

# NON-INCOME WELFARE AND INCLUSIVE GROWTH IN SOUTH AFRICA

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**Abstract:**

Recent studies on poverty trends in South Africa suggest that poverty increased in the 1990s, before a continuous downward trend took place after 2000. This study augments the income and expenditure-based literature by examining poverty trends using household assets and services. We consider numerous private assets, household service variables, and educational attainment in order to derive a non-income welfare index. Principal components analysis (PCA) is used to create an asset index and investigate the changes in non-income welfare across household income quintiles between 1993 and 2010. The results indicate large and statistically significant decreases in poverty, where the extent of this decline is more significant in the poorer quintiles and among female-headed households.

**Keywords:** poverty; asset index; income, poverty

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## 1. INTRODUCTION

A number of wide-ranging economic reforms were introduced in South Africa after the demise of apartheid. These reforms aimed at, amongst other things, macroeconomic stability, economic growth, job creation, as well as poverty reduction. The new democratic government repeatedly emphasized that the provision of free basic services such as water, electricity, sanitation, and housing, to previously disadvantaged groups was a key policy objective. In addition, Section 2 of the country's Constitution identifies a set of socio-economic rights that include housing, water, and education. Nonetheless, most of the attempts to measure broad changes in the welfare of South Africans since 1994 have understandably focused on the private returns to economic growth, and in doing so attention remains primarily on income- or expenditure-based measures of wellbeing. Studies focused on these money-metric measures find that income poverty worsened over the period between South Africa's transition to democracy until about 2000 and 2001, after which a continuous but slow downward trend has been observed. Such findings are consistent regardless of the datasets used (Ardington, Lam, Leibbrandt & Welch, 2005; Hoogeveen & Özler, 2006; Leibbrandt, Poswell, Naidoo & Welch, 2006; Van der Berg, Louw & Du Toit, 2008).

In contrast to the valuable work on money-metric measures of economic progress, studies that have focused on wellbeing in terms of access to assets and services, over a similar period, are limited. Yet this is an important component of understanding the extent to which economic growth in South Africa has been inclusive, or pro-poor. Burger, Van der Berg, Van der Walt & Yu, (2004), Bhorat, Naidoo & Van der Westhuizen (2006), and Bhorat & Van der Westhuizen (2009) provided the first attempts at non-money-metric assessments of welfare for the post-apartheid period. Using a variety of empirical approaches these papers find significant declines in the levels of non-income poverty. Two recent additions to the South African literature are Schiel (2012) and Finn, Leibbrandt & Woolard (2013). Schiel (2012), in an unpublished dissertation, examines poverty levels using both money-metric and non-money-metric techniques to assess welfare gains, while Finn et al. (2013) construct a measure of multidimensional poverty, based on Alkire & Foster (2011) and Alkire & Santos (2011), and analyse changes between 1993 and 2010. Their index includes information on health, education, and a variety of living standard measures and the authors find strong declines in multidimensional poverty.

Building on previous work this paper contributes to a more comprehensive understanding of changes in non-income welfare, over an 18 year period in South Africa. While the existing literature reveals increased delivery of basic services by the government since 1994 there has been a fairly narrow focus on so-called 'public assets', such as state provision of housing, water, and electricity. Most studies exclude information on private assets, such as whether a household has a stove, a fridge, a TV, a vehicle and so on. We believe these to be relevant indicators of economic welfare. In addition, most of the aforementioned studies ignore the contribution that increased access to education makes to overall wellbeing. Hence, in an attempt to extend the reach of existing work this paper offers a more nuanced understanding of the role that assets (both public and private) and services have played in post-apartheid welfare in South Africa. Specifically, using information on both public and private assets, as well as education, we create a welfare measure to investigate shifts in non-income poverty between 1993 and 2010. In addition to analyzing aggregate shifts we

examine changes across different income quintiles in the distribution. To construct a non-income welfare index we use Principal Components Analysis (PCA) which allows us to aggregate over our set of chosen variables.

The paper is structured as follows: Section 2 provides a brief overview of the data we use and the PCA methodology. Section 3 presents a descriptive summary of the various changes in access to assets and services over the period before Section 4 explains the results of the PCA analysis. Section 5 then examines the major changes in non-income welfare that have taken place and finally Section 6 briefly concludes.

## **2. DATA AND METHODOLOGY**

### **2.1 Data**

Two sources of data were used in the analysis: the 1993 South African Integrated Household Survey, from the Project for Statistics on Living Standards and Development (PSLSD), and the 2008 and 2010/2011 National Income Dynamics Study (NIDS). Both surveys were conducted by the Southern African Labour and Development Research Unit (SALDRU), based at the University of Cape Town's School of Economics.

The PSLSD collected information on the conditions under which South Africans lived in 1993 and was intended to provide policy makers with the data required for planning strategies to implement the goals outlined in the Government's Reconstruction and Development Programme (RDP). The survey data was released in 1994 and contains a wide range of indicators on standards of living. Households taking part in the survey submitted detailed information on demographics, employment status, income (from employment and non-employment sources), spending (food and non-food), health, and perceived quality of life. In addition, a community questionnaire was run in each geographical cluster of the sample to capture information on the availability of facilities to the community in each cluster, such as infrastructure, education, health, and recreational amenities. A total of 8 809 households took part in the PSLSD, and when the survey weights are applied this amounts to approximately 7.82 million households. All data presented in this paper is weighted at the household level.

The NIDS is South Africa's first national panel study of individuals across all ages. The main objective of NIDS is to measure and understand who is getting ahead and who is falling behind in South Africa, and to do this the survey has five main focus areas. These are: the incomes and expenditures of households and individuals, the assets owned by the household and the household's access to services, individual educational attainment and health status, labour market status, and membership of community groups. In terms of coverage, 7 301 and 6 809 households took part in NIDS 2008 and NIDS 2010/2011, respectively. When weighted these numbers are 12.80 million (2008) and 13.26 million (2010/2011), and again, the weighted numbers are used in this analysis.

There are several reasons for using these three surveys in order to analyze non-income poverty, as opposed to surveys such as the General Household Surveys (GHS), the Income and Expenditure Surveys (IES), or the National Censuses. The first reason is that both the PSLSD and the NIDS include comprehensive questions on public assets and private asset

ownership, which is critical for our paper. Secondly, these surveys contain detailed asset information that goes beyond a simple summation of public and household assets, extending to, for example, the type of material used for housing, the kind of toilet household members have access to, and the source of fuel used for cooking. Thirdly, the 18-year gap that these surveys allow us to analyse is a sufficiently lengthy timeframe within which to explore whether there have been substantial changes in economic welfare. Finally, in the case of South Africa the 1993 PSLSD serves as a snapshot of the non-income welfare of South African households just before the democratic transition, while the 2008 and 2010/2011 NIDS are fairly reliable benchmarks for contemporary households after almost two decades of democracy.

As in any empirical inquiry of this nature there are potential data problems that must be noted at the outset. In our case, in the NIDS 2010/2011 data there is a problem of racial representivity due to a significantly decreased sample of white-headed households, which falls from a total of 550 in the 2008 survey to 300 in 2010/2011. While we rely on the household weights to adjust for this it does decrease the precision of our estimates for this group.

## **2.2 Methodology**

There are several possible approaches that allow one to aggregate over a range of different variables and derive a uni-dimensional measure of socio-economic welfare. When dealing with asset ownership one such approach, and the most basic, is to simply add up the number of assets that a household owns by giving equal weight to each asset. However, this method, despite its simplicity, masks the fact that the imposition of equal weights for each asset is completely arbitrary – should having a car be comparable to having electricity, for example (Filmer & Pritchett, 2001)? Equal weighting also makes it more difficult to include measures of quality, for assets or services, when there are more than two quality options (McKenzie, 2005). Therefore, more complex statistical approaches are usually adopted to determine the most appropriate weight for each variable. The most common being: principal components analysis (PCA), factor analysis (FA), or multiple correspondence analysis (MCA).

Among these options PCA is an appealing method for several reasons. First, it is relatively intuitive as a way to extract shared information from a set of variables that are interrelated. As Filmer and Pritchett (2001: 116) explain, “the first principal component of a set of variables is the linear index of all the variables that captures the largest amount of information that is common to all the variables”. The technique used is in fact similar to a regression analysis in terms of ‘minimizing residuals’, but in the case of PCA the residuals are measured against all of the variables instead of just one dependent variable. Secondly, the weights assigned to each component in the analysis have a fairly simple interpretation, since the weight given to any variable is related to how much information it provides about the other variables. For example, if ownership of one type of asset is highly indicative of ownership of other assets for a given population, these assets receive a positive weight, and vice versa. Moreover, assets that are more unequally distributed across households would be given greater weight in PCA. An asset which all households own or which no households own (i.e., zero standard deviation) would be given zero weight when deriving the index,

since it explains none of the variation across households. Finally, in terms of interpretation, a variable with a positive weight is associated with higher socio-economic status (SES).

Our choice of PCA also follows from the fact that this method has been used in numerous South African and international studies. Van der Berg, Nieftagodien & Burger (2003) construct an index using PCA from the 2000 IES to investigate if consumption in black households was systematically different from consumption in white households due to an asset deficit. As noted, Schiel (2012) used PCA to create a non-money-metric index from the 1993 PSLSD and 2008 NIDS data. In the international literature the PCA approach has often been used to create a proxy for the level of socio-economic status (SES) based on access to, or ownership of, various public and private assets (Schroeder, Kaplowitz & Martorell, 1992; Pollitt, Gorman, Engel, Martorell & Rivera, 1993). PCA has also been used by Filmer and Pritchett (2001) and McKenzie (2005) to examine the relationship between household wealth and children's school enrolment, while Paxson & Shady (2005) use PCA to derive an SES index to investigate the relationship between household's socio-economic status and language ability of children in Ecuador. Vyas and Kumaranayake (2006) also adopted PCA to investigate non-income welfare differences across geographic regions in Brazil and Ethiopia.

Specifically, PCA is a multivariate technique first used by Karl Pearson in 1901, and can be explained as follows<sup>1</sup>: Let  $x = (x_1, x_2, \dots, x_n)'$  be a vector of asset indicators. It is expected that ownership of different assets or access to various services will be highly correlated across households, so that a single summary measure should account for a reasonable amount of the cross-household variation in non-income welfare. Hence, PCA solicits a linear combination of variables such that the maximum variance is extracted from these variables. This method is applied several times, with each application extracting variation from the data that was unexplained by the previous application, and forming the eigenvectors of the covariance matrix, or principal components. The components are ordered so that the first component explains the largest possible amount of variation in the data, subject to the constraint that the sum of the squared weights is equal to one. The second component, being completely uncorrelated with the first component, explains additional but less variation than the first component, subject to the same constraint. This is repeated until all the variation is explained by the 'principal components'. The higher the degree of correlation amongst the variables, the fewer the components required to explain the variation.

In equation terms, the first principal component,  $\lambda$ , stands for the linear combination of the

asset vector such that:  $\lambda = \alpha_1 \times \left( \frac{x_1 - \bar{x}_1}{\sigma_1} \right) + \alpha_2 \times \left( \frac{x_2 - \bar{x}_2}{\sigma_2} \right) + \dots + \alpha_n \left( \frac{x_n - \bar{x}_n}{s_n} \right)$ , subject to

the constraint that  $\alpha' \alpha = 1$ , where  $\alpha_i$  is a vector of scoring coefficients or weights,  $\sigma_i$  is the sample standard deviation of the asset  $x_i$  with mean of  $\bar{x}_i$ . Furthermore, data in categorical form are not suitable for PCA, as "the categories are converted into a quantitative scale which does not have any meaning" (Vyas & Kumaranayake, 2006: 463). Hence, qualitative categorical variables are re-coded into binary variables, before PCA is conducted to derive

<sup>1</sup> This section draws on Filmer & Pritchett (2001), KcKenzie (2005) and Vyas & Kumaranayake (2006).



an asset index. As a result of the standardization of the variable,  $\lambda$  has a zero mean and a variance of  $\sigma^2$ , which is the largest eigenvalue of the correlation matrix between the various assets. In case the assets are indicated in the form of a dummy variable,  $\alpha_i / \sigma_i$  captures the effect of ownership of asset  $x_i$  on the asset index  $\lambda$ .

In this study, three categories of variables were used to construct the non-income welfare index, namely: household characteristics and access to services, household private assets, and the educational attainment of household head. There are seven household characteristics: (service access) variables: type of dwelling (formal, traditional, informal), type of roof material (bricks, tile, asbestos, corrugated, thatch, other inferior-quality material<sup>2</sup>), type of wall material (high-quality<sup>3</sup>, medium-quality<sup>4</sup>, and low-quality materials<sup>5</sup>), source of water (piped water, public tap, borehole, and surface water), sanitation facility (flush or chemical toilet, pit latrine with ventilation, pit latrine without ventilation, bucket latrine, none), fuel source for cooking (electricity, gas, paraffin or coal, wood or dung), and fuel source for lighting (electricity, paraffin, candles, other). The household private asset variables consist of: vehicle (including a car, *bakkie*, truck, motorcycle, and scooter), radio (including a hi-fi stereo, CD player and MP3 player), television, telecommunications (including both landline telephones and cellular phones), fridge (including a freezer), and stoves (including an electric stove, gas stove, primus cooker, and paraffin stove). The educational attainment of the household head is simply measured by the years of schooling completed.

One common drawback of using asset measures is that the ownership of assets, or access to the services mentioned, does not always accurately indicate quality. For example, public access to piped water that only runs for a few hours a day is appreciably different from consistent access to water in a private home. The data we have does not capture these differences. However, the variation in each type of asset/service that we do have does allow for some measure of quality albeit more crude than we would like. Moreover, Falkingham & Namazie (2002) point out that in many countries the problem of quality does not significantly alter the overall picture of wealth, which is our overarching focus here. A related concern in this paper is the classification of dwelling categories from the survey data into three distinct dimensions (formal, traditional, informal). In some cases, for example, dwellings were classified into a category called 'combination of buildings', which makes it difficult to assign a measure of quality. Here we decided that for households staying in combination buildings that had high-quality or medium-quality wall materials, these were most likely formal and traditional dwellings, respectively, the remaining households (made from low-quality materials) were assumed to be informal dwellings.

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<sup>2</sup> This includes wood, plastic, cardboard, mixture of mud and cement, wattle and daub, mud bricks, as well as stones and rocks.

<sup>3</sup> Bricks and cement block are distinguished as high-quality wall materials.

<sup>4</sup> Mixture of mud and cement, wattle and daub, as well as mud bricks are distinguished as medium-quality materials.

<sup>5</sup> Corrugated iron or zinc, wood, plastic, cardboard, tile, thatching, asbestos, as well as stones and rocks are regarded as low-quality materials.

### **3. DESCRIPTIVE OVERVIEW OF CHANGES IN ACCESS TO SERVICES AND ASSETS**

#### **3.1 Changes in Ownership of Private Assets**

For our analysis households have been divided into 5 quintiles based on their per capita income in each survey, Table A.1 in the Appendix shows the currency values (in 2010 prices) for these quintile boundaries in all three survey years. Before discussing the results of the PCA we examine how access to various assets and services has changed between the surveys.<sup>6</sup> First, the proportion of households with access to each private asset is presented in Table 1 (the absolute numbers are shown in Table A.2 in the Appendix). This table reveals some large and important shifts over time, and when reading the percentage changes in the table it is also crucial to note that in absolute terms there was an increase in the number of households with access to all private assets. Put differently, in 2010/2011, for each private asset, access has increased in absolute terms.

Looking at Table 1 reveals that the most common asset owned among all households in the 1993 PSLSD was a stove (over 80% of households had a stove even in the poorest quintile 5), however, in the 2010/2011 NIDS, telephones had become the most common asset. In fact the largest increase in asset access was in telecommunications in both absolute (an increase of 9.39 million households) and relative (an increase of 59.65 percentage points) terms. The proliferation of cellphones is surely the major driver of this growth. In contrast to this there were slight decreases in the proportion of households with vehicles, radios and stoves between the two surveys. The greatest decrease here was in radio ownership (-10.05%) but this finding could be due to the fact that in many households standalone radios have been replaced with cellular phones, computers, or other devices which perform the same function. The decrease in access to vehicles and stoves, however, is less easily explained.

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<sup>6</sup> We focus our discussion on the changes between 1993 and 2010/2011, given that the changes between 2008 and 2010/2011 are very small.

**Table 1: Proportional Changes in Ownership of Private Assets by Quintile: 1993 – 2010/11**

	Vehicle	Radio	TV	Telephone	Fridge	Stove
PSLSD 1993 (%)						
Quintile 1	5.27	68.96	15.68	2.09	10.10	80.05
Quintile 2	7.11	75.01	29.83	5.84	21.25	82.93
Quintile 3	14.56	78.43	48.59	17.45	39.92	87.31
Quintile 4	34.31	79.85	59.14	35.94	54.37	85.60
Quintile 5	77.33	92.79	84.16	74.93	83.02	91.09
All	27.72	79.01	47.48	27.25	41.73	85.40
NIDS 2008 (%)						
Quintile 1	4.54	63.02	48.70	80.85	33.26	67.79
Quintile 2	7.18	77.72	61.74	83.95	51.35	78.91
Quintile 3	12.75	78.16	63.44	83.29	51.22	80.62
Quintile 4	27.09	82.58	74.11	90.92	65.68	85.81
Quintile 5	70.40	92.75	88.58	97.75	86.68	90.70
All	24.38	78.84	67.31	87.35	57.63	80.76
NIDS 2010/2011 (%)						
Quintile 1	3.44	61.64	57.72	80.23	46.46	72.33
Quintile 2	6.88	62.44	63.51	82.72	52.80	77.45
Quintile 3	10.22	66.76	68.93	82.80	60.15	81.67
Quintile 4	29.85	72.46	74.04	91.14	66.85	81.59
Quintile 5	63.37	81.48	85.66	97.63	82.51	85.34
All	22.75	68.96	69.97	86.90	61.75	79.68
Difference between PSLSD 1993 and NIDS 2010/2011 (percentage points)						
Quintile 1	-1.83	-7.32	42.04	78.14	36.36	-7.72
Quintile 2	-0.23	-12.57	33.68	76.88	31.55	-5.48
Quintile 3	-4.34	-11.67	20.34	65.35	20.23	-5.64
Quintile 4	-4.46	-7.39	14.90	55.20	12.48	-4.01
Quintile 5	-13.96	-11.31	1.50	22.70	-0.51	-5.75
All	-4.96	-10.05	22.49	59.65	20.02	-5.72

Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

### 3.2. Changes in Access to Household Services

Table 2 shows the proportional changes in access to high-quality household assets and services in each category (e.g. formal housing in the 'Dwelling Type' category), while Table A.3 in the Appendix shows the number of households for the full quality range in every asset and service. First, Table 2 reveals a relatively rapid increase in the proportion of households using electricity as their fuel source for cooking (from 45.77% to 80.05%) and as their source for lighting (from 52.65% to 87.01%) between 1993 and 2010/2011. Moreover, the proportion of households with access to piped water and a flush/chemical toilet increased by approximately 20% and 15%, respectively. In all categories the greatest shifts are evident in the lower income quintiles.

**Table 2: Proportional Changes in Ownership of Household Services by Quintile: 1993 – 2010/11**

	Dwelling type: Formal	Water source: Piped water	Sanitation facility: Flush or chemical toilet	Fuel source for cooking: Electricity	Fuel source for lighting: Electricity
PSLSD 1993 (%)					
Quintile 1	48.67	21.68	13.51	7.37	14.99
Quintile 2	57.78	35.46	23.68	16.92	27.77
Quintile 3	71.85	61.05	49.05	40.17	47.11
Quintile 4	87.34	83.38	82.18	72.04	78.92
Quintile 5	96.95	96.48	96.83	92.39	94.51
All	72.51	59.60	53.04	45.77	52.65
NIDS 2008					
Quintile 1	55.33	49.87	32.25	50.88	68.14
Quintile 2	70.41	62.73	41.60	62.09	76.85
Quintile 3	75.07	71.71	55.55	69.77	78.48
Quintile 4	86.55	87.60	78.13	83.26	89.93
Quintile 5	96.67	95.88	94.60	92.19	98.34
All	76.80	73.55	60.42	71.63	82.34
NIDS 2010/2011 (%)					
Quintile 1	62.83	59.97	45.35	63.30	77.30
Quintile 2	67.59	67.69	54.49	69.74	79.64
Quintile 3	76.16	81.68	67.92	81.46	86.54
Quintile 4	84.87	88.95	81.46	90.20	93.52
Quintile 5	95.54	95.88	93.60	95.61	98.09
All	77.38	78.82	68.54	80.05	87.01
Difference between PSLSD 1993 and NIDS 2010/2011 (percentage points)					
Quintile 1	14.16	38.29	31.84	55.93	62.31
Quintile 2	9.81	32.23	30.81	52.82	51.87
Quintile 3	4.31	20.63	18.87	41.29	39.43
Quintile 4	-2.47	5.57	-0.72	18.16	14.60
Quintile 5	-1.41	-0.60	-3.23	3.22	3.58
All	4.87	19.22	15.50	34.28	34.36

Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

These trends are to be expected and largely reflect the impact of efforts to ensure the provision of basic services, particularly for poorer areas, since the mid-1990s. For instance, the government aims to provide electrification for all households in the country and the provision of free basic electricity (50 kWh per household per household) to poor households (Department of Minerals and Energy, 2003; National Treasury, 2003). The Housing Subsidy Programme identified the provision of low-cost housing as one of the government's core pro-poor programmes since 1994 (National Treasury, 2003). Finally, the government has also prioritised free access to water, of up to 6 kilolitres per household, alongside access to toilets (National Treasury, 2003). While these are of course only goals on paper the data suggest that much positive progress has indeed been made on these fronts.

Table A.4 in the Appendix shows the changes in access to education over the period. The table contains the proportion of households in each educational attainment category by

quintile, where the household head is used a proxy.<sup>7</sup> It can be seen that overall education levels rose and the proportion with no or primary education declined in all quintiles across the two surveys. However, it is also clear that households in the upper income quintiles saw the biggest gains in terms of those who finished high school and those who went on to a tertiary qualification.

#### **4. DERIVATION OF THE ASSET INDEX**

##### **4.1 Results from the Principal Components Analysis Methodology**

As noted above the PCA analysis provides more insight into overall changes in non-monetary welfare by creating a welfare index based on our three asset classes. The analysis uses a pooled sample of the datasets and Table 3 presents the scoring factors or weights for the index produced by the PCA, based on the first principal component. The signs of the weights are all as expected, with positive signs indicating that the ownership of assets, or access to services, is associated with higher non-income welfare. Relatively large positive weights were derived for access to: electricity, piped water, flush or chemical toilet, high-quality wall material of a dwelling, residence in a formal dwelling, as well as ownership of a fridge and television. In contrast, large negative weights were derived for the use of candles for lighting, wood or dung for cooking, and a medium-quality material of the dwelling.

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<sup>7</sup> Table A.5 shows the absolute numbers.

**Table 3: Scoring Coefficients and Summary Statistics for Variables included in the Non-Income Welfare Index**

	<b>Scoring Factor</b>	<b>Mean</b>	<b>Standard Deviation</b>
Vehicle	0.1647	0.2063	0.4046
Radio	0.0899	0.7454	0.4357
Television	0.2130	0.5740	0.4945
Telephone	0.1619	0.6042	0.4890
Fridge	0.2246	0.5042	0.5000
Stove	0.0904	0.8107	0.3918
Dwelling: Formal	0.2311	0.7292	0.4444
Dwelling: Traditional	-0.1705	0.1406	0.3476
Dwelling: Informal	-0.1373	0.1302	0.3365
Roof material: Bricks	0.0491	0.0402	0.1964
Roof material: Tile	0.1542	0.1340	0.3406
Roof material: Asbestos	0.0576	0.1313	0.3378
Roof material: Corrugated	-0.1331	0.6169	0.4861
Roof material: Thatch	-0.1055	0.0507	0.2194
Roof material: Inferior quality	-0.0354	0.0269	0.1617
Wall material: High quality	0.2367	0.6884	0.4632
Wall material: Medium quality	-0.1986	0.1916	0.3936
Wall material: Low quality	-0.1097	0.1200	0.3250
Water source: Piped water	0.2568	0.6271	0.4836
Water source: Public tap	-0.1610	0.2021	0.4016
Water source: Borehole	-0.0817	0.0519	0.2218
Water source: Surface water	-0.1503	0.1165	0.3208
Sanitation: Flush or chemical toilet	0.2546	0.5363	0.4987
Sanitation: Pit latrine with ventilation	-0.0458	0.0726	0.2596
Sanitation: Pit latrine without ventilation	-0.1588	0.2563	0.4366
Sanitation: Bucket latrine	-0.0661	0.0467	0.2110
Sanitation: None	-0.1416	0.0877	0.2828
Energy source for cooking: Electricity	0.2778	0.5962	0.4907
Energy source for cooking: Gas	-0.0091	0.0248	0.1557
Energy source for cooking: Paraffin/Coal	-0.1637	0.1691	0.3748
Energy source for cooking: Wood/Dung	-0.1998	0.2099	0.4072
Energy source for lighting: Electricity	0.2743	0.6861	0.4641
Energy source for lighting: Paraffin	-0.1362	0.0940	0.2919
Energy source for lighting: Candles	-0.2203	0.2172	0.4124
Energy source for lighting: Other inferior sources	-0.0118	0.0026	0.0512
Educational attainment of head: None	-0.1207	0.2235	0.4166
Educational attainment of head: Primary	-0.0903	0.2938	0.4555
Educational attainment of head: Incomplete secondary	0.0323	0.2821	0.4500
Educational attainment of head: Matric	0.0866	0.1235	0.3290
Educational attainment of head: Matric + Cert./Dip.	0.0757	0.0519	0.2219
Educational attainment of household head: Degree	0.0704	0.0251	0.1565

Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

Notes: The first eigenvalue is 8.54 and 21% of the covariance is explained by the first principal component.

The abovementioned weights were applied to the three datasets to calculate non-income welfare index values for all households. Table 4 presents the mean values of the welfare index, for each income quintile, by survey. It is evident that the changes in the poorest four quintiles, in both 1993-2008 and 1993-2010, were statistically significant and large, while there was no statistically significant change in the richest quintile. Hence, the initial evidence here points toward a story of inclusive growth in non-income welfare over the period, where growth has had a relatively greater impact for households in the poorer income quintiles.

**Table 4: Mean value of the non-income welfare index by income quintile**

	PSLSD 1993	NIDS 2008		NIDS 2010/2011	
	Mean	Mean	t-statistic	Mean	t-statistic
Quintile 1	-4.3875	-1.7986	-26.7021*	-0.9783	-38.5168*
Quintile 2	-3.3535	-0.7335	-24.7408*	-0.4532	-30.6405*
Quintile 3	-1.5505	-0.1525	-11.7806*	0.4330	-17.5967*
Quintile 4	0.5887	1.1644	-6.2355*	1.3792	-8.8516*
Quintile 5	2.3274	2.5092	-1.6074	2.4043	0.9938
All households	-1.2758	0.1971	-19.8168*	0.5554	-25.8600*

Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

Notes: \* The 2008 estimate is significantly different at the 5% level from the 1993 estimate.

\*\* The 2010/2011 estimate is significantly different at the 5% level from the 1993 estimate.

Table 5, below, examines the changes in income and non-income welfare over the period, for each quintile. Here households are divided into quintiles based on income (shown in rows) and non-income (shown in columns) measures, and the cells contain the percentage share of households in each overlapping category. For example, in 1993, 47.5% of households from the poorest income quintile also fell into the lowest non-income quintile. However, this proportion decreased to 41.79% in 2008 and 38.34% in 2010/2011 as asset ownership for income-poor households increased. Reinforcing this point, the proportion of households that fall into the second-lowest income quintile, but belong to a higher quintile in terms of non-income welfare, increased from 35.6% in 1993 to 41.7% in 2010/2011. Hence, the results from the table suggest that non-income welfare growth was more rapid than income growth over the period.

**Table 5: Overlap between non-income welfare index quintiles and real per capita income quintiles**

PSLSD 1993		Non-income welfare index household quintile				
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Real per capita income quintile	Quintile 1	47.50%	33.07%	14.28%	4.81%	0.34%
	Quintile 2	32.57%	31.81%	23.33%	10.93%	1.35%
	Quintile 3	16.24%	23.80%	26.39%	27.49%	6.08%
	Quintile 4	3.99%	10.30%	26.71%	35.00%	24.00%
	Quintile 5	0.80%	1.70%	10.78%	21.58%	65.13%
NIDS 2008		Non-income welfare index household quintile				
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Real per capita income quintile	Quintile 1	41.79%	29.22%	19.46%	9.01%	0.52%
	Quintile 2	26.41%	29.00%	23.68%	17.81%	3.10%
	Quintile 3	21.69%	24.61%	24.53%	23.35%	5.82%
	Quintile 4	8.95%	12.33%	23.82%	33.78%	21.11%
	Quintile 5	1.19%	4.77%	9.25%	20.50%	64.30%
NIDS 2010/2011		Non-income welfare index household quintile				
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Real per capita income quintile	Quintile 1	38.34%	29.47%	19.19%	11.74%	1.26%
	Quintile 2	30.13%	28.16%	20.62%	17.56%	3.54%
	Quintile 3	18.36%	24.91%	25.95%	22.46%	8.31%
	Quintile 4	10.57%	12.84%	24.56%	25.44%	26.59%
	Quintile 5	2.67%	7.7%	12.85%	19.18%	57.59%

Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

## 5. CHANGES IN NON-INCOME WELFARE, 1993 – 2010/11

In this section the results derived after applying standard poverty analyses to the non-income welfare index are presented, for each survey. We evaluate the extent to which households' non-income welfare has changed in more detail and across different strata (e.g. race, province, gender). For our poverty analysis the index values at the 20<sup>th</sup> and 40<sup>th</sup> percentiles in 1993 are used as relative poverty lines, where the 20<sup>th</sup> percentile is the 'lower' poverty line and the 40<sup>th</sup> percentile is the 'upper' poverty line.

### 5.1 Changes in Non-Income Poverty

Table 6 presents the Foster-Greer-Thorbecke (FGT) poverty headcount rates and poverty gap ratios by various demographic characteristics at the two selected poverty lines. Overall, asset poverty has fallen by almost 17% according to the lower poverty line. Put differently; if we take the level of asset ownership in 1993 as a benchmark and classify all households below the 20<sup>th</sup> percentile as poor, we find that in 2011 only 3.5% of households remain poor by that standard. Similarly, if we use the 40<sup>th</sup> percentile as an upper poverty line, the total household poverty rate falls by 27.5 percentage points (from 40% to 12.5%). These decreases are both statistically significant.



**Table 6: Non-income Poverty Shifts by Race, Gender of Household Head and Geographic Region: 1993 – 2010/11**

	Headcount Rate (%)			Poverty Gap Ratio (%)		
	PSLSD 1993	NIDS 2008	NIDS 2010/11	PSLSD 1993	NIDS 2008	NIDS 2010/11
	Poverty line at 20th percentile					
All households	20.0	6.6*	3.5**	8.5	2.2	1.2
By gender of household head						
Male	17.4	5.3*	2.8**	7.3	1.8	1.0
Female	27.1	8.3*	4.4**	11.8	2.8	1.4
By race of household head						
African	28.2	8.6*	4.5**	11.9	2.9	1.5
Coloured	0.0	0.3	0.0	0.0	0.0	0.0
Asian	0.0	0.0	0.0	0.0	0.0	0.0
White	0.0	0.0	0.0	0.0	0.0	0.0
Geographic Region						
Urban	5.9	1.7*	0.7**	1.1	0.2	0.0
Rural	36.4	16.0*	8.1**	17.1	6.0	2.9
	Poverty line at 40th percentile					
All households	40.0	17.2*	12.5**	18.9	6.9	2.3
By gender of household head						
Male	36.0	14.5*	11.3**	16.6	5.6	4.0
Female	50.9	20.9*	13.9**	25.2	8.6	5.2
By race of household head						
African	56.0	22.2*	16.0**	26.5	8.9	5.8
Coloured	3.5	3.3	2.8	0.8	0.8	0.1
Asian	0.0	0.0	0.0	0.0	0.0	0.0
White	0.0	0.0	0.0	0.0	0.0	0.0
Geographic Region						
Urban	15.4	7.7*	6.1**	5.4	2.6	1.8
Rural	68.9	35.5*	23.2**	34.6	15.2	9.1

Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

Notes: \* The 2008 estimate is significantly different at the 5% level from the 1993 estimate.

\*\* The 2010/2011 estimate is significantly different at the 5% level from the 1993 estimate.

If we examine non-income poverty by gender it is again clear that the decrease in the poverty headcount ratio between the two surveys was large and statistically significant, for both male and female headed households. In particular, the decrease was greater for female-headed households. As a result of this sharper decline, the difference in poverty rates between female and male headed households has narrowed from 9.7 percentage points in 1993 to only 1.6 percentage points in 2010/2011 at the lower poverty line, and from 14.9 to 2.6 percentage points at the upper poverty line.

When we review non-income poverty by race the initial estimates are startling, only African-headed households were poor under the lower poverty line in 1993, and this situation persists in 2011 with the poor being exclusively those living in African-headed households. If we use the upper poverty line African-headed households are joined by a very small percentage of Coloured-headed households in both 1993 and 2011. The changes in poverty, by race of the household head, do, however, reveal substantial improvement. Both the poverty headcount rates and poverty gap ratios decrease dramatically for African-headed

households over the period – there was a 23.7 percentage point decrease under the lower poverty line and a 40 percentage point decrease under the upper line. In other words, African-headed households, since they were virtually the only non-income poor households, benefited considerably from the aggregate decrease in non-income poverty over the period. This again suggests that service delivery efforts have been a success, in addition to the private asset gains made by these households.

Table 6 also reports the different poverty estimates by geographic region (urban/rural), and it can be seen that poverty headcount ratios decreased continuously in both urban and rural areas, but the extent of this decline was more rapid in rural areas. All the declines in headcount poverty were statistically significant, under both the upper and lower lines.

Table 7 presents the FGT poverty estimates for each per capita income quintile. It can be seen that while poverty fell in all quintiles, both poverty lines reveal that this decrease was more rapid in the poorer quintiles over the period. Looking at the poverty headcount ratios in greater detail, the gap between the poorest and the richest quintiles under the lower line has narrowed from 46.6 to 8.6 percentage points and from 78.1 to 23.7 percentage points at the upper poverty line, between 1993 and 2010/2011. The above findings once again suggest the non-income welfare growth has been more rapid for income-poor households.

**Table 7: Poverty Shifts by Income Quintile: 1993 – 2010/11**

	Headcount Rate (%)			Poverty Gap Ratio (%)		
	PSLSD 1993	NIDS 2008	NIDS 2010/11	PSLSD 1993	NIDS 2008	NIDS 2010/11
	Poverty line at 20th percentile					
Income Quintiles						
Quintile 1	47.4	16.9*	8.6**	22.3	5.9	2.9
Quintile 2	32.5	8.2*	6.2**	13.5	3.0	2.1
Quintile 3	16.2	5.2*	2.3**	5.9	1.4	0.7
Quintile 4	4.0	2.3	0.3**	0.9	0.6	0.1
Quintile 5	0.8	0.2	0.0**	0.2	0.1	0.0
	Poverty line at 40th percentile					
Income Quintiles						
Quintile 1	80.6	36.3*	24.6**	43.3	16.2	9.8
Quintile 2	64.4	23.4*	20.4**	30.3	8.9	7.7
Quintile 3	40.0	17.5*	11.5**	16.3	6.3	3.6
Quintile 4	14.3	7.7*	4.9**	4.6	2.7	1.4
Quintile 5	2.5	1.1	0.9**	0.8	0.3	0.2

Source: Own calculations using PSLSD 1993 and NIDS 2010/2011 data.

Notes: \* Significantly different at the 5% level from the 1993 estimate.

Table A.6 (Appendix A) presents information on the share of the poor by race of household, gender of household head, province of residence and income quintile at both poverty lines across the two surveys. The share of the poor accounted for by the female-headed households increased from 36.2% to 55.8% and from 33.9% to 50.0% at the 20th and 40th percentile poverty lines respectively, between 1993 and 2010/2011. In contrast, although the previous analysis found the drastic and significant decline of poverty rates of the African-headed households, these households' share of the poor only declined negligibly at both poverty lines (still above 98% in 2010/2011). Furthermore, it is interesting that the share of

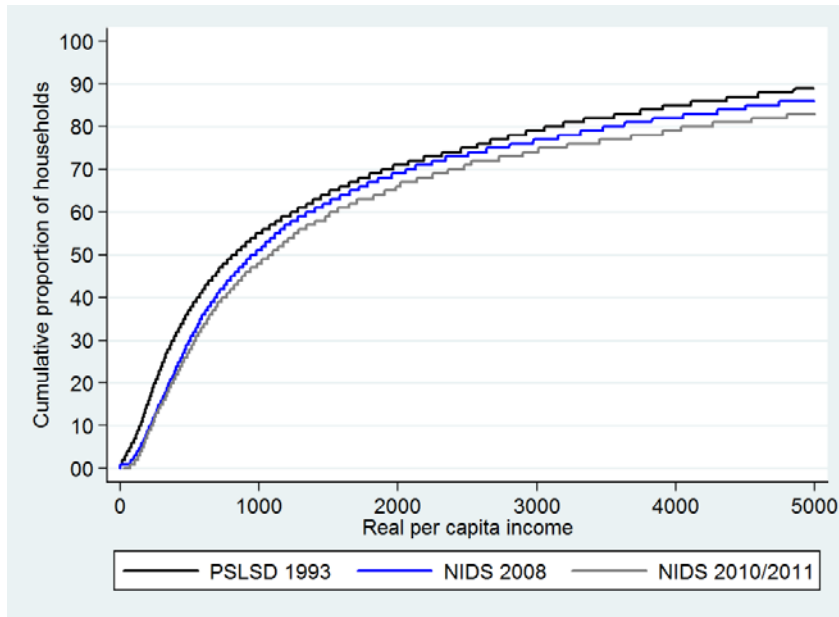
the poor accounted for by households residing in rural areas increased slightly from 83.9% in 1993 to 86.2% in 2010/2011 at the lower poverty line, while this share decreased continuously across the three surveys (dropping from 79.3% in 1993 to 69.05 in 2010/2011) at the upper poverty line. Finally, it is encouraging that at both poverty lines, nearly half of the poor came from households in the poorest income quintile in the 1993 PSLSD, but this share dropped to approximately 40% in the 2010/2011 NIDS. This result once again suggests that pro-poor non-income welfare shift has taken place more rapidly for the poor-income households.

## 5.2 Cumulative Distribution Functions

The attraction of using cumulative distribution functions (CDFs) is that they do not rely on selected poverty lines. In the figures below, the two vertical lines represent the lower and upper poverty lines, set at the 20th and 40th percentile, respectively. Figures 1 and 2 compare the changes in income poverty to those of non-income poverty using real per capita income and the non-income welfare index, respectively. The proportion of households is represented on the vertical axis (ranked by income/non-income welfare) and this is then plotted against income/non-income welfare on the x-axis. Both figures show that poverty declined continuously across the three surveys, but it is obvious that the decrease in non-income poverty was more rapid, as shown by the movements downward and to the right of the curves in Figure 2. The CDFs in Figure 1 also provide a more robust account of the slow growth in incomes that were presented in Table A1 earlier.

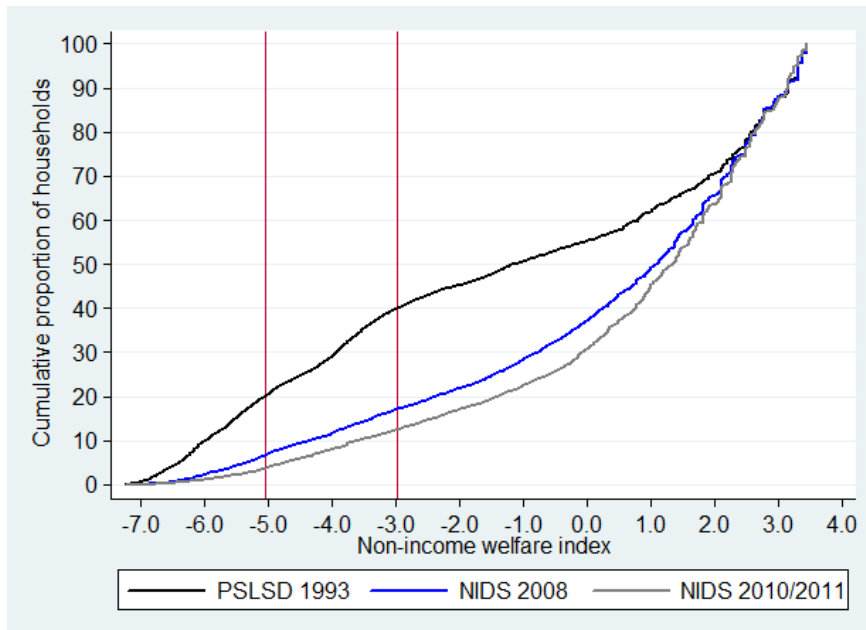
Concerning non-income poverty, figure 2 shows that with the exception of the top 20% of households, the poverty headcount ratio declined significantly between 1993 and 2010/2011, irrespective of the poverty line chosen. Moreover, the gap between the two lines is greatest for households in the lower-middle section of the distribution compared with the top 50% or the bottom 10% of households. This implies that the non-income poverty decline was most rapid for households in the bottom 50% of the distribution, while for the poorest 10% and the richest 50% of households more modest changes have taken place. CDFs that illustrate the welfare changes by gender and race over the period can be found in the Appendix (Figures A1 & A2). The results provide support for the trends identified in the previous section.

**Figure 1: Cumulative Distribution Functions for All Households, using Real Per Capita Income**



Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

**Figure 2: Cumulative Distribution Functions for All Households, using Non-Income Welfare**

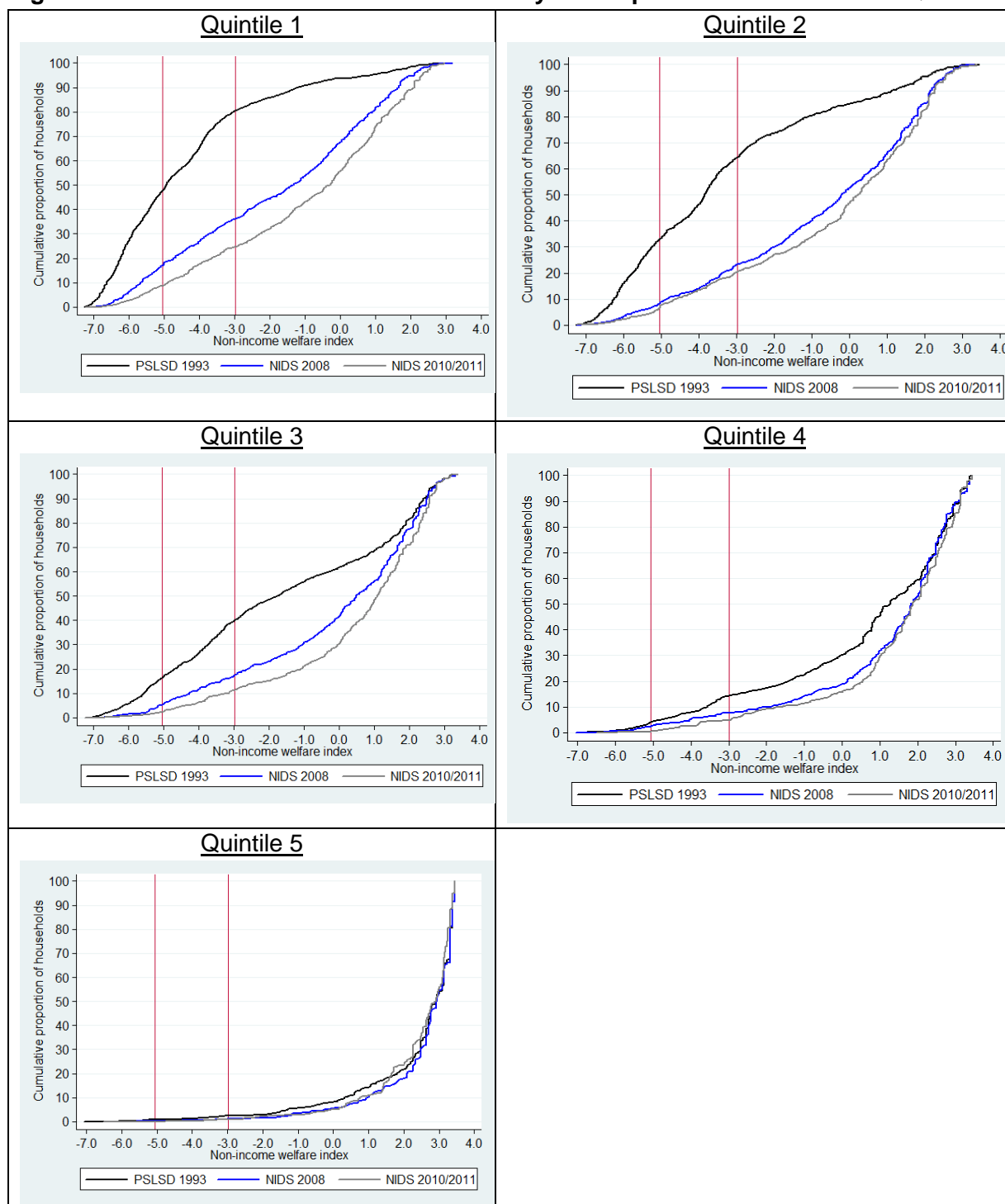


Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

Figure 3, below, presents the CDFs for each income quintile over time to examine how the distribution of non-income welfare has changed for households with different levels of income. Here we are interested in whether those households which were poorest in income terms in 1993 saw the largest improvement in asset welfare over the period, and how has this change been spread across the distribution. The results indicate that pro-poor non-income welfare gains were in fact most rapid for the poorest income quintile where the gap between the 1993 and 2010/2011 CDFs is the greatest. The extent of this poverty decline

diminishes when moving from quintile 1 to quintile 4, while for the richest quintile there has been almost no change at all.

**Figure 3: Cumulative Distribution Functions by Per Capita Income Household Quintile**



Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

## 6. CONCLUSION

This paper has examined the changing nature of non-income welfare in post-apartheid South Africa, over an 18 year period. It serves as a supplement to the majority of South African studies on poverty which have focused predominantly on changes in income welfare as the most important marker of economic progress. Our paper is also an extension of the few studies that focus on non-income welfare but have generally neglected the role of private assets in the welfare calculation. We include public and private assets as well as educational attainment in our PCA approach to derive a non-income welfare index.

We find that poverty declined significantly over the period and this result holds for virtually all households, regardless of the gender or race of the household head, and for rural and urban areas. The important exceptions are that in terms of race, poverty declines were almost exclusively found for African-headed households, the reason being that these households constituted virtually the entire population of households in poverty in 1993. We also found that poverty declines were relatively more rapid for female-headed households, and in rural areas. Comparing the declines in income and non-income poverty over the same period revealed that non-income poverty has fallen much more rapidly than income poverty. Finally we note that poverty decreases were relatively well targeted toward poor households and it was shown that in terms of both income and non-income poverty poorer households experienced the largest decreases in non-income poverty.

In conclusion, the results are encouraging as South Africa nears the end of its second decade of democratic rule. However, the changes that have taken place must be understood in the context of the socio-economic situation at the end of apartheid, with the majority of the non-white population living in extreme poverty in both income and non-income terms. The substantial progress that we observe has built on an exceptionally low base of initial non-income welfare and the levels of poverty in South Africa, however one chooses to measure them, remain high.

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## APPENDIX

**Table A.1: Mean real per capita monthly income in Rands (2010 prices), by quintile**

	PSLSD 1993	NIDS 2008	NIDS 2010/2011	Annualized percentage growth, 1993-2010 (%)
Quintile1	133	210	227	3.2
Quintile2	387	506	544	2.0
Quintile3	846	976	1 095	1.5
Quintile4	2 030	2 232	2 577	1.4
Quintile5	7 591	9 722	19 465	5.7
All	2 197	2 727	4 768	4.7

Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

**Table A.2: Number of Households Owning Each Private Asset: 1993 – 2010/11**

Number						
	Vehicle	Radio	TV	Telephone	Fridge	Stove
PSLSD 1993						
Quintile 1	82 451	1 079 427	245 425	32 722	158 146	1 252 958
Quintile 2	111 226	1 173 791	466 787	91 397	332 545	1 297 757
Quintile 3	227 996	1 227 822	760 728	273 246	624 941	1 366 907
Quintile 4	536 442	1 248 595	924 729	561 962	850 190	1 338 500
Quintile 5	1 209 628	1 451 507	1 316 435	1 172 135	1 298 595	1 424 945
All	2 167 743	6 181 142	3 714 104	2 131 462	3 264 417	6 681 067
NIDS 2008						
Quintile 1	116 231	1 614 736	1 247 898	2 071 704	852 157	1 737 017
Quintile 2	183 557	1 987 401	1 578 821	2 146 686	1 312 978	2 017 877
Quintile 3	326 352	2 001 202	1 624 218	2 132 508	1 311 428	2 064 014
Quintile 4	694 421	2 116 573	1 899 475	2 330 277	1 683 336	2 199 245
Quintile 5	1 799 422	2 370 496	2 264 012	2 498 335	2 215 495	2 318 259
All	3 119 983	10 090 408	8 614 424	11 179 510	7 375 394	10 336 412
NIDS 2010/2011						
Quintile 1	91 375	1 635 836	1 531 685	2 129 158	1 232 996	1 919 473
Quintile 2	182 879	1 659 127	1 687 296	2 197 790	1 402 851	2 057 791
Quintile 3	271 104	1 770 672	1 828 164	2 195 985	1 595 432	2 165 985
Quintile 4	793 097	1 925 338	1 967 495	2 421 840	1 776 478	2 168 015
Quintile 5	1 674 780	2 153 208	2 263 679	2 579 898	2 180 582	2 255 132
All	3 013 235	9 144 181	9 278 319	11 524 671	8 188 339	10 566 396
Difference between PSLSD 1993 and NIDS 2010/2011						
Quintile 1	8 924	556 409	1 286 260	2 096 436	1 074 850	666 515
Quintile 2	71 653	485 336	1 220 509	2 106 393	1 070 306	760 034
Quintile 3	43 108	542 850	1 067 436	1 922 739	970 491	799 078
Quintile 4	256 655	676 743	1 042 766	1 859 878	926 288	829 515
Quintile 5	465 152	701 701	947 244	1 407 763	881 987	830 187
All	845 492	2 963 039	5 564 215	9 393 209	4 923 922	3 885 329

Source: Own calculations using PSLSD 1993 and NIDS 2010/2011 data.

**Table A.3: Number of Households in Each Household Asset Category by Quintile: 1993 – 2010/11**

Number												
	PSLSD 1993						NIDS 2010/2011					
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	All	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	All
Dwelling type												
Formal	761 763	904 205	1 124 837	1 365 735	1 516 574	5 673 114	1 667 460	1 795 830	2 019 931	2 255 135	2 524 908	10 263 264
Traditional	399 007	276 110	120 207	22 500	3 679	821 503	561 954	393 969	194 778	92 359	38 713	1 281 773
Informal	404 502	384 540	320 506	175 469	44 031	1 329 048	424 376	467 146	437 535	309 779	79 032	1 717 868
	1 565 272	1 564 855	1 565 550	1 563 704	1 564 284	7 823 665	2 653 790	2 656 945	2 652 244	2 657 273	2 642 653	13 262 905
Roof material of dwelling												
Bricks	17 756	15 496	15 738	43 686	46 865	139 541	158 170	194 929	340 350	372 104	474 554	1 540 107
Tile	8 329	30 759	144 591	358 402	796 683	1 338 764	101 064	142 460	338 239	676 858	1 140 082	2 398 703
Asbestos	106 503	202 992	357 347	477 850	194 092	1 338 784	145 821	249 887	251 007	248 905	218 866	1 114 486
Corrugated	1 142 267	1 146 971	931 843	630 283	490 977	4 342 341	2 019 108	1 866 933	1 607 868	1 331 159	789 653	7 614 721
Thatch	263 620	134 001	77 469	16 289	16 731	508 110	96 989	70 675	30 577	4 772	5 308	208 321
Inferior quality	26 797	34 636	38 562	37 194	18 936	156 125	132 638	132 061	84 203	23 475	14 190	386 567
	1 565 272	1 564 855	1 565 550	1 563 704	1 564 284	7 823 665	2 653 790	2 656 945	2 652 244	2 657 273	2 642 653	13 262 905
Wall material of dwelling												
High quality	599 533	770 025	992 252	1 298 998	1 484 439	5 145 247	1 652 859	1 775 287	1 940 135	2 243 362	2 486 294	10 097 937
Medium quality	780 789	559 167	317 449	95 957	28 060	1 781 422	547 935	400 779	228 408	58 687	35 739	1 271 548
Low quality	184 950	235 663	255 849	168 749	51 785	896 996	452 996	480 879	483 701	355 224	120 620	1 893 420
	1 565 272	1 564 855	1 565 550	1 563 704	1 564 284	7 823 665	2 653 790	2 656 945	2 652 244	2 657 273	2 642 653	13 262 905
Water source												
Piped water	339 378	554 959	955 693	1 303 843	1 509 242	4 663 115	1 591 449	1 798 378	2 166 377	2 363 551	2 533 787	10 453 542
Public tap	454 155	428 250	328 179	127 874	25 428	1 363 886	731 964	624 983	370 628	222 108	85 212	2 034 895
Borehole	301 169	249 113	122 488	49 354	5 352	727 476	36 365	40 785	17 873	23 287	8 065	126 375
Surface water	470 570	332 533	159 190	82 633	24 262	1 069 188	294 012	192 799	97 366	48 327	15 589	648 093
	1 565 272	1 564 855	1 565 550	1 563 704	1 564 284	7 823 665	2 653 790	2 656 945	2 652 244	2 657 273	2 642 653	13 262 905

Table A.3: Continued

	Number											
	PSLSD 1993					All	NIDS 2010/2011					
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	All
Sanitation facility												
Flush/Chemical	211 406	370 529	767 910	1 285 047	1 514 688	4 149 580	1 203 403	1 447 680	1 801 407	2 164 621	2 473 411	9 090 522
Pit with vent.	20 834	23 842	29 587	12 041	4 590	90 894	408 308	319 354	251 097	129 243	28 173	1 136 175
Pit without vent.	768 778	768 210	515 662	172 442	29 576	2 254 668	646 803	624 766	446 008	252 809	120 634	2 091 020
Bucket latrine	100 606	124 779	122 564	63 385	10 725	422 059	209 803	158 958	89 479	66 149	16 715	541 104
None	463 648	277 495	129 827	30 789	4 705	906 464	185 473	106 187	64 253	44 451	3 720	404 084
	1 565 272	1 564 855	1 565 550	1 563 704	1 564 284	7 823 665	2 653 790	2 656 945	2 652 244	2 657 273	2 642 653	13 262 905
Fuel source for cooking												
Electricity	115 284	264 765	628 910	1 126 512	1 445 221	3 580 692	1 679 836	1 853 086	2 160 455	2 396 758	2 526 526	10 616 661
Gas	18 486	49 462	70 647	51 452	25 268	215 315	47 269	31 669	34 882	44 835	56 183	214 838
Paraffin/Coal	469 310	598 250	564 681	312 857	89 212	2 034 310	318 855	401 131	299 524	156 537	47 522	1 223 569
Wood/Dung	962 192	652 378	301 312	72 883	4 583	1 993 348	607 830	371 059	157 383	59 143	12 422	1 207 837
	1 565 272	1 564 855	1 565 550	1 563 704	1 564 284	7 823 665	2 653 790	2 656 945	2 652 244	2 657 273	2 642 653	13 262 905
Fuel source for lighting												
Electricity	234 692	434 637	737 597	1 234 064	1 478 343	4 119 333	2 051 489	2 116 076	2 295 175	2 484 997	2 592 112	11 539 849
Paraffin	497 477	409 125	344 468	128 466	25 580	1 405 116	131 237	120 933	113 356	48 876	14 989	429 391
Candles	832 227	714 717	477 730	197 343	59 465	2 281 482	461 753	417 980	241 756	112 831	34 651	1 268 971
Other	876	6 376	5 755	3 831	896	17 734	9 311	1 956	1 957	10 569	901	24 694
	1 565 272	1 564 855	1 565 550	1 563 704	1 564 284	7 823 665	2 653 790	2 656 945	2 652 244	2 657 273	2 642 653	13 262 905

Source: Own calculations using PSLSD 1993 and NIDS 2010/2011 data.

**Table A.4: Proportional Changes in Highest Educational Attainment of Household Heads by Quintile: 1993 – 2010/11**

	None	Primary	Incomplete secondary	Matric	Matric + Cert./Dip.	Degree
PSLSD 1993 (%)						
Quintile 1	41.32	40.22	16.72	1.32	0.35	0.07
Quintile 2	35.65	40.00	21.36	2.41	0.51	0.07
Quintile 3	21.37	34.30	35.72	6.53	1.70	0.39
Quintile 4	9.90	27.59	41.62	13.11	6.69	1.09
Quintile 5	4.50	9.21	24.07	26.56	21.99	13.67
All	22.55	30.26	27.89	9.98	6.25	3.06
NIDS 2008 (%)						
Quintile 1	22.45	35.96	32.81	8.19	0.59	0.00
Quintile 2	21.33	33.17	30.81	12.59	1.54	0.56
Quintile 3	15.98	27.63	38.02	16.45	1.44	0.48
Quintile 4	5.23	15.47	38.23	30.09	7.34	3.64
Quintile 5	0.68	5.06	19.63	36.44	21.88	16.31
All	13.14	23.46	31.91	20.75	6.55	4.19
NIDS 2010/2011 (%)						
Quintile 1	22.75	32.58	33.59	9.45	1.57	0.05
Quintile 2	18.80	32.18	37.23	9.24	2.39	0.16
Quintile 3	14.01	21.57	43.11	16.18	4.79	0.35
Quintile 4	3.32	15.22	37.60	28.60	12.03	3.23
Quintile 5	0.97	4.73	22.31	30.60	21.97	19.42
All	11.98	21.27	34.78	18.81	8.54	4.63
Difference between PSLSD 1993 and NIDS 2010/2011 (percentage points)						
Quintile 1	-18.57	-7.64	16.87	8.13	1.22	-0.02
Quintile 2	-16.85	-7.82	15.87	6.83	1.88	0.09
Quintile 3	-7.36	-12.73	7.39	9.65	3.09	-0.04
Quintile 4	-6.58	-12.37	-4.02	15.49	5.34	2.14
Quintile 5	-3.53	-4.48	-1.76	4.04	-0.02	5.75
All	-10.57	-8.99	6.89	8.83	2.29	1.57

Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

**Table A.5: Number of Households in Each Educational Attainment Category: 1993 – 2010/11**

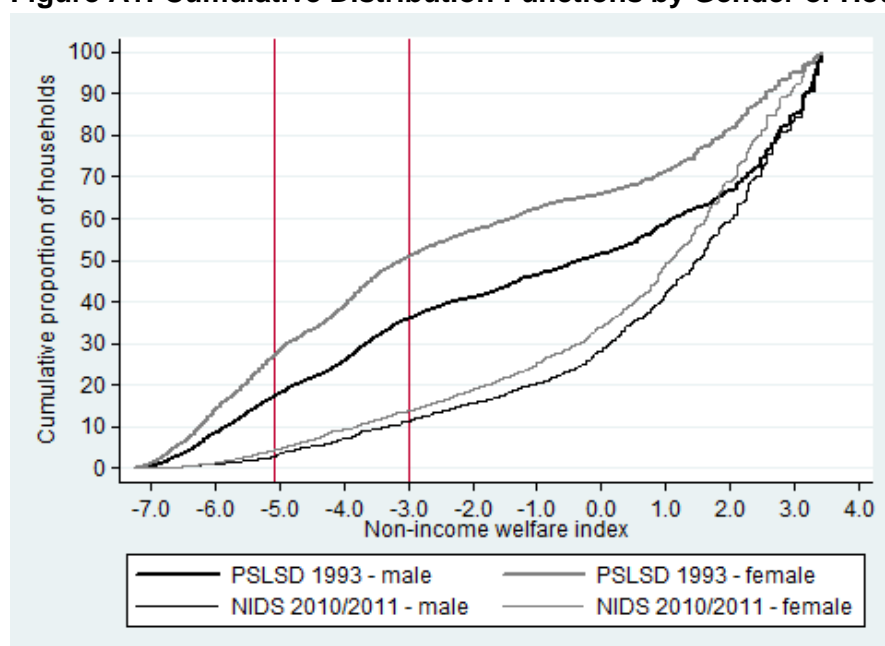
Number						
	None	Primary	Incomplete secondary	Matric	Matric + Cert./Dip.	Degree
PSLSD 1993						
Quintile 1	646 837	629 527	261 688	20 660	5 539	1 021
Quintile 2	557 874	625 883	334 297	37 745	8 035	1 021
Quintile 3	334 500	536 932	559 137	102 163	26 637	6 181
Quintile 4	154 774	431 487	650 736	205 039	104 650	17 018
Quintile 5	70 423	144 000	376 516	415 428	344 012	213 905
All	1 764 408	2 367 829	2 182 374	781 035	488 873	239 146
NIDS 2008						
Quintile 1	575 262	921 380	840 803	209 810	15 066	0
Quintile 2	545 379	848 266	787 821	321 980	39 457	14 203
Quintile 3	409 221	707 486	973 418	421 063	36 828	12 282
Quintile 4	133 953	396 529	979 864	771 121	188 172	93 331
Quintile 5	17 349	129 258	501 743	931 341	559 219	416 947
All	1 681 164	3 002 919	4 083 649	2 655 315	838 742	536 763
NIDS 2010/2011						
Quintile 1	603 848	864 681	891 522	250 810	41 647	1 282
Quintile 2	499 634	855 045	989 074	245 480	63 517	4 195
Quintile 3	371 580	571 963	1 143 255	429 130	126 924	9 392
Quintile 4	88 290	404 461	999 087	760 092	319 641	85 702
Quintile 5	25 583	125 080	589 610	808 610	580 610	513 160
All	1 588 935	2 821 230	4 612 548	2 494 122	1 132 339	613 731
Difference between PSLSD 1993 and NIDS 2010/2011						
Quintile 1	-42 989	235 154	629 834	230 150	36 108	261
Quintile 2	-58 240	229 162	654 777	207 735	55 482	3 174
Quintile 3	37 080	35 031	584 118	326 967	100 287	3 211
Quintile 4	-66 484	-27 026	348 351	555 053	214 991	68 684
Quintile 5	-44 840	-18 920	213 094	393 182	236 598	299 255
All	-175 473	453 401	2 430 174	1 713 087	643 466	374 585

Source: Own calculations using PSLSD 1993 and NIDS 2010/2011 data.

**Table A.6: Share of the Poor by Race, Gender of Household Head, Area Type of Residence and Income Quintile: 1993 – 2010/11**

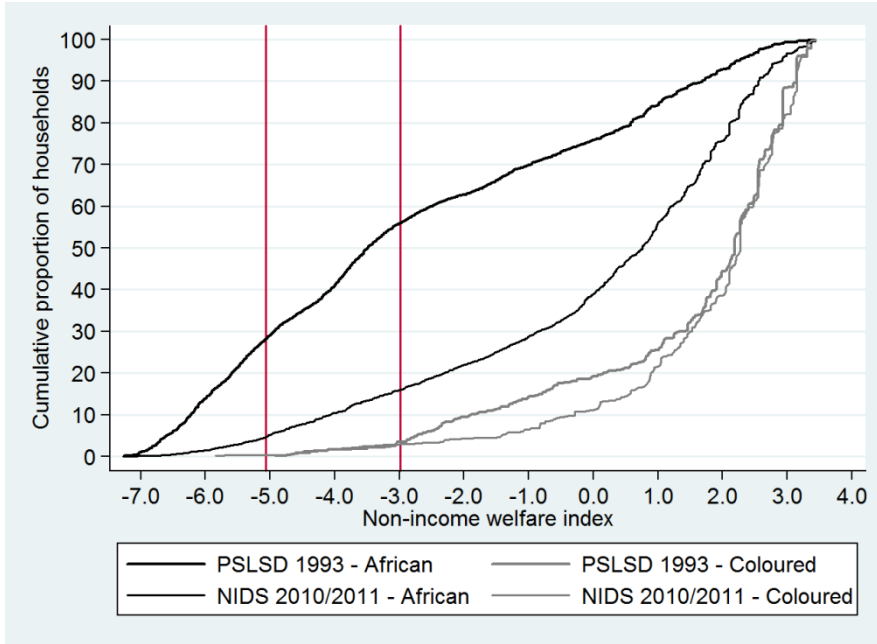
	Poverty line at 20th percentile			Poverty line at 40th percentile		
	PSLSD 1993	NIDS 2008	NIDS 2010/11	PSLSD 1993	NIDS 2008	NIDS 2010/11
<b>By gender of household head</b>						
Male	63.8	46.3	44.2	66.1	48.6	50.0
Female	36.2	53.7	55.8	33.9	51.4	50.0
<b>By race of household head</b>						
African	100.0	99.7	99.2	99.3	98.3	98.1
Coloured	0.0	0.3	0.8	0.6	1.7	1.9
Asian	0.0	0.0	0.0	0.0	0.0	0.0
White	0.0	0.0	0.0	0.1	0.0	0.0
<b>By area type of residence</b>						
Urban	16.1	17.0	13.8	20.7	29.6	31.0
Rural	83.9	83.0	86.2	79.3	70.4	69.0
<b>By income quintile</b>						
Quintile 1	47.0	51.5	49.3	39.9	42.2	39.4
Quintile 2	32.2	25.0	35.5	31.9	27.2	32.7
Quintile 3	16.1	15.8	13.4	19.8	20.4	18.5
Quintile 4	4.0	7.2	1.8	7.1	8.9	7.9
Quintile 5	0.8	0.6	0.1	1.2	1.3	1.4

Source: Own calculations using PSLSD 1993, NIDS 2008 and NIDS 2010/2011 data.

**Figure A1: Cumulative Distribution Functions by Gender of Household Head**

Source: Own calculations using PSLSD 1993 and NIDS 2010/2011 data.

**Figure A2: Cumulative Distribution Functions for African and Coloured Households**



Source: Own calculations using PSLSD 1993 and NIDS 2010/2011 data.





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