per cent between 1996 and 2000, and the deficit was to be reduced to a target rate of 3 per cent of GDP.[7] The main goals of the RDP were reiterated in GEAR, including reforms to make the labour markets more flexible, to improve productivity, and to increase training and employment of the unskilled.

During this period prices were stable, spending levels in education and pension programmes were adequate, and access to certain basic services and infrastructure improved significantly. However, GDP per capita grew at an annual rate of roughly 0.6 per cent that was more in line with baseline projections rather than with the Integrated Scenario projections of GEAR, and unemployment kept increasing steadily.[8,9] Final consumption expenditure by households also grew by less than 1 per cent per capita annually between 1995 and 2000.[10]

The failure of the economy to grow and to create enough jobs gave rise to an '…interrogation of the compatibility between GEAR and the labour legislation and a growing concern with rising unemployment and poverty' (Leibbrandt et al. 2001). The government reiterated its commitment to GEAR at the Presidential Jobs Summit in 1998, which brought together government, organised labour and the business sector. Despite consensus on the need for occupational training and job creation schemes, significant changes in labour market legislation did not follow. Nor did any significant land reform materialise, although this was identified as a source of improved prospects for long-term employment and rural income growth.

The narrow unemployment rate increased from 17 per cent to 24 per cent between 1995 and 1999, while the broad unemployment rate, which includes the so-called 'discouraged workers', increased from 29 per cent to 38 per cent during the same period (Klasen and Woolard 2000). During this period the demand for high-skilled labour increased, while it declined for low-skilled labour, a trend that Rama (2001) relates, to some extent, to trade liberalisation. Rama (2001) also reports a tendency towards outsourcing in the manufacturing sector, which led to an increase of workers in the informal sector between 1995 and 2000. Bhorat (2003) reports that the expansion of the informal sector accounted for 84 per cent of the 1.1 million jobs created between 1996 and 1999. However, the labour force expanded by 3.1 million over the same period, causing an overall increase in the rate of unemployment. Employers in manufacturing perceived labour market regulations as a major hindrance to the hiring of workers (Rama 2001; *The Economist* 2004).

The result is a segmented labour market, the high-skill tier of which is characterised by excess demand (Rama 2001), while the low-skill tier displays large excess supply.[11] Unemployment is very high in rural areas, highlighting not only the lack of economic

activity in former homelands, but also the fact that unemployed individuals stay in or move back to rural areas to attach themselves to households with adequate public or private support (Klasen and Woolard 2000). Under these circumstances, one would expect an increase in inequality due to rising incomes for a small group of educated and skilled South Africans and stagnant or declining incomes for a much larger group of low-skilled individuals.[12]

Given this backdrop of very high levels of poverty and inequality in what is essentially an upper-middle-income country, knowledge of what has happened to the national distribution of household expenditures since the end of apartheid is important, but somewhat inadequate.[13] Various studies using the panel data generated by the KwaZulu-Natal Income Dynamics Study (KIDS) report on changes in welfare in KwaZulu-Natal, a large province of South Africa that is home to roughly one-fifth of its population. Carter and May (2001) find that poverty rates among the non-white population in KwaZulu-Natal increased from 27 per cent to 43 per cent between 1993 and 1998. Furthermore, they find that approximately 70 per cent of the poor may be dynamically so, unable to escape poverty. Using the same data source, but utilising income data instead of expenditures, Fields et al. (2003) do not present any figures on absolute poverty, but report that the Gini coefficient increased from 0.515 to 0.543 in KwaZulu-Natal. Also using income data from the same data sources used in this chapter (the Statistics South Africa (SSA) 1995 and 2000 Income and Expenditure Surveys (IES)), Lam and Leibbrandt (2003) find that incomes deteriorated for most South Africans. They also report that inequality within racial groups increased substantially, while between groups inequality declined only slightly, as a result of which total inequality increased in South Africa between 1995 and 2000.

In this chapter, we build on the existing literature and make three main contributions. Firstly, we utilise consumption aggregates in both the 1995 and 2000 IES that are carefully constructed so as to be as comparable to each other as possible. Secondly, using price data for each food item collected in the monthly Consumer Price Surveys conducted by SSA, we not only construct provincial and inter-temporal price indices, but also draw normative poverty lines to assess poverty in South Africa using the 'cost-of-basic-needs' approach. Finally, in addition to describing changes in real mean household expenditure, poverty and inequality across all of South Africa and for various sub-groups of the population for the 1995–2000 period, we also investigate whether the observed changes in welfare are due to changes in endowments, or changes in the returns to those endowments.

We find that the annual per capita growth rate of household expenditures between 1995 and 2000 is 0.5 per cent – very much in line with the GDP growth and the growth of final consumption expenditure by households.[14] Echoing Lam and Leibbrandt (2003), we find a deterioration of expenditures at the bottom end of the distribution, as a result of which poverty, especially extreme poverty, increased significantly. There were approximately 1.8 million more South Africans in 2000 living on less than $1/day, and 2.3 million more living on less than $2/day, than there

were in 1995. However, these losses were not uniform: coloureds made significant gains against poverty over this period, as did several provinces, such as the Western Cape, Northern Cape and Free State. Overall inequality also increased, mainly due to a sharp increase of inequality within the African population. The fact that the growth rate was low and the reality that the materialised growth was not pro-poor were the main reasons for the lack of progress in the elimination of poverty in this period.

The next section of the chapter briefly discusses the data and methodology used, while the third section presents findings on the changes in poverty and inequality in South Africa, and provides breakdowns by ethnic group, province, and type of area. The fourth section discusses the sensitivity of our results with respect to the assumptions on sampling weights, the importance of home-grown food consumption, and urban/rural price differentials. The fifth section, using a multivariate regression framework, addresses the question of whether changes in endowments or returns to endowments are responsible for the results reported in this chapter. The final section discusses some remaining puzzles and concludes the chapter.

Data and methodology

In constructing household consumption aggregates to analyse changes in welfare in South Africa, we followed standard practice, in particular the guidelines put forth by Deaton and Zaidi (2002), Lanjouw et al. (1996), and Ravallion (2001).[15] Instead of discussing the construction and comparability of the consumption aggregates, the normative poverty lines, and the spatial and inter-temporal price adjustments in great detail, we refer the readers to Babita et al. (2003), which provides a very detailed account of these issues. Below, we briefly discuss the data and deviations we had to make from standard practice – mainly due to data constraints – that may affect our welfare estimates.

The data utilised in this chapter come from two surveys, each of which was conducted by SSA in both 1995 and 2000. The first is the October Household Survey (OHS) that is conducted annually. The second is the Income and Expenditure Survey (IES), which is held every five years among households surveyed by the OHS. Combined, these surveys provide information on household income and expenditure, along with information on other household characteristics such as demographics, work, access to services and housing characteristics for roughly 30 000 households in each of the survey years. Recently the annual OHS was transformed into a biannual Labour Force Survey (LFS) with a rotating panel. We utilise OHS 1995, IES 1995, LFS 2000 (2) and IES 2000 to build comparable welfare indicators for 1995 and 2000.

The income and expenditure modules in the IES hardly changed between 1995 and 2000, and hence it is possible to build comparable consumption aggregates based on a large set of common items that are included in both the 1995 and 2000 data.[16] The consumption aggregate includes the following expenditure categories: food,

beverages and cigarettes (excluding home-grown foods); housing (imputed rental value of residence and utilities); compensation for domestic workers; personal care, household services and other household consumer goods; fuel (excluding firewood and dung); clothing and footwear; transport (excluding cost of purchased vehicles); communication; education; reading matter, cost of licences and other rental charges, and cost of insurance.[17] Rental values for housing were imputed in the same manner for each year using hedonic regressions.[18]

We used the 'cost-of-basic-needs' approach to draw normative poverty lines for our analysis (Ravallion 1994, 2001). According to these calculations, a reasonable poverty line for South Africa must lie between R322 (lower-bound poverty line) and R593 (upper-bound poverty line) per capita per month in 2000 prices. In this chapter, we report poverty using the lower-bound poverty line as well as the $2/day poverty line, which is equivalent to R174 per capita per month. The $2/day poverty line is close to the poverty line used by Deaton (1997), and also reasonably close to our food poverty line of R211.[19] While it is significantly lower than our preferred poverty line for South Africa, it is useful for international comparisons, and to describe what happens to the welfare of those at the bottom end of the distribution. Using these poverty lines, we report the Foster-Greer-Thorbecke (FGT) measures of headcount rate, poverty gap, and poverty gap squared. We also present three inequality measures for South Africa: the Gini index, the Theil index, and the Mean Log Deviation.

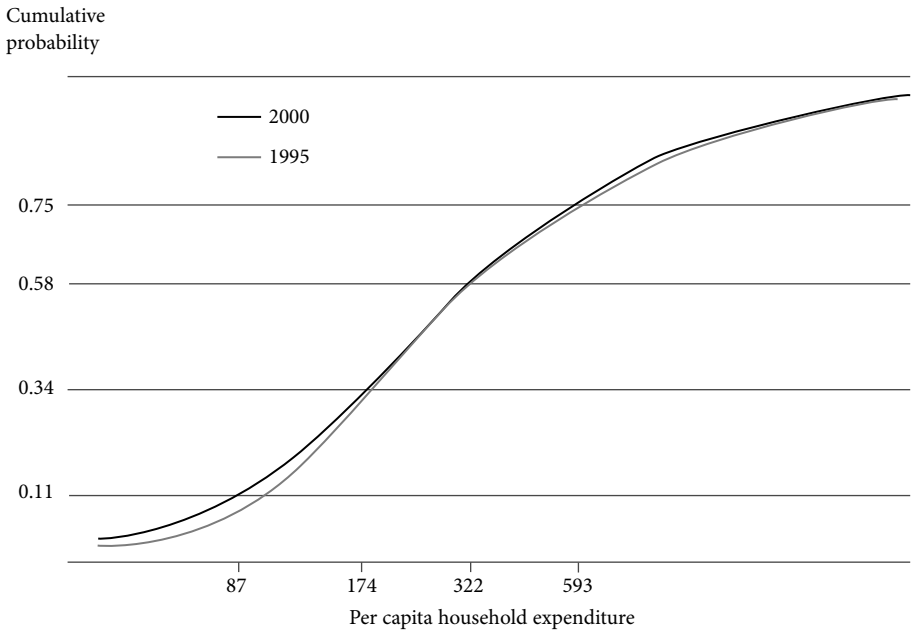
The data have three possible shortcomings that might bias the results presented in this chapter. Firstly, the issue of sampling weights for the 1995 and 2000 IES data has been a source of much controversy. Because of problems with the sampling frame for the 1995 OHS and IES, we report results using a set of sampling weights that was recalculated by SSA using information from the 1996 Census.[20] However, there is also reason to fear that the 2000 sampling weights might be inadequate (Simkins 2003). Secondly, the IES lacks the necessary information to impute a comparable value for consumption of home-grown products. In many countries, consumption of home-grown products is a significant component of the household consumption aggregate and hence its omission can lead to poverty being overestimated and the cross-sectional and inter-temporal poverty profiles being biased.[21] Thirdly, the IES neither collects information on quantities purchased to allow the construction of 'unit values', nor does it collect information on prices of various food items in the markets in the communities sampled. Hence, the price data we utilise to transform nominal household expenditures into real expenditures come from the price surveys that SSA conducts on a monthly basis. The Consumer Price Survey covers only metropolitan and urban areas throughout the nine provinces of South Africa. The lack of rural price data may cause an overestimation of poverty in rural areas, as well as biases in inter-temporal comparisons. For each of the potential problems discussed above, we perform sensitivity analysis and report the results in the fourth section of the chapter.

Results

Absolute poverty

Figure 2.1 shows the cumulative distribution functions (CDFs) for per capita expenditure in 1995 and 2000. The four vertical lines at R87, R174, R322, and R593 refer to the $1/day, $2/day, lower-bound and upper-bound poverty lines, respectively. The CDF for 1995 starts below that for 2000 and stays below it for most of the relevant range of poverty lines before crossing it, indicating a decline in real expenditures for those in the bottom half of the distribution.

Figure 2.1 *Cumulative distribution functions by year*



More than one in ten individuals lived on less than just $1/day in 2000, a large increase from 7.7 per cent in 1995 that translates into roughly 1.8 million additional individuals. These changes in poverty are presented in Table 2.1. Using the normative lower bound poverty line of R322 per month, we find that at least 58 per cent of the South African population were poor in both years. Roughly one-third of the population lived on less than $2/day (R174 per month) in 2000. For any poverty line below R322 per capita per month, the poverty gap and poverty severity (poverty gap squared) indices are significantly higher in 2000 than they were in 1995. These increases in poverty accompanied positive expenditure growth that was statistically insignificant.

Table 2.1 *Changes in poverty between 1995 and 2000*

Poverty line		$2/day poverty line (R174)		Lower-bound poverty line (R322)	
		1995	2000	1995	2000
South Africa	Headcount index*	0.32 (0.01)	0.34 (0.01)	0.58 (0.01)	0.58 (0.01)
	Poverty gap*[a]	0.11 (0.00)	0.13 (0.00)	0.27 (0.01)	0.29 (0.01)
	Poverty gap squared*[a]	0.05 (0.00)	0.07 (0.00)	0.16 (0.00)	0.17 (0.00)
	Mean expenditure	534 (10.5)	547 (11.0)	534 (10.5)	547 (11.0)
Africans	Headcount index*	0.38 (0.01)	0.40 (0.01)	0.68 (0.01)	0.67 (0.01)
	Poverty gap*[a]	0.13 (0.00)	0.15 (0.00)	0.32 (0.00)	0.34 (0.00)
	Poverty gap squared*[a]	0.06 (0.00)	0.08 (0.00)	0.19 (0.00)	0.21 (0.00)
	Mean expenditure[b]	341 (6.8)	357 (5.9)	341 (6.8)	357 (5.9)
Coloureds	Headcount index*[a]	0.20 (0.01)	0.12 (0.01)	0.50 (0.02)	0.35 (0.02)
	Poverty gap*[a]	0.06 (0.00)	0.04 (0.00)	0.19 (0.01)	0.13 (0.01)
	Poverty gap squared*[a]	0.02 (0.00)	0.01 (0.00)	0.10 (0.01)	0.07 (0.00)
	Mean expenditure[b]	474 (15.9)	659 (23.6)	474 (15.9)	659 (23.6)
Asians/ Indians	Headcount index	0.00 (0.00)	0.01 (0.01)	0.08 (0.01)	0.07 (0.02)
	Poverty gap	0.00 (0.00)	0.00 (0.00)	0.02 (0.00)	0.02 (0.01)
	Poverty gap squared	0.00 (0.00)	0.00 (0.00)	0.01 (0.00)	0.01 (0.00)
	Mean expenditure	1 108 (66.6)	1 146 (49.7)	1 108 (66.6)	1 146 (49.7)
Whites	Headcount index	0.00 (0.00)	0.00 (0.00)	0.01 (0.00)	0.01 (0.01)
	Poverty gap	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
	Poverty gap squared	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
	Mean expenditure[b]	1 989 (39.0)	2 211 (51.7)	1 989 (39.0)	2 211 (51.7)
Urban	Headcount index*[a]	0.15 (0.01)	0.18 (0.01)	0.36 (0.01)	0.40 (0.01)
	Poverty gap*[a]	0.05 (0.00)	0.05 (0.00)	0.14 (0.00)	0.16 (0.00)
	Poverty gap squared*[a]	0.02 (0.00)	0.02 (0.00)	0.08 (0.00)	0.09 (0.00)
	Mean expenditure[b]	811 (19.8)	764 (17.9)	811 (19.8)	764 (17.9)
Rural	Headcount index*[a]	0.45 (0.01)	0.55 (0.01)	0.75 (0.01)	0.80 (0.01)
	Poverty gap*[a]	0.16 (0.00)	0.22 (0.01)	0.37 (0.01)	0.44 (0.01)
	Poverty gap squared*[a]	0.07 (0.00)	0.12 (0.00)	0.22 (0.00)	0.29 (0.00)
	Mean expenditure[b]	313 (8.3)	262 (6.1)	313 (8.3)	262 (6.1)

Notes: All figures have been weighted using person weights (household weight * household size).
Standard errors are given in parentheses and are corrected for complex survey design.
* indicates that the difference in the poverty figures between 1995 and 2000 is statistically significant at the 90 per cent level for z=174.
[a] indicates that the difference in the poverty figures between 1995 and 2000 is statistically significant at the 90 per cent level for z=322.
[b] indicates that the difference in mean expenditure levels between 1995 and 2000 is statistically significant at the 90 per cent level.

Figures 2.2 and 2.3 show the cumulative distribution functions for Africans and coloureds by year. Figure 2.2 demonstrates that the CDF for Africans looks very similar to the CDF for all South Africans, indicating that while some Africans made gains in their household expenditures over time, many others experienced losses. However, Africans are the only ethnic group that exhibit this pattern. As can be seen in Figure 2.3, the CDF in 2000 for coloureds lies nowhere above that in 1995, meaning that poverty among this group is lower in 2000 for any poverty line. We find similar but more modest improvements for Asians/Indians and whites (figures not shown).

Figures 2.4 and 2.5 show the distribution of per capita expenditure by ethnic groups for 1995 and 2000, respectively. In both years, the CDF for coloureds first order dominates that for Africans, the CDF for Asians/Indians dominates that for coloureds, and the CDF for whites dominates that for Asians/Indians. However, somewhat surprisingly, the gap between coloureds and Africans increased over this period, while the gap between coloureds and the remaining population groups decreased. Nonetheless, poverty in 2000 was virtually zero among whites, and Africans were the poorest ethnic group followed by coloureds and Asians/Indians – closely mimicking the order established by the apartheid regime.

Figure 2.2 *Cumulative distribution functions by year for Africans*

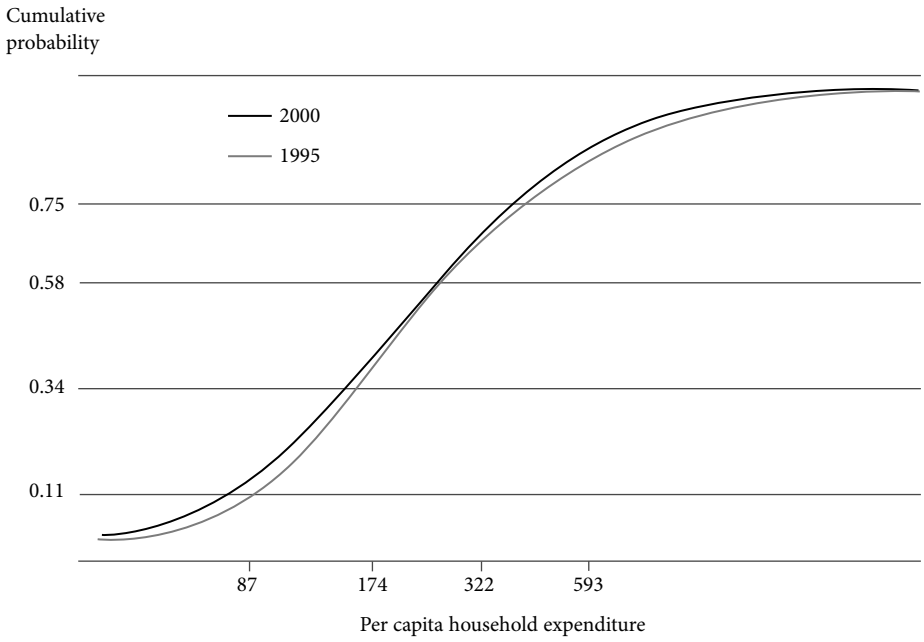


Figure 2.3 *Cumulative distribution functions by year for coloureds*

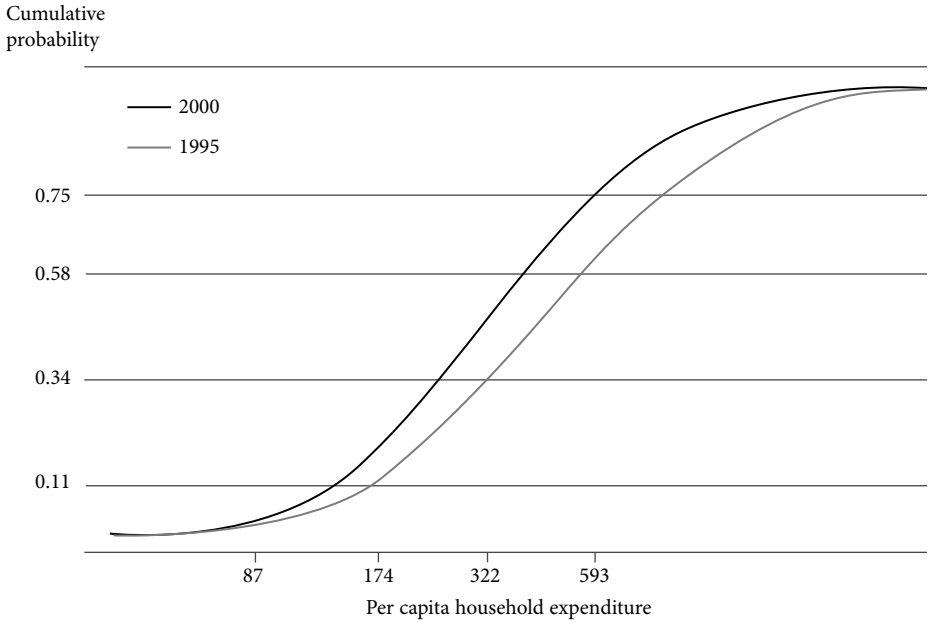


Figure 2.4 *Cumulative distribution functions by population group in 1995*

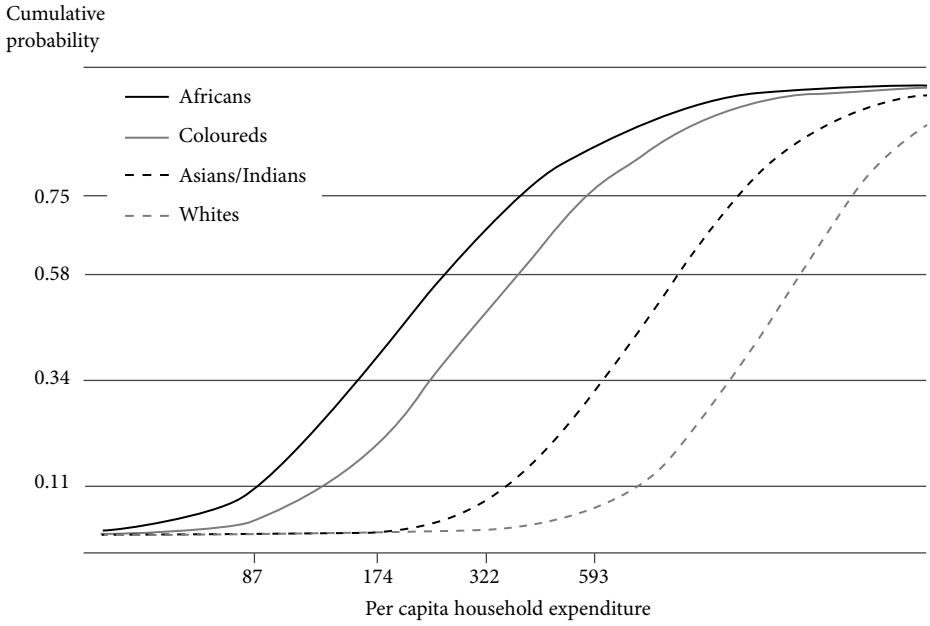
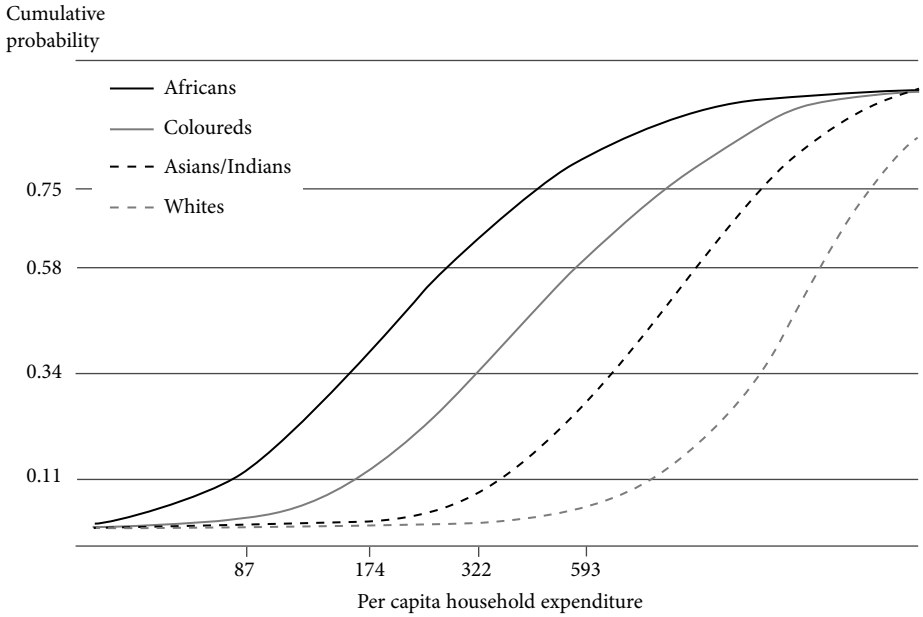


Figure 2.5 *Cumulative distribution functions by population group in 2000*



Changes in poverty by population group are also presented in Table 2.1. Among Africans, extreme poverty increased in terms of any of the three common Foster-Greer-Thorbecke (FGT) measures of poverty. In 2000, more than two-thirds of Africans in South Africa lived in poverty, while more than 40 per cent lived on less than $2/day. On the other hand, the substantial improvements in mean expenditure for coloureds resulted in a significant decrease in poverty. The poverty headcount among this group went down from 50 per cent in 1995 to 35 per cent in 2000, while extreme poverty declined from 20 per cent to 12 per cent. There was no change for Asians/Indians and whites, i.e. the headcount rate remained at a very low level for Asians/Indians and at virtually zero for whites.

Table 2.1 also presents changes in poverty for urban and rural areas. There is a large gap in poverty rates between urban and rural areas, both of which increased significantly over this period. No significant change in the overall headcount ratio (using the lower-bound poverty line of R322 per capita per month) in South Africa during this period is consistent with increases in that index in both urban and rural areas, as the share of the population living in urban areas increased significantly during this period.[22] More than three-quarters of the population in rural areas lived in poverty in both years, while the share living on less than $2/day increased from 45 per cent in 1995 to more than half of the rural population in 2000. Poverty in urban areas also increased – from 36 per cent to 40 per cent.

Table 2.2 *Changes in poverty by province*

		$2/day poverty line (R174)		Lower-bound poverty line (R322)	
		1995	2000	1995	2000
South Africa	Headcount index*	0.32 (0.01)	0.34 (0.01)	0.58 (0.01)	0.58 (0.01)
	Poverty gap*[a]	0.11 (0.00)	0.13 (0.00)	0.27 (0.01)	0.29 (0.01)
	Poverty gap squared*[a]	0.05 (0.00)	0.07 (0.00)	0.16 (0.00)	0.17 (0.00)
Western Cape	Headcount index*[a]	0.15 (0.02)	0.10 (0.01)	0.40 (0.02)	0.31 (0.02)
	Poverty gap*[a]	0.04 (0.01)	0.02 (0.00)	0.15 (0.01)	0.11 (0.01)
	Poverty gap squared*[a]	0.01 (0.00)	0.01 (0.00)	0.07 (0.01)	0.05 (0.00)
Eastern Cape	Headcount index*	0.49 (0.01)	0.56 (0.02)	0.76 (0.01)	0.76 (0.01)
	Poverty gap*[a]	0.18 (0.01)	0.23 (0.01)	0.39 (0.01)	0.44 (0.01)
	Poverty gap squared*[a]	0.08 (0.00)	0.13 (0.01)	0.24 (0.01)	0.29 (0.01)
Northern Cape	Headcount index*[a]	0.33 (0.03)	0.26 (0.02)	0.62 (0.03)	0.53 (0.03)
	Poverty gap*[a]	0.12 (0.04)	0.09 (0.01)	0.29 (0.02)	0.24 (0.02)
	Poverty gap squared[a]	0.05 (0.01)	0.04 (0.01)	0.17 (0.01)	0.13 (0.01)
Free State	Headcount index*[a]	0.48 (0.02)	0.38 (0.02)	0.70 (0.02)	0.61 (0.02)
	Poverty gap*[a]	0.19 (0.01)	0.14 (0.01)	0.38 (0.01)	0.32 (0.01)
	Poverty gap squared*[a]	0.10 (0.01)	0.07 (0.00)	0.24 (0.01)	0.19 (0.01)
KwaZulu-Natal	Headcount index*[a]	0.32 (0.02)	0.46 (0.02)	0.63 (0.02)	0.68 (0.02)
	Poverty gap*[a]	0.11 (0.01)	0.20 (0.01)	0.28 (0.01)	0.37 (0.01)
	Poverty gap squared*[a]	0.05 (0.01)	0.11 (0.01)	0.16 (0.01)	0.24 (0.01)
North West	Headcount index[a]	0.39 (0.02)	0.35 (0.02)	0.66 (0.02)	0.61 (0.02)
	Poverty gap	0.14 (0.01)	0.13 (0.01)	0.33 (0.01)	0.30 (0.01)
	Poverty gap squared	0.07 (0.01)	0.06 (0.01)	0.20 (0.01)	0.18 (0.01)
Gauteng	Headcount index*[a]	0.08 (0.01)	0.14 (0.01)	0.23 (0.02)	0.37 (0.02)
	Poverty gap*[a]	0.02 (0.00)	0.04 (0.00)	0.08 (0.01)	0.14 (0.01)
	Poverty gap squared*[a]	0.01 (0.00)	0.02 (0.00)	0.04 (0.01)	0.07 (0.00)
Mpumalanga	Headcount index	0.31 (0.02)	0.29 (0.02)	0.62 (0.02)	0.59 (0.02)
	Poverty gap	0.09 (0.01)	0.09 (0.01)	0.28 (0.01)	0.26 (0.01)
	Poverty gap squared	0.04 (0.00)	0.04 (0.00)	0.15 (0.01)	0.14 (0.01)
Limpopo	Headcount index*[a]	0.36 (0.02)	0.47 (0.01)	0.65 (0.02)	0.76 (0.01)
	Poverty gap*[a]	0.12 (0.01)	0.16 (0.01)	0.31 (0.01)	0.38 (0.01)
	Poverty gap squared*[a]	0.06 (0.01)	0.07 (0.00)	0.18 (0.01)	0.23 (0.01)

Notes: All figures have been weighted using person weights (household weight * household size).
Standard errors are given in parentheses and are corrected for complex survey design.
* indicates that the difference in the poverty figures between 1995 and 2000 is statistically significant at the 90 per cent level for z=174.
[a] indicates that the difference in the poverty figures between 1995 and 2000 is statistically significant at the 90 per cent level for z=322.

Table 2.2 presents the changes in poverty for the nine provinces of South Africa. There is substantial variation in levels and changes in poverty across provinces. The only provinces that have experienced significant growth in their mean household expenditure levels – the Western Cape, Northern Cape and Free State – have experienced significant declines in poverty. In fact, by 2000, the Western Cape had the lowest poverty headcount rate in South Africa, replacing Gauteng. The declines in poverty in the Northern Cape and Free State were mainly driven by rural sector growth.[23] That the Western Cape and Northern Cape are also the two provinces in which coloureds form the majority of the population is consistent with the significant reduction in poverty experienced by coloureds. However, it wasn't only coloureds who benefited from poverty reduction in these provinces – the poverty headcount among Africans went down from 75 per cent to 62 per cent in the Northern Cape and from 62 per cent to 55 per cent in the Western Cape.

While a few provinces made progress, a number of provinces have seen dramatic increases in poverty. In the Eastern Cape, already the poorest province in South Africa in 1995, the extreme poverty rate increased from 49 per cent to 56 per cent, while the poverty gap and poverty severity have also worsened significantly. Limpopo, a mainly rural province, has seen the most dramatic increase in its poverty incidence, with approximately three-quarters of its population living in poverty by 2000 compared with 65 per cent in 1995. Poverty has also increased in KwaZulu-Natal, where close to half of the population was living on less than $2/day by 2000.[24] Finally, Gauteng, the wealthiest province in 1995, has experienced large increases in poverty, where more than one-third of the population was living in poverty by 2000, up from less than a quarter five years prior to that.[25]

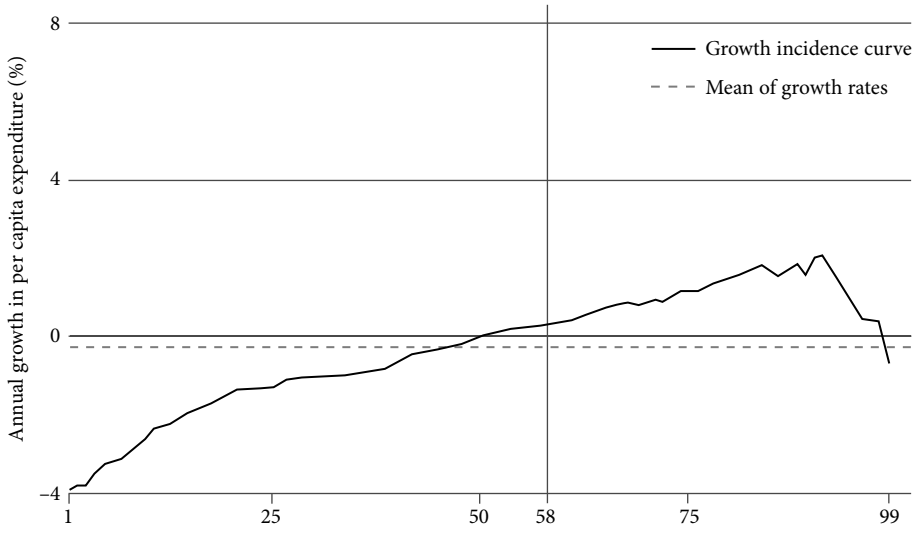
Some of the dramatic increases in extreme poverty happened in provinces where mean expenditure levels stayed constant over time. In the Eastern Cape and KwaZulu-Natal, the increase in poverty is a result of a worsening of the distribution of expenditures. On the other hand, in North West and Mpumalanga, where growth rates were also zero, poverty stayed constant. Given this variation in outcomes regarding consumption growth and poverty, in the next two sub-sections of this discussion we examine whether South Africa's growth has been pro-poor for some, and describe the changes in inequality that have been experienced.

Pro-poor growth

Figures 2.6 and 2.7 present growth incidence curves (GIC) for South Africa and for the coloured population, respectively, for the period 1995–2000. The GIC is obtained by plotting the annual growth rate in each percentile p of the distribution of per capita expenditures while p is varied from 0 to 1.[26] The area under the GIC up to the headcount index in 1995 (normalised by the headcount rate in 1995) gives the mean growth rate for the poor. The vertical line in the graph indicates the headcount rate in 1995, while the horizontal line denotes the mean percentile

growth rate. We define growth to be 'absolutely pro-poor' if the mean growth rate for the poor is positive, and 'relatively pro-poor' if, in addition, the mean growth rate for the poor is greater than or equal to the growth rate in mean expenditure. Hence, 'absolute pro-poor growth' only requires that the poor be better off on average in absolute terms, while 'relative pro-poor growth' requires the distributional shifts to be pro-poor as well.[27]

Figure 2.6 *Growth incidence curve for South Africa*

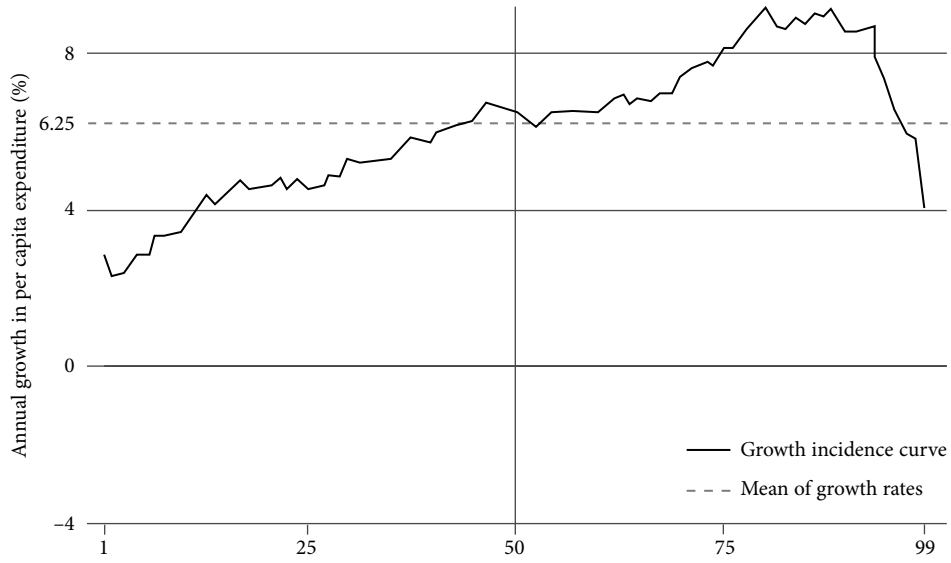


A GIC that lies above zero for each percentile implies first order dominance of the expenditure distribution in 2000 over 1995, i.e. an unambiguous decline in poverty. A GIC that is downward-sloping implies that the poor benefit from growth more than the non-poor, leading to a decrease in inequality. Unfortunately, the GIC for South Africa during this period (Figure 2.6) satisfies neither condition: it is below zero everywhere for the poor and upward-sloping over most of the range. The annual growth rate in the mean is 0.5 per cent, while the rate of pro-poor growth is 1.4 per cent. Hence, the modest growth in South Africa has not been pro-poor between 1995 and 2000 – either absolutely or relatively.

As the poverty headcount has dropped sharply among coloureds, it is informative to contrast the GIC for coloureds with that for the whole country. Figure 2.7 shows that the GIC for coloureds lies entirely above the zero line and the rate of pro-poor growth is 4.8 per cent. However, the GIC is again upward-sloping, meaning that the non-poor benefited more from growth than the poor and that inequality among

coloureds has risen. The growth in the mean for coloureds is 6.8 per cent. Hence, growth has been only 'absolutely pro-poor' for coloureds. The same pattern (not shown here) also holds for the three provinces with significant poverty reduction.

Figure 2.7 *Growth incidence curve for coloureds*



Growth has not been pro-poor in South Africa as a whole, and in the instances where poverty declined for certain sub-groups, the distributional shifts were still not pro-poor. As a result, one expects inequality to have somewhat increased. We describe the changes in inequality below.

Inequality

Table 2.3 shows the changes in inequality in South Africa as a whole as well as the changes by population group and type of area, using three inequality measures: the Gini index, mean log deviation, and the Theil index. The Gini index went up only slightly from 0.56 in 1995 to 0.58 in 2000. This is not unexpected, as the Gini index is most sensitive to income differences in the middle of the distribution, while the observed changes in the South African expenditure distribution took place mostly at the tails. Mean log deviation, a general entropy class measure of inequality that is sensitive to changes at the bottom end of the distribution, went up from 0.56 to 0.61. Table 2.3 also shows that there was a significant increase in inequality among

the African population. During this five-year period, the Gini index among Africans increased by more than three percentage points to 0.50 and the mean log deviation went up from 0.37 to 0.44. Inequality also increased slightly among coloureds and decreased somewhat among Asians/Indians and whites.

Table 2.3 *Changes in inequality between 1995 and 2000*

		1995	2000
South Africa	Gini index	0.565 (0.005)	0.577 (0.005)
	Mean log deviation	0.563 (0.011)	0.607 (0.012)
	Theil index	0.608 (0.014)	0.617 (0.012)
Africans	Gini index	0.467 (0.007)	0.501 (0.005)
	Mean log deviation	0.370 (0.011)	0.436 (0.010)
	Theil index	0.414 (0.015)	0.460 (0.012)
Coloureds	Gini index	0.439 (0.009)	0.453 (0.008)
	Mean log deviation	0.326 (0.014)	0.359 (0.012)
	Theil index	0.345 (0.016)	0.348 (0.013)
Asians/Indians	Gini index	0.398 (0.019)	0.374 (0.014)
	Mean log deviation	0.265 (0.025)	0.243 (0.021)
	Theil index	0.287 (0.034)	0.233 (0.018)
Whites	Gini index	0.344 (0.007)	0.319 (0.009)
	Mean log deviation	0.203 (0.008)	0.179 (0.011)
	Theil index	0.201 (0.007)	0.172 (0.011)
Urban	Gini index	0.527 (0.006)	0.533 (0.006)
	Mean log deviation	0.502 (0.013)	0.517 (0.013)
	Theil index	0.494 (0.013)	0.502 (0.013)
Rural	Gini index	0.493 (0.009)	0.502 (0.008)
	Mean log deviation	0.410 (0.016)	0.428 (0.014)
	Theil index	0.513 (0.022)	0.516 (0.022)

Notes: All figures have been weighted using person weights (household weight * household size).
Standard errors are given in parentheses and are corrected for complex survey design by utilising the ineqerr.ado file in STATA that provides bootstrap estimates of sampling the variances.
Mean log deviation and Theil index are General Entropy Class Inequality Measures with parameter values 'c' equal to 0 and 1, respectively.

General entropy class inequality measures are decomposable into components of inequality within and between groups, and the mean log deviation is decomposed as follows:

$$I_0 = [\Sigma_j g_j \log(\frac{\mu}{\mu_j})] + \Sigma_j I_j g_j, \qquad [1]$$

where j refers to sub-groups, g_j refers to the population share of group j and I_j refers to inequality in group j. The between-group component of inequality is captured by the first term to the right of the equality sign. It can be interpreted as measuring what would be the level of inequality in the population if everyone within the group had the same (the group-mean) consumption level, μ_j. The second term on the right reflects what would be the overall inequality level if there were no differences in mean consumption across groups but each group had its actual within-group inequality I_j.

Table 2.4 shows the results for such a decomposition exercise for South Africa, where the sub-groups are the four major population groups. We find that the share of inequality between ethnic groups went down from 38.3 per cent in 1995 to 33.2 per cent in 2000. However, this decrease in the share of between-group inequality can be attributed mostly to the increase in inequality within groups, as between-group inequality decreased slightly over the same period. The former can be explained mostly by the large increase in inequality among Africans, while the latter is mainly a result of the relative progress made by coloureds in their level of mean per capita household expenditure.

Table 2.4 *Inequality within and between population groups*

	1995	**2000**
Mean log deviation	0.563	0.606
Inequality within population groups	0.347	0.405
Inequality between population groups	0.216	0.201
Share of between-group inequality	38.3%	33.2%

Sensitivity analysis

Sampling weights

Throughout this chapter, we use a set of sampling weights for the 1995 data that were recalculated by SSA based on information from the 1996 Census. However, some have suggested (for example, Simkins 2003) that the sampling weights in the 2000 IES may also be problematic, in that they may lead to an overestimation (under-estimation) in the population share of Africans (whites). Following the end of apartheid, internal migration and emigration might have led to rapid shifts in demographic composition in South Africa, possibly making the 1996 Census – the sampling frame for the 2000 IES – somewhat outdated. A comparison of respective population shares of racial groups in the IES with those from the recent 2001 Census (Statistics South Africa 2003) confirms that this may be true to some extent. Table 2.5 shows that the share of whites is under-estimated significantly in the IES

(9.6 per cent versus 7.7 per cent), and this is particularly true in Gauteng (19.9 per cent versus 13.0 per cent). If the census figures of 2001 are a better representation of the 2000 population, this bias could lead to an under-estimation of the growth rate and an overestimation of the increase in poverty in South Africa.

Table 2.5 *Percentage population shares by race in 2000*

	South Africa		Gauteng	
	IES 2000	**Census 2001**	**IES 2000**	**Census 2001**
Africans	81.0	79.0	81.1	73.8
Coloureds	8.8	8.9	4.3	3.8
Asians/Indians	2.5	2.5	1.6	2.5
Whites	7.7	9.6	13.0	19.9

To test the robustness of our results, we employ a crude ex-post re-weighting scheme.[28] Using population shares from the 2001 Census at the province level for each racial group, we re-weight our 2000 IES sample so that the population share in each of the 36 province/race cells (9 provinces times 4 racial groups) is identical to that from the 2001 Census. The re-estimated welfare measures are presented in Table 2.6. Using the adjusted weights, mean expenditure grows from R534 to R587 over this period, a per capita growth rate of 1.9 per cent per year. This is more than double the GDP growth rate, and as such we can treat it as an upper limit on growth of per capita household expenditures over this period.

Despite this expenditure growth, the effect of re-weighting on poverty changes is minimal. The conclusion that poverty increased between 1995 and 2000 remains true for a wide range of poverty lines, especially for the poverty gap and poverty severity measures. On the other hand, inequality is higher using these adjusted sampling weights. These results are not completely surprising. As the population share of whites – who are clustered at the top end of the expenditure distribution – is significantly higher than originally estimated by the IES alone, the rate of growth and the level of inequality increase, but poverty levels are not significantly affected.

While our results with respect to changes in poverty and inequality generally hold regardless of the sampling weights used in the analysis, the magnitudes of some of these changes are different. For example, using the adjusted weights for 2000, the headcount index for Gauteng still increases significantly, but only to 33.8 per cent instead of 36.8 per cent. We conclude that adjustments to sampling weights alone cannot reverse the main conclusions reached in this chapter.

Table 2.6 *Sensitivity of poverty and inequality comparisons to sampling weights*

Poverty line		Revised 1995 sampling weights	Published 2000 sampling weights	Adjusted 2000 sampling weights
$2/day poverty line (R174)	Headcount index[a*]	0.317 (0.007)	0.339 (0.007)	0.334 (0.007)
	Poverty gap[a*]	0.109 (0.003)	0.128 (0.003)	0.126 (0.003)
	Poverty gap squared[a*]	0.050 (0.002)	0.065 (0.002)	0.064 (0.002)
Lower-bound poverty line (R322)	Headcount index	0.579 (0.007)	0.575 (0.007)	0.564 (0.007)
	Poverty gap[a]	0.272 (0.005)	0.286 (0.005)	0.281 (0.005)
	Poverty gap squared[a*]	0.157 (0.003)	0.174 (0.004)	0.171 (0.004)
	Mean expenditure*	534 (10.5)	547 (11.0)	587 (13.1)
	Gini index	0.565 (0.005)	0.578 (0.004)	0.588 (0.005)
	Mean log deviation	0.563 (0.011)	0.606 (0.010)	0.638 (0.012)
	Theil index	0.608 (0.014)	0.623 (0.011)	0.636 (0.012)

Notes: All figures have been weighted using person weights (household weight * household size).
Standard errors are given in parentheses and are corrected for complex survey design.
[a] indicates that the difference between the 1995 figures (column 3) and the published 2000 figures (column 4) for mean expenditure and poverty measures is statistically significant at the 90 per cent level.
* indicates that the difference between the 1995 figures (column 3) and the adjusted 2000 figures (column 5) for the same measures is statistically significant at the 90 per cent level.

Consumption from home-grown production

The importance of consumption from home-grown production seems to be small in South Africa compared with other countries. Deaton and Zaidi (2002) report that the budget share of this item was 2.2 per cent in South Africa in 1993, compared with 6.7 per cent in Brazil or 16.8 per cent in Vietnam. We have obtained the South Africa Integrated Household Survey, 1993 (SAIHS) – the same data set used by Deaton and Zaidi – and replicated this figure ourselves. Further examination of these data revealed no significant differences in the share of consumption from home-grown production across per capita expenditure deciles.

To examine whether this pattern has significantly changed over time, we calculated the share of maize consumption from home-grown production using our data sets for 1995 and 2000.[29] We use the market price of maize in each province to value home consumption. We find that while only 3 per cent of the population was consuming maize from own-production in 1995, this figure went up to approximately 11 per cent by 2000. The share of maize consumption from home production in the consumption aggregate also increased from approximately 0.5 per cent in 1995 to roughly 1.5 per cent by 2000. Furthermore by 2000, home-grown maize consumption constituted 3 per cent of the poorest quintile's consumption and virtually none of the richest quintile's, suggesting that home production of food may have become more important for the poor over this period.

However, these figures are still very small. Table 2.7 compares the poverty figures for 2000 using a consumption aggregate that includes home-grown maize (column 5) with those without this consumption item for 1995 (column 3) and 2000 (column 4). While poverty (and inequality) is slightly less in 2000 when this consumption of home grown maize is accounted for, the changes in the poverty gap and poverty gap squared measures over this period remain significant. We conclude that our general conclusions regarding inter-temporal comparisons of the mean growth rate, poverty and inequality are robust to the inclusion of home-grown food products. This conclusion remains the same regardless of whether we use the *published* sampling weights in the IES 2000 or the *adjusted* ones discussed above.

Table 2.7 *Sensitivity of poverty and inequality comparisons to consumption of home-grown food*

Poverty line		**Consumption *excluding* home-grown maize (1995)**	**Consumption *excluding* home-grown maize (2000)**	**Consumption *including* home-grown maize (2000)**
$2/day poverty line (R174)	Headcount index[a]	0.317 (0.007)	0.339 (0.007)	0.331 (0.006)
	Poverty gap[a*]	0.109 (0.003)	0.128 (0.003)	0.122 (0.003)
	Poverty gap squared[a*]	0.050 (0.002)	0.065 (0.002)	0.061 (0.002)
Lower-bound poverty line (R322)	Headcount index	0.579 (0.007)	0.575 (0.007)	0.573 (0.006)
	Poverty gap[a]	0.272 (0.005)	0.286 (0.005)	0.281 (0.004)
	Poverty gap squared[a*]	0.157 (0.003)	0.174 (0.004)	0.169 (0.003)
	Mean expenditure	534 (10.5)	547 (11.0)	549 (10.6)
	Gini index	0.565 (0.005)	0.578 (0.004)	0.574 (0.005)
	Mean log deviation	0.563 (0.011)	0.606 (0.010)	0.596 (0.012)
	Theil index	0.608 (0.014)	0.623 (0.011)	0.610 (0.012)

Notes: All figures have been weighted using person weights (household weight * household size).
Standard errors are given in parentheses and are corrected for complex survey design.
[a] indicates that the difference between figures excluding maize for 1995 (column 3) and for 2000 (column 4) for mean expenditure and poverty measures is statistically significant at the 90 per cent level.
* indicates that the difference between the 1995 figures (column 3) and the 2000 figures including maize (column 5) for the same measures is statistically significant at the 90 per cent level.

Rural/urban price differentials

Data on rural prices in South Africa are poor. As mentioned before, the IES data do not allow the calculation of unit values and there are no community price surveys. To get a basic idea of the rural/urban food price differentials, we again draw from the SAIHS of 1993. We fix a food bundle that makes up roughly 80 per cent of the food consumption in the 2000 IES and use the mean national urban and rural prices of these items from the SAIHS community questionnaire to construct crude rural

and urban price indices for South Africa.[30] We find that the cost of this bundle in urban areas is approximately 4.5 per cent higher than it is in rural areas in 1993. This difference would lead to a slight overestimation of poverty in South Africa in general and the relative poverty of rural households in particular.

There is no data source available to us that can shed light on whether this small difference has changed between 1995 and 2000.[31] However, there is evidence from other countries on divergence of price indices between urban and rural areas. For instance, Friedman and Levinsohn (2002) report a co-movement of rural and urban prices in Indonesia over a 12-year period between 1984 and 1996.[32] Deaton and Tarozzi (2000) report that urban prices were 11.4 per cent higher than rural prices in India in 1987–88 and that this difference increased to 15.6 per cent by 1993–94. These numbers do not suggest a large divergence in rural/urban price differentials over time.

Table 2.8 *Sensitivity of poverty and inequality comparisons to changes in the urban/rural price differential*

		If the base urban/rural price differential of 5% in 1995 doubled to 10%, tripled to 15%, or quadrupled to 20% by 2000:			
Poverty line		**1995 (5%)**	**2000 (10%)**	**2000 (15%)**	**2000 (20%)**
$2/day poverty line (R174)	Headcount index	0.303 (0.007)	0.316 (0.007)	0.306 (0.006)	0.296 (0.006)
	Poverty gap	0.101 (0.003)	0.115* (0.003)	0.109* (0.003)	0.104 (0.003)
	Poverty gap squared	0.046 (0.002)	0.057* (0.002)	0.053* (0.002)	0.050* (0.002)
Lower-bound poverty line (R322)	Headcount index	0.570 (0.007)	0.561 (0.007)	0.555 (0.007)	0.549* (0.007)
	Poverty gap	0.262 (0.005)	0.271 (0.005)	0.264 (0.005)	0.257 (0.004)
	Poverty gap squared	0.149 (0.003)	0.161* (0.003)	0.155 (0.003)	0.150 (0.003)
	Mean expenditure	543 (10.6)	558 (11.0)	564 (11.0)	569* (11.0)
	Gini index	0.560 (0.005)	0.570 (0.005)	0.566 (0.005)	0.563 (0.004)
	Mean log deviation	0.552 (0.011)	0.586 (0.012)	0.577 (0.011)	0.569 (0.010)
	Theil index	0.598 (0.012)	0.601 (0.013)	0.593 (0.012)	0.586 (0.012)

Notes: The figures in parentheses in row 2 represent the percentage by which prices in urban areas exceed those in rural areas.
All figures have been weighted using person weights (household weight * household size).
Standard errors are given in parentheses and are corrected for complex survey design.
* indicates that the difference in mean expenditure and the poverty figures between 1995 and 2000 is statistically significant at the 90% level.

There are yet other factors to suggest that the small rural/urban price differentials are not likely to affect our results significantly. According to information collected on the area of purchase of goods and services in the 2000 IES, households in rural areas report buying a significant quantity of food items and most of their non-food items in nearby urban areas.[33] Nonetheless, we simulate the effect of changes in the

rural/urban price differential over time and report the results in Table 2.8. We present revised poverty and inequality figures under three hypothetical scenarios: that the base rural/urban price differential increased from a reasonable 5 per cent in 1995 to 10 per cent, 15 per cent, or 20 per cent in 2000. We note that if we had assumed a 5 per cent price differential between urban and rural areas in 1995, the poverty figures would not be significantly lower than those reported in the third section (column 3). The table also shows that the increase in various FGT measures of poverty between 1995 and 2000 becomes insignificant only if the rural/urban price differential quadrupled in the five-year period between 1995 and 2000 (columns 4–6).

Correlates of household expenditure

In this section, we investigate the underlying reasons for the changes in household expenditures described in the previous section. We show that changes in the distribution of welfare between 1995 and 2000 are mostly attributable to changes in returns to endowments, such as education, and not to changes in the endowment levels themselves. In a manner that is analogous to wage regressions (for example, Lam 1999), we estimate a regression model to explain the variation in per capita household expenditures.[34]

Endogeneity – either as a result of reverse causality (for example, current household expenditure may affect decisions regarding the formation of new households) or due to omitted variables (for example, quality of education) – is a cause for concern. We try to minimise this concern through a careful selection of explanatory variables and the use of location fixed effects. Household size and composition, for instance, are responsive to the availability of resources, such as the receipt of old-age pensions, in South Africa (Klasen and Woolard 2000; Edmonds, Mammen and Miller 2001; Dieden 2003). The convention, however, is to include household size in regressions such as ours (see, for instance, Maluccio, Haddad and May 2000; Leibbrandt and Woolard 2001). We include household size and composition in our regressions for two reasons. Firstly, predicted poverty estimates (reported in Table 2.10) derived from the regression coefficients are closer to the 'true' poverty estimates for the regressions with household size included than without. Secondly, the remaining coefficients in the regression model are robust to the inclusion of household size and composition.

To estimate these regressions, we pool the data for 1995 and 2000 and regress the natural logarithm of per capita household consumption, $1n\, y_{id}$, for the ith household in district d on its characteristics, X_{id}, and a set of district dummies, v_d. To capture changes over time, all household characteristics are interacted with a time dummy for year 2000. The model can be written as follows:

$$1n\, y_{id} = X'_{id}\beta + tX'_{id}\gamma + v_d + \varepsilon_i, \qquad [2]$$

where ε_i is an i.i.d. error term, and t a dummy taking the value one if the observation is from 2000 and zero otherwise. β is the vector of coefficients pertaining to 1995, and $(\beta + \gamma)$ is the vector of parameter estimates for the year 2000.

The explanatory variables can be divided into three categories: demographics, education and location effects. Demographic characteristics include household size, age and ethnic origin of the head of household, and whether the head of household is female or widowed. We also include variables reflecting the fraction of dependants in the household and distinguish between those aged 17 and below and those of pensionable age (65 for men, 60 for women).[35]

For heads of households who did not report obtaining a diploma or schooling certificate, we include dummies for each year of education between 2 and 10 years.[36] For those with high levels of education, i.e. those who obtained a diploma, dummy variables are included, and the years of education is set to zero.[37] All education variables are interacted with ethnic group dummies, because quality of education received conditional on attainment may differ for these groups (Case and Deaton 1999), and because there may be discrimination in the marketplace.

Finally, geographic effects, such as living in a former homeland, agro-ecological factors, access to markets, local institutions and infrastructure could be sources of variation in household consumption. We experimented with province, district, and primary sampling unit (PSU) level fixed effects, and settled for the inclusion of 362 district dummies.[38] We present two separate regression models for urban and rural areas.[39] There are very few Asians/Indians in rural areas and they are classified as whites in the rural regression model.[40]

Table 2.9 presents the regression results. The adjusted-R^2 is 0.68 for the urban regression and 0.67 for the rural one.[41]

Table 2.9 *Correlates of log per capita consumption*

	Urban		Rural	
	Coefficient	**T-statistic**	**Coefficient**	**T-statistic**
Household size	–0.24	–22.4	–0.23	–23.2
Household size, squared	0.01	9.9	0.01	12.9
Fraction of dependants aged 17 and less	–0.22	–10.6	–0.27	–13.6
Fraction of dependants of pensionable age	–0.15	–5.3	0.03	0.7
Age of head of household	0.02	10.5	0.02	9.9
Age of head of household, squared	0.00	–9.7	0.00	–8.6
D–household head is widow	0.02	1.3	–0.04	–2.1
D-household head is female	–0.14	–10.7	–0.03	–2.5
D-head is African	–1.09	–11.7	–0.80	–4.7
D-head is coloured	–1.00	–10.3	–0.77	–4.3

	Urban		Rural	
	Coefficient	T-statistic	Coefficient	T-statistic
D-head is Asian/Indian	–0.51	–3.5		
D-6 years of education, white	–0.10	–1.1	0.33	1.7
D-7 years of education, white	0.02	0.2	0.37	1.6
D-8 years of education, white	0.14	1.5	0.77	4.3
D-9 years of education, white	0.20	2.0	0.78	3.8
D-10 years of education, white	0.41	4.6	1.14	6.4
D-holder of certificate with less than Std 9, white	0.39	3.6	1.09	3.9
D-holder of certificate with Std 10, white	0.59	6.4	1.28	6.7
D-holder of degree, white	0.75	8.1	1.39	7.6
D-other diploma, white	0.10	0.8	1.24	4.0
D-2 years of education, Asian/Indian	0.09	0.5		
D-3 years of education, Asian/Indian	0.12	0.8		
D-4 years of education, Asian/Indian	–0.05	–0.4		
D-5 years of education, Asian/Indian	0.27	2.0		
D-6 years of education, Asian/Indian	0.26	2.2		
D-7 years of education, Asian/Indian	0.11	0.8		
D-8 years of education, Asian/Indian	0.38	3.1		
D-9 years of education, Asian/Indian	0.55	4.3		
D-10 years of education, Asian/Indian	0.65	5.4		
D-holder of certificate with less than Std 9, Asian/Indian	1.33	3.1		
D-holder of certificate with Std 10, Asian/Indian	1.04	7.6		
D-holder of degree, Asian/Indian	1.10	7.4		
D-other diploma, Asian/Indian	0.42	0.7		
D-2 years of education, coloured	0.08	1.3	0.05	0.8
D-3 years of education, coloured	0.14	2.8	0.10	1.7
D-4 years of education, coloured	0.18	3.8	0.26	5.0
D-5 years of education, coloured	0.20	4.6	0.26	4.3
D-6 years of education, coloured	0.28	7.0	0.27	4.4
D-7 years of education, coloured	0.43	9.2	0.26	2.2
D-8 years of education, coloured	0.60	11.4	0.53	4.6
D-9 years of education, coloured	0.63	9.4	0.61	2.4
D-10 years of education, coloured	0.93	18.6	1.14	6.7
D-holder of certificate with less than Std 9, coloured	1.26	7.0	0.65	1.5
D-holder of certificate with Std 10, coloured	1.18	18.7	1.30	6.0
D-holder of degree, coloured	1.51	14.0	1.46	4.3

	Urban		Rural	
	Coefficient	T-statistic	Coefficient	T-statistic
D-other diploma, coloured	0.92	4.0	–0.03	–0.2
D-2 years of education, African	–0.01	–0.4	0.12	6.1
D-3 years of education, African	0.04	1.0	0.08	4.1
D-4 years of education, African	0.13	4.0	0.14	6.9
D-5 years of education, African	0.12	4.2	0.22	10.9
D-6 years of education, African	0.24	8.9	0.30	14.2
D-7 years of education, African	0.27	8.2	0.39	13.2
D-8 years of education, African	0.40	12.0	0.42	14.0
D-9 years of education, African	0.42	11.2	0.54	13.6
D-10 years of education, African	0.69	21.4	0.74	19.0
D-holder of certificate with less than Std 9, African	0.78	9.3	0.78	10.3
D-holder of certificate with Std 10, African	1.06	24.5	1.24	22.3
D-holder of degree, African	1.18	19.7	1.41	11.6
D-other diploma, African	0.21	2.7	0.35	4.6
Interaction terms with D-2000				
Household size	0.01	1.1	–0.05	–3.5
Household size, squared	0.00	–0.7	0.00	2.1
Fraction of dependents aged 17 and less	–0.10	–3.3	–0.09	–3.0
Fraction of dependents of pensionable age	–0.02	–0.4	–0.09	–1.7
Age of head of household	0.00	–0.8	–0.01	–1.8
Age of head of household, squared	0.00	1.9	0.00	2.7
D-household head is widow	0.00	0.0	–0.02	–0.7
D-household head is female	–0.03	–1.4	–0.08	–4.3
D-head is African	–0.16	–1.0	–0.37	–1.1
D-head is coloured	0.02	0.1	–0.16	–0.5
D-head is Asian/Indian	0.07	0.3		
D-6 years of education, white	0.06	0.4	–0.30	–0.8
D-7 years of education, white	0.04	0.2	–0.23	–0.5
D-8 years of education, white	0.00	0.0	–0.11	–0.3
D-9 years of education, white	0.14	0.8	–0.70	–1.4
D-10 years of education, white	0.08	0.5	–0.27	–0.8
D-holder of certificate with less than Std 9, white	0.15	0.8	0.03	0.1
D-holder of certificate with Std 10, white	0.06	0.4	–0.43	–1.2
D-holder of degree, white	0.00	0.0	–0.20	–0.6
D-other diploma, white	0.73	3.9	–0.07	–0.2
D-2 years of education, Asian/Indian	0.24	1.1		
D-3 years of education, Asian/Indian	–0.20	–0.9		
D-4 years of education, Asian/Indian	0.03	0.2		

	Urban		Rural	
	Coefficient	T-statistic	Coefficient	T-statistic
D-5 years of education, Asian/Indian	–0.37	–1.9		
D-6 years of education, Asian/Indian	–0.10	–0.6		
D-7 years of education, Asian/Indian	–0.04	–0.2		
D-8 years of education, Asian/Indian	0.07	0.4		
D-9 years of education, Asian/Indian	–0.03	–0.2		
D-10 years of education, Asian/Indian	–0.07	–0.5		
D-holder of certificate with less than Std 9, Asian/Indian	–0.49	–1.1		
D-holder of certificate with Std 10, Asian/Indian	–0.13	–0.7		
D-holder of degree, Asian/Indian	0.00	0.0		
D-other diploma, Asian/Indian	0.41	0.6		
D-2 years of education, coloured	0.06	0.7	–0.11	–1.1
D-3 years of education, coloured	0.02	0.2	0.06	0.7
D-4 years of education, coloured	–0.08	–1.1	–0.13	–1.7
D-5 years of education, coloured	0.03	0.5	–0.12	–1.3
D-6 years of education, coloured	0.06	1.0	0.04	0.5
D-7 years of education, coloured	0.10	1.4	0.10	0.8
D-8 years of education, coloured	0.01	0.1	–0.02	–0.1
D-9 years of education, coloured	0.10	0.9	–0.22	–0.7
D-10 years of education, coloured	0.10	1.4	–0.60	–2.7
D-holder of certificate with less than Std 9, coloured	–0.09	–0.4	–0.01	0.0
D-holder of certificate with Std 10, coloured	0.13	1.4	0.08	0.3
D-holder of degree, coloured	0.15	1.1	0.17	0.5
D-other diploma, coloured	0.58	2.2		
D-2 years of education, African	0.11	2.4	0.03	1.0
D-3 years of education, African	0.09	2.0	0.05	1.7
D-4 years of education, African	0.00	0.0	0.07	2.2
D-5 years of education, African	0.07	1.8	0.04	1.2
D-6 years of education, African	0.02	0.6	0.01	0.3
D-7 years of education, African	0.06	1.4	–0.06	–1.5
D-8 years of education, African	0.06	1.3	0.00	0.1
D-9 years of education, African	0.06	1.4	–0.18	–3.6
D-10 years of education, African	0.08	2.0	–0.15	–2.7
D-holder of certificate with less than Std 9, African	0.26	2.5	0.07	0.5
D-holder of certificate with Std 10, African	0.26	4.7	0.07	0.9
D-holder of degree, African	0.38	4.8	0.06	0.4
D-other diploma, African	1.22	11.1	0.85	5.1

	Urban		Rural	
	Coefficient	T-statistic	Coefficient	T-statistic
D-year 2000	–0.04	–0.2	0.52	1.5
Constant	7.19	69.9	6.56	36.5
Number of observations	29 472		24 966	
R^2	0.68		0.67	

Note: District dummies are not reported.

Turning first to the results for 1995, we find that in both rural and urban areas, household size is negatively correlated with per capita expenditure.[42] The coefficient for the age of the household head reflects the expected life-cycle effects. Living in a household that is non-white, that includes young dependants or that is female-headed is negatively correlated with per capita expenditure. This comes over and above the negative correlations associated with household size. There is no correlation between households with a dependant of pensionable age and log per capita consumption for those living in rural areas, but a negative and significant correlation exists in urban areas. The fact that this coefficient is negative in urban areas, despite eligibility for a transfer, confirms a finding by Case and Deaton (1998), who report that median per capita income in pensioner households is lower than in households without a beneficiary of this transfer.

The parameter estimates for the education variables are consistently positive and significant, but vary significantly across ethnic groups and rural and urban areas. Note that the parameter estimates for education between whites and non-whites are not directly comparable as the omitted groups are different. Returns to education for Africans and whites seem to be higher in rural areas than in urban areas in 1995. We also observe sheepskin effects[43] in all population groups at ten years of education, as well as for degree holders and certificate holders with Standard 10.

Turning to the results for 2000, we find that in the rural and urban regression the sets of 2000 interactions are jointly significant, suggesting that a structural change took place.[44] The pattern of change, especially with respect to education, is strikingly different across rural and urban areas. In rural areas the year-interacted terms for demographic characteristics are all negative and mostly significant, implying an across-the-board worsening of these parameters. In urban areas, the results are similar but the declines in parameters are less significant statistically. More interesting are the changes in education coefficients. In urban areas, while the coefficients on education have not changed significantly for whites, Asians, or coloureds, they have increased for Africans. These gains are particularly large for Africans with high education, such as degree, certificate and other diploma holders. In rural areas, however, the picture is different. The year-interacted education parameters for whites and coloureds are mostly negative, although statistically

insignificant, while those for Africans are mixed. As in urban areas, there were some small gains in returns to low levels of education (2–3 years), and there were declines in those for higher levels (9–10 years).

Since this is a household-level analysis and education reflects the level of education of the head of household, we cannot make definitive statements about the returns to education; however, one can interpret the education coefficients to capture the composite impact of differences in the quality of education and various trends in the labour market. Increasing unemployment since 1995, increased labour market opportunities for skilled labourers, deteriorating conditions for unskilled workers, and the decline of labour market discrimination are likely to have affected the education coefficients in various ways.

The results confirm a decline in the ethnic gap in education coefficients, a phenomenon some (for example, Mwabu and Schultz 1996; Moll 2000) attribute to the decline in labour market discrimination. The result that the returns to education accrued mostly to urban Africans with high levels of education – something also documented by Lam and Leibbrandt (2003) – is consistent with the high and rising demand for skilled workers, and an erosion of demand at the bottom end of the labour force. Note that the consequence of such a trend is a greater inequality within the African group, and a decline in inequality between ethnic groups, consistent with our earlier findings on changes in inequality.

In view of these results, it is natural to ask how many of the changes in poverty described earlier can be attributed to changes in the coefficients, as opposed to the changes in household endowments. To address this question, we construct counterfactual consumption distributions and examine the difference in the poverty headcount between the original and counterfactual distributions.[45] Table 2.10 presents the different counterfactuals, and the associated predicted poverty numbers.

Table 2.10 *Poverty headcounts for various counterfactuals in 1995 and 2000*

	Simulated log per capita consumption	**Urban**	**Rural**
1995 poverty incidence	$\ln \hat{y}_{95} = \beta_x X_{95} + \beta_e E_{95}$	37.0	75.2
2000 poverty incidence	$\ln \hat{y}_{00} = (\beta_x + \gamma_x) X_{00} + (\beta_e + \gamma_e) E_{00}$	41.5	80.1
Counterfactuals			
1. All parameters change	$\ln \hat{y}_{95} = (\beta_x + \gamma_x) X_{95} + (\beta_e + \gamma_e) E_{95}$	39.6	79.9
2. *Education* parameters change	$\ln \hat{y}_{95} = \beta_x X_{95} + (\beta_e + \gamma_e) E_{95}$	34.7	74.6
3. *Other* parameters change	$\ln \hat{y}_{95} = (\beta_x + \gamma_x) X_{95} + \beta_e E_{95}$	42.0	80.5
4. Old parameters	$\ln \hat{y}_{00} = \beta_x X_{00} + \beta_e E_{00}$	37.5	74.9
5. *Other* parameters unchanged	$\ln \hat{y}_{00} = \beta_x X_{00} + (\beta_e + \gamma_e) E_{00}$	35.5	74.8
6. *Education* parameters unchanged	$\ln \hat{y}_{00} = (\beta_x + \gamma_x) X_{00} + \beta_e E_{00}$	43.8	80.0

Note: Poverty is calculated as the expected probability of poverty, i.e. prob ($\ln \hat{y} < \ln z$), with z being the poverty line at R322.

Starting with rural areas, counterfactuals 1 and 4 demonstrate that the changes in poverty are entirely due to changes in the parameters and not in the endowments. Poverty headcount would have remained the same in rural South Africa if only the endowments had changed while the coefficients had remained the same between 1995 and 2000 (counterfactual 4). Similarly, the poverty headcount in 2000 would be the same if only the parameters had changed (counterfactual 1). Examining further which parameters are responsible for the increase in poverty in rural areas, we find that the decline in the parameters for demographic characteristics (counterfactual 3) and not in those for education (counterfactual 2) is responsible for this change.

In urban areas, the picture is slightly different. Again, counterfactual 4 shows that if only the endowments had changed, but the parameters had stayed the same, poverty in urban areas would be roughly the same in 2000 as in 1995. However, if only the parameters had changed (counterfactual 1), poverty would have increased (from 37.0 per cent to 39.6 per cent), but not as much as the realised poverty increase between 1995 and 2000 (from 37.0 per cent to 41.5 per cent). Interestingly, and consistent with the finding that there were increases in returns to education in urban areas, the direction of change in poverty as a result of a change in education parameters is different from that caused by a change in 'other' parameters. If only the education parameters had changed between 1995 and 2000 (counterfactual 2), poverty would have actually declined to 34.7 per cent in urban South Africa. However, these potential gains were cancelled by declines in other parameters: if only the 'other' parameters had changed between 1995 and 2000, then poverty would have increased to 42.0 per cent – very close to the realised poverty headcount of 41.5 per cent. Interestingly, poverty would have been highest in urban areas in 2000 if only education parameters had remained *unchanged* between 1995 and 2000.

Given the central importance of education, it may be useful to consider what happens to poverty if inequalities in education are reduced, as this is likely to translate into inequalities in per capita expenditure. This notion is intuitively appealing, although whether it holds depends on how education outcomes are mapped onto welfare outcomes (Lam 1999). A legacy of apartheid, the education gap between racial groups still exists in 2000 but is closing because of improvements in educational attainment, especially by Africans and coloureds (Lam and Leibbrandt 2003).

To explore how increases in educational attainment and returns to education might affect poverty reduction, we perform more simulations. For example, all else being equal, if every household head with less than seven years of education attained seven years of education, then poverty would decline by about eight percentage points in rural areas and five percentage points in urban areas.[46] If, in addition, the return to education for those with some education but without a diploma increased by 50 per cent, poverty would decline by 16 percentage points in rural areas and by about 14 percentage points in urban areas.

We conclude that most of the trends in poverty observed between 1995 and 2000 can be attributed not to the changes in household endowments, but rather to the returns to those endowments. Although there was some improvement in educational attainment over this period, these changes were not large for Africans.[47] In urban areas, where returns to education seem to be improving, these returns improved mostly for the highly educated – a very small percentage of the African population. The education parameters reflect the composite influence of education quality, labour market opportunities and (wage) returns to education. Disentangling these effects is beyond the scope of this chapter. However, we can say that microeconomic policies that focus on improving quality educational attainment for the poor, addressing labour market rigidities and providing safety nets are urgently needed if the trend of increasing poverty and inequality in South Africa is to be reversed in the short to medium run.[48]

Policy discussion and conclusions

This chapter has assessed the changes in poverty and inequality in South Africa between 1995 and 2000, the period that covers the first five years after the official end of apartheid in 1994. Consistent with GDP growth, we find that there was little growth in per capita household expenditures during this period. Roughly 60 per cent of all South Africans, and two-thirds of the African population, were poor in either year. The depth and severity of poverty increased as a result of declining expenditures at the bottom end of the expenditure distribution, and inequality among Africans rose sharply. By 2000, there were approximately 1.8 million more South Africans living on less than $1/day and 2.3 million more living on less than $2/day.

While substantial progress was made in other areas, such as access to safe water and sanitation, or coverage for social transfers like the old-age pension programme, the government's macroeconomic strategy failed to generate the projected growth and create enough jobs to bring down the high rate of unemployment. Even if the projected growth rates had been achieved, it should not be assumed that substantial reductions in poverty would have followed. Without a progressive shift in the expenditure distribution, even if South Africa grew at a remarkable annual rate of 8 per cent per capita – similar to China's growth rate in the 1990s – it would take approximately ten years for the average poor household to escape from poverty.[49] Hence, it is unlikely that growth alone – without explicit poverty reduction strategies – could have lifted many South Africans out of poverty. South Africa needs to grow in a way that also improves the distribution of incomes if it is to make significant progress against poverty in the short to medium run.

Some puzzles remain. Firstly, what explains the divergent paths taken by the African and coloured populations? The substantial decline in poverty experienced by coloureds is consistent with the finding that the Western Cape and Northern

Cape – the two provinces where coloureds form the majority of the population – also saw their poverty rates decline significantly during this period. The fact that African residents of these provinces also benefited from these reductions in poverty suggests a geographic rather than an ethnic explanation for this change, although we cannot provide any evidence as to whether there was a common underlying cause for poverty reduction in these areas for both population groups, or some positive spillover effects of the gains by coloureds for Africans.

Secondly, what explains the losses at the bottom end of the distribution? It is difficult to answer this question without further research, but it seems fair to say that the reasons behind these changes are complex. Gains in the levels and returns to education during this period seem to have been offset by demographic as well as labour market shifts. It is undisputed that the labour force growth was far higher than employment growth, causing the already high initial unemployment rates to swell. On the demographic side, there was a smaller number of adults per household in 2000 than in 1995, while the percentage of female-headed households was higher in 2000. It seems that there were more women without the necessary education or skills in the labour market in 2000 than there were in 1995. One possible explanation for this demographic shift could be the high prevalence of HIV/AIDS. HIV affects the African population in South Africa more than any other population group, and adult mortality (or morbidity) leads to the loss of assets and income-earners, causing other adults in the family, sometimes women who have never participated in the labour force before, to seek work outside the home. HIV could also partly explain the sluggish overall growth performance of South Africa during this period (Bell, Devarajan and Gersbach 2003).

Detailed answers to these questions are beyond the scope of this chapter. Future research that analyses the microeconomics of the complex distributional dynamics in South Africa is called for.

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Notes

1 In this chapter, we refer to four major population groups: Africans, coloureds, Asians/Indians, and whites. We use 'ethnic', 'racial', and 'population' groups interchangeably.

2 Authors' calculations using the SSA Income Expenditure Survey (1995).

3 Authors' own calculations using the 1996 Census.

4 <http://www.unaids.org/hivaidsinfo/statistics/fact_sheets/pdfs/Southafrica_en.pdf>. 1 October 2004.

5 *Mail and Guardian*, 7 February 2003. <http://www.mg.co.za/Content/l3.asp?ao=10925>.

6 Leibbrandt, van der Berg and Bhorat (2001: 16).

7 Government of South Africa (1996).

8 Authors' calculation using 'gross domestic product at constant 1995 prices (time series code KBP6006Y)' data from the South African Reserve Bank at http://www.reservebank.co.za/, accessed 1 October 2004.

9 Annual population growth in South Africa was approximately 2 per cent during this period.

10 Authors' calculation using 'final consumption expenditure by households (time series code KBP6007Y)' data from the South African Reserve Bank at http://www.reservebank.co.za/, accessed 1 October 2004.

11 According to *The Economist* (2004), blacks with sought-after skills are typically paid 15–20 per cent more than similarly qualified whites, as private companies compete for these workers in their effort to make their workplace more 'demographically representative'.

12 Old-age pensions, child support grants and unemployment insurance that provide social support to some families may counter these impacts.

13 The PPP-adjusted GDP per capita for South Africa (in current international $) was $8 642 in 1995 and $9 580 in 2000. Source: World Bank, International Comparison Programme database.

14 According to our household survey data, per capita household expenditures went from R534 in 1995 to R547 in 2000. However, this annual increase of 0.5 per cent is not statistically significant.

15 The literature on the choice of income versus expenditure to measure household welfare is well established and we abstract from that debate here. We believe, for empirical and theoretical reasons, that using data on household expenditures is preferable to using data on incomes.

16 However, there are two main shortcomings associated with the IES. Firstly, it is an expenditure survey as opposed to a consumption survey, making it difficult to deduce that the purchased amount was consumed during the period of recall. Secondly, the IES lacks the necessary information to impute reliable values of durable goods and as a result this item was excluded from the consumption aggregate.

17 Important categories of expenditures we have excluded from the consumption aggregate are: water; firewood and dung; health; imputed value of household durables; food consumption from home production; lobola/dowry, funerals, religious or traditional ceremonies, gambling; lumpy expenditures, such as furniture, appliances, vehicles, sound and video equipment, etc. See Babita et al. (2003) for details.

18 Again, see Babita et al. (2003) for details.

19 Deaton (1997) uses R105 per capita in 1993 prices as a poverty line. This is very close to R174 in 2000 prices.

20 The 1991 Census, which was the sampling frame for the 1995 OHS and IES (and for the widely used SALDRU survey), was carried out under the apartheid regime and had marked coverage problems.

21 For example, Deaton and Zaidi (2002) report that food consumption from home production accounts for 35 per cent of the consumption aggregate in Nepal in 1996 and 21 per cent in Ghana in 1988–89.

22 In our samples for the IES in 1995 and 2000, the share of population living in urban areas is 44.3 per cent and 56.7 per cent, respectively.

23 Rural poverty headcount declined from 87 per cent to 76 per cent in the Free State and from 70 per cent to 49 per cent in the Northern Cape between 1995 and 2000.

24 This increase is consistent with the results reported in Carter and May (2001) on changes in poverty in KwaZulu-Natal between 1993 and 1998.

25 There is reason to believe that the sampling problems that plagued the 1995 survey were most severe in Gauteng, leading to an undercount of the population there, especially of Africans. Hence, part of the increase in poverty in Gauteng during this period may be to the result of an underestimation of poverty in 1995. Another factor likely to be contributing to this increase is migration to Gauteng from poorer provinces after 1994. According to the 2001 Census, the population of Gauteng increased by 20 per cent between 1996 and 2001, a growth rate that is twice as large as that of South Africa as a whole. We discuss these issues further in the fourth section of the chapter.

26 It is important to remember that the households in the same percentile in two different periods need not be the same, i.e. these percentiles are 'anonymous'. See Ravallion and Chen (2003) for a detailed discussion of growth incidence curves and pro-poor growth.

27 For example, Ravallion and Chen (2003) report that the rate of pro-poor growth in China was 3.9 per cent between 1990 and 1999, while the growth rate in the mean was 6.2 per cent, an example of what we define as 'absolute pro-poor growth'. However, between 1993 and 1996, the same figures were 10 per cent and 8.2 per cent respectively, i.e. growth during this period was 'relatively pro-poor'.

28 Introducing ex-post inflation factors into surveys in this way is not uncommon. See, for example, Deaton (1997).

29 Among the home-grown products for which data are collected, maize is by far the most important item grown and consumed by households in our surveys.

30 This bundle includes mealie meal/maize flour, rice, bread, beef, mutton, pork, lamb, potatoes, tomatoes, cabbage, soft drinks, milk, milk powder, eggs, vegetable oil, margarine, butter, and sugar.

31 Carter and May (2001) use separate costs for rural and urban areas of KwaZulu-Natal that are borrowed from Potgieter (1993), but we were not able locate this study.

32 Specifically, they report that the rural prices increased by 182 per cent while urban prices increased by 187 per cent.

33 For example, approximately 60 per cent of rural households reported purchasing grain products in nearby urban areas.

34 Van de Walle and Gunewardena (2001) present a similar regression model to identify the determinants of living standards in Vietnam.

35 This old-age pension is arguably the most important social transfer in South Africa (Case and Deaton 1998). In 2000, the maximum pension benefit was R549 (or 1.7 times the lower-bound poverty line) per month per pensioner; the maximum disability grant was slightly larger: R685.

36 However, in our sample, the number of whites with low levels of education was very small. Hence, the omitted education group for whites is 5 years and below, rather than 0 or 1 year of education for other population groups.

37 We distinguish between four diploma types: (i) diploma obtained with Standard 9 or lower; (ii) diploma obtained with Standard 10; (iii) university degree; and (iv) other diplomas and certificates (including postgraduate diplomas).

38 The results are also robust to the inclusion of time-variant geographic fixed-effects.

39 We tested whether the correlates of poverty in rural areas are different from those in urban areas by including interaction terms for urban households for all variables. The null hypothesis that the interaction terms are jointly equal to zero was rejected.

40 Asians/Indians made up less than 0.3 per cent of the rural population in both years.

41 The high R^2 may be partly attributable to the endogeneity of household size. If household size is excluded from the regressions, the R^2 drops to around 0.5.

42 This result is robust to the choice of different parameters for adult equivalence and economies of scale.

43 This refers to the attainment of a diploma for primary, secondary, or higher schooling.

44 A potential concern is that changes in the estimated parameters pick up measurement error or changes in the omitted variables rather than structural changes (see for instance Malucio, Haddad and May (2000), who report large changes in the return to social capital between 1993 and 1998 in KwaZulu-Natal). As it is not clear how this could be addressed, we assume changes in measurement error are random and the observed parameter changes structural.

45 A detailed description of how we derive predicted poverty rates for each counterfactual is presented in Appendix 1.

46 This is the average level of education for the most recent cohort of household heads, defined as those aged 30 or below.

47 Average education levels for Africans remained roughly the same in urban areas between 1995 and 2000, possibly due to migration by low-skilled individuals from rural to urban areas. In contrast, the improvements in education were larger for coloureds in both urban and rural areas.

48 Kingdon and Knight (1999) find a negative relationship between wages and local unemployment rates in South Africa, concluding that wages are flexible with respect to unemployment, but not those of unionised workers.

49 Authors' own calculation. With a more reasonable growth rate of 5 per cent per year (3 per cent per capita), it would take more than 23 years for an average poor household to escape from poverty, assuming that the Lorenz curve stays unchanged.

Appendix

Poverty simulations

To calculate poverty incidence from the regressions we allow for the fact that even if predicted per capita consumption, $\hat{y}_i$, exceeds the poverty line, z, there is a non-zero probability that the household is in fact poor. Hence we derive a household's *probability* of being poor, and calculate the incidence of poverty as the mean of the household-specific probabilities (see Ravallion and Wodon (1999); Hentschel et al. (2000); Datt and Joliffe (2001)).

Using the model's parameters, the expected probability of being poor P_i for each household i, can be written as:

$$E(P_i \mid X_i, \hat{\beta}, \hat{y}, \hat{v}_d, \hat{\sigma}) = prob(1\text{n}\,\hat{y}_i < 1\text{n}\,z) \qquad [A1]$$

where $\hat{\sigma}$ indicates the predicted standard error of the regression. Assuming normally distributed errors, the expected probability P_i is non-zero for every household and given by:

$$E(P_i \mid X_i, \hat{\beta}, \hat{y}, \hat{v}_d, \hat{\sigma}) = \qquad [A2]$$
$$prob(X_i\hat{\beta} + tX_i\hat{y} + \hat{v}_d < 1\text{n}\,z) = \Phi\left[\frac{1\text{n}\,z - (X_i\hat{\beta} + X_i\hat{y} + \hat{v}_d)}{\hat{\sigma}}\right]$$

with Φ indicating the cumulative standard normal distribution. The predicted incidence of poverty P* for a group of households i with observable characteristics X_i and household weights w_i is then:

$$P^* = \frac{\sum_{i=1}^{N} w_i E(P_i \mid X_i, \hat{\beta}, \hat{y}, \hat{\sigma})}{\sum_{i=1}^{N} w_i} \qquad [A3]$$

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