Working Paper Series

Race, poverty, and deprivation in South Africa

Carlos Gradín

ECINEQ WP 2011 – 224

ECINEQ 2011 – 224
October 2011

www.ecineq.org

Race, poverty, and deprivation in South Africa*

Carlos Gradín†
Universidade de Vigo

Abstract

The aim of this paper is to explain why poverty and material deprivation in South Africa are significantly higher among those of African descent than among whites. To do so, we estimate the conditional levels of poverty and deprivation Africans would experience had they the same characteristics as whites. By comparing the actual and counterfactual distributions, we show that the racial gap in poverty and deprivation can be attributed to the cumulative disadvantaged characteristics of Africans, such as their current level of educational attainment, demographic structure, and area of residence, as well as to the inertia of past racial inequalities. Progress made in the educational and labor market outcomes of Africans after Apartheid explains the reduction in the racial poverty differential.

Keywords: poverty, deprivation, race, decomposition, South Africa, households' characteristics.
JEL classification: D31, D63, I32, J15, J71, J82, O15.

* I acknowledge financial support from the Spanish Ministerio de Educación y Ciencia (Grant ECO2010-21668-C03-03/ECON) and Xunta de Galicia (Grant 10SEC300023PR).
† **Contact details**: Facultade de Ciencias Económicas e Empresariais, Universidade de Vigo, Campus Lagoas-Marcosende s/n, 36310 Vigo, Galicia, Spain. cgradin@uvigo.es.

1. Introduction

South Africa stands out as a country with one of the largest racial divisions in the world due to European colonization and the Apartheid regime that followed independence, which officially ended in 1994. South Africa is indeed a racially diverse country: In 2008, nearly 80 percent of the population had heterogeneous African ancestry, with an additional 9 percent being people of mixed race (colored). Whites accounted for another 9 percent, with the remaining 2.5 percent having Asian or Indian origins. However, the distribution of resources is extremely unequal across these groups, with whites reporting about 8 times the average per capita income and expenditure levels of Africans. This stark inequality indicates only a small progress since the official end of legal racial segregation, as the differential was slightly higher (about 10 times) in 1993.[1] This racial divide has remarkable implications in terms of poverty and deprivation by population group.

The previous literature has devoted extensive attention to poverty in post-Apartheid South Africa.[2] Even though findings about poverty trends remain contested, an apparently increasing consensus agrees that poverty was aggravated in the early periods after the transition, and then improvements in more recent years were the result of the construction of a safety net through the social grant system (Leibbrandt et al. 2010). Among the many features that these studies have outlined in South African poverty, the differential in poverty levels across racial groups stands out as one of the most important. Hoogeveen and Özler (2006) and Özler (2007) proposed lower and upper bound monthly poverty lines based on the cost of basic needs at R322 and R593 in 2000, which we updated to R514 and R946, respectively, in 2008. The per capita household income of about 57 percent of Africans and 28 percent of colored people fell below the lowest of these thresholds, in contrast with that of 9 percent of Asians/Indians and only 1.5 percent of whites. Using the upper bound poverty line, the percentages of poor people increase to 77, 49, 27, and 7 percent, respectively. This implies that the corresponding poverty rates for Africans are respectively 38 and 11

[1] These are our estimations using NIDS (2008) and PSLSD (1993), respectively. See the next section for details.

[2] Among others, see Agüero et al. (2007), Argent et al. (2009), Leibbrandt et al. (2009, 2010), May (2000), Meth (2006), Özler (2007), Seekings (2007), Statistics South Africa (2000), Van der Berg and Louw (2004), and Van der Berg et al. (2008).

times higher than those of whites.[3] The racial differentials in poverty of other countries that are well known for their racial inequalities are dwarfed by the scale observed in South Africa. For example, the poverty rates among those of African descent in Brazil and the United States are, respectively, about 2 and 3 times higher than those of whites (Gradín 2009, 2011).[4]

Similarly, we find that the differentials by race are also large when we move our interest toward direct measures of deprivation. After calculating a composite index based on multiple dimensions (using principal component analysis), Klasen (2000) reported a deprivation rate of 67 percent for Africans in contrast with only 0.6 percent for whites in 1993. Bhorat et al. (2006) have shown that the access of poor South Africans to basic services substantially increased in the early years of the post-Apartheid period (from 1993 to 2004). However, in 2008, the differences by race in deprivation regarding several dimensions were still large. For example, according to our own calculations, 30 percent of Africans in 2008 lived in traditional or informal dwellings, while two-thirds lacked piped water inside their homes, compared with 0.5 and 5.5 percent of whites, respectively. Regarding home equipment, while 6, 7, and 18 percent of whites lived in households that did not own a fridge, a TV, or a radio, these percentages shifted to 47, 34, and 32 percent in the case of people of African origin. The differential is also large in terms of the accumulation of deprivation. Less than 2 percent of whites lacked all three of these appliances at home, in contrast with 12 percent of Africans. Likewise, 45 percent of Africans reported having insufficient (less than adequate) healthcare coverage, more than doubling the level of 19 percent for whites in a similar situation.

The aim of this paper is to investigate the reasons that these differentials in well-being remain so large. More specifically, we will measure the extent to which they result from Africans having poorer human capital or sociodemographic endowments. Then, the differentials would come from a compositional effect and represent inequality

[3] The situation does not change significantly when expenditure is used for measuring well-being in South Africa. Expenditure poverty among Africans was still about 25 times higher than that among whites with both thresholds.

[4] Estimates obtained using the official poverty line in the case of the U.S. 2007 *Current Population Survey* and the 50 percent of the median (120 reals) in the case of Brazil's 2005 *Pesquisa Nacional por Amostra de Domicílios*. For a more detailed comparison of income distributions in Brazil, the United States, and South Africa (using the *2005/06 Income and Expenditure Survey*), see Gradín (2010).

across those attributes. Alternatively, the differentials could be a consequence of those attributes' having a different impact on Africans' well-being.

Disentangling which part can and which cannot be explained by human capital and sociodemographic endowments is relevant, as they are both important but have different natures. Differences that come from a compositional effect indicate that the bad performance of disadvantaged groups is driven mostly by their unequal access to education, family planning, or the labor market or by the fact that they live in more deprived areas. The part that cannot be explained suggests that the disadvantage more likely stems from schooling, labor market participation, or location having a different impact on poverty and deprivation within these groups, which could be caused by the prevailing discrimination in the labor market, different perceived quality of education, or different degree of vulnerability due to unobserved factors. The causes associated with the former are more directly solved through redistributive policies at different levels than those coming from the latter, which tend to be more structural. The identification of the factors more closely associated with the racial gap in well-being could also be of help in ascertaining the racial implications of any public policy, even if it is not directly aimed at reducing racial inequities, such as conditional transfers seeking a larger attachment of poor children to schooling or of adults to the labor force and development policies addressed at specific regions or communities. It is also very important to identify the extent to which the racial differential in poverty/deprivation is attributed to the inertia of past inequalities through the intergenerational transmission of poverty/deprivation. The larger this contribution, the slower the expected reduction in the differential in the near future.

The structure of the paper is as follows. In the next section, we describe the data and methodology. Then, we undertake an empirical analysis and finally summarize the paper's main contributions.

2. Data and Methodology

2.1 Data

For the analysis, we used two different nationally representative samples of all private households in South Africa with information on households' living conditions. One is the first wave of the *National Income Dynamics Study* (NIDS, version 3) from 2008. This dataset, provided by the Southern Africa Labour and Development Research Unit

(SALDRU, University of Cape Town), includes rich information over an array of dimensions, such as income, expenditure, home appliances owned, neighborhood, educational level, and health status, for 28,250 individuals living in 7,302 households. The other is the *Project for Statistics on Living Standards and Development* (PSLSD 1993), which sampled 43,687 individuals living in 8,809 households, undertaken by SALDRU in collaboration with the World Bank during the nine months previous to the country's first democratic elections at the end of April 1994. An effort was made to make information from both samples as comparable as possible, even if the former provides richer information regarding some relevant issues than the latter.

2.2 Measuring poverty and deprivation

In order to measure financial poverty, we computed various indices of the Foster et al. (1984) family (FGT) using two monetary-based indicators (monthly income and expenditure). We used total household income as calculated in NIDS divided by the number of household members. Income was obtained by aggregating all forms of income from the adult questionnaire-implied rental.[5] In the case of PSLSD, we took the closest definition of total monthly income. We used Hoogeveen and Özler (2006) and Özler's (2007) lower and upper bound absolute poverty lines in 2000 prices (R322 and R593) updated to R514 and R946, respectively, in 2008, and deflated to 1993 prices to R198 and R365, respectively.[6] For a robust analysis, we also measured poverty with the same poverty lines but using per capita total household expenditure as a well-being indicator.[7] Let *P(y)* be a member of the FGT family of poverty measures. If *z* is the poverty line, we have

$$P(y)=\frac{1}{N}\sum_{1}^{N}\min\left\{\left(\frac{z-y}{z}\right)^{\alpha},0\right\} \quad ; \quad \alpha=0,1,2 \qquad \textbf{(1)}$$

For $\alpha=0$, the index is the head-count ratio (or poverty rate); for $\alpha=1$, the average normalized poverty gap; and for $\alpha=2$, the average normalized squared poverty gap.

[5] This includes income (reported or imputed) from the labor market, government investments, implied rental income, remittances, and subsistence agriculture and excludes items of a capital nature, such as inheritance, retrenchment payments, retirement gratuities, lobola/bride payments, gift income, loan repayments, sale of household goods income, and 'other' income.

[6] After applying a conversion rate of R4.25 per dollar (Leibbrandt et al. 2010), both lines correspond respectively to 121 and 223 PPP dollars in 2008.

[7] This includes food and non-food expenditure, household rent/implied-rent, and full imputations in the case of NIDS (and the closest definition available for the PSLSD).

The first case accounts only for poverty incidence, while the other two add sensitivity to poverty intensity and inequality among the poor.

To take into account the multidimensional nature of racial differentials in well-being, direct measures of material deprivation were also computed across 22 attributes reflecting different well-being dimensions: i) needs insufficiently met (coverage less than adequate compared to household needs in food, housing, clothing, healthcare, and schooling); ii) lack of ownership of motor vehicle and several home appliances (e.g., radio, TV, VCR/DVD, computer, electric/gas stove, microwave, fridge/freezer, and washing machine); and iii) exclusion from access to different basic services (e.g., formal dwelling, piped water, flush toilets, electricity, landline telephone, cellular, rubbish collection, and street lighting).

As a first step, we used the percentage of population in each group that is excluded in each of these attributes in their households. This is a flexible way of looking at possible differences among this heterogeneous set of dimensions. Let d_i^j be a dummy variable, taking the value 1 if the i^{th} individual (i=1, …, N) is deprived in the j^{th} attribute (j=1,…,J) and 0 otherwise. Then, the proportion of the population deprived in this attribute is given by the following:

$$\bar{d}^j = 1/N \sum_{i=1}^{N} d_i^j \,, \qquad j=1,\ldots,J \qquad \textbf{(2)}$$

As a second step, we summarized the extent of exclusion for each person from this set of attributes, constructing an individual composite indicator of material deprivation:

$$d_i = \sum_{j=1}^{J} d_i^j w^j \,,\ i=1,..,N\,; \qquad \text{with } w^j = \frac{s_0^j - s_1^j}{\sum_{j=1}^{J}\left(s_0^j - s_1^j\right)} \,,\ \sum_{j=1}^{J} w^j = 1, \qquad \textbf{(3)}$$

where w^j can be interpreted as the marginal contribution to the individual indicator of being deprived in the j^{th} attribute, compared with not being deprived. One can obtain these weights in many ways. The literature provides no conclusion regarding the best approach. In our empirical analysis, we estimated them using a multiple correspondence analysis (MCA) for the joint sample of Africans and whites over the set of dummies and then the (standardized) scores s_k^j (k=0,1) associated with each

category $d_i^j = k$.[8] This individual indicator of deprivation takes values between 0, not deprived with respect to any attribute, and 1, deprived in all of them. It is the linear combination of the original variables providing the largest possible correlation, or explaining the largest share of variability (inertia).

To measure the extent of larger incidence of severe deprivation among Africans compared with whites, we computed the proportions of members of each group experiencing deprivation above a given cut-off. Let F^A and F^w respectively indicate the cumulative distribution functions of deprivation among Africans and whites. The cut-offs will be different percentiles $d_{i(p)}$ (p=0.99, 0.95, 0.90, …) at the top of whites' distribution such that $p \equiv F^w\left(d_{i(p)}\right)$. Thus, the proportion of Africans experiencing deprivation above this cut-off is given by $1-F^A(d_{i(p)})$, while by construction $1-F^w(d_{i(p)}) \equiv 1-p$ for whites.[9]

2.3 Explicative factors

In our empirical analysis, we considered a number of potential explicative factors for racial differences in well-being, including current characteristics of the household that are presumed to influence the risk of poverty and deprivation through constraining or enhancing either the household's members' ability to earn income or household needs.

---

[8] See Asselin (2009) for a detailed discussion of the use of MCA in the measurement of multidimensional poverty. We speak here of deprivation, not poverty, because we deliberately use only dichotomous variables, although using multiple categories of the variables instead does not significantly change the results. In particular, note that the distance function between profiles used by MCA, the chi-square metric, weights the Euclidean distance by the inverse of the relative frequencies. This makes exclusion from more common attributes contribute more to individual deprivation than exclusion from rare attributes. This is in line with other views in the literature, such as the approaches followed by Desai and Shah (1988) or Tsakloglou and Papadopoulos (2002). For example, the latter uses the normalized proportion of non-deprived population as the weight for each attribute. Indeed, replacing weights in (3) by $w^j = \left(1-\bar{d}^j\right) \Big/ \sum_j \left(1-\bar{d}^j\right)$ would produce a new individual indicator highly correlated with ours (about 96 percent in our empirical analysis). So this and our approach are very close.

[9] Obviously, researchers can choose one from among several alternatives for comparing both distributions. We can use the average deprivation (also computed in our empirical analysis) or construct FGT-type indices of deprivation. In the absence of a natural "deprivation line" and for the sake of simplicity, we adopt here this approach to explain the larger incidence of deprivation among Africans using alternative thresholds indexed to the distribution of whites, which is the reference distribution and remains constant after the counterfactual analysis.

We initially organized current household characteristics in the NIDS sample into five groups.[10] First, geographical location accounts for potential differences in economic opportunities, including province of residence and a dummy indicating whether the household lives in a rural area.[11] Second, we used a set of demographic variables. These include the characteristics of the head of household, such as marital status (i.e., married; single living with partner; widow(er)/divorced/separated; and never married), sex, age interval (i.e., below 25 years old, between 25 and 55, or above 55), and migration status (i.e., migrated or not during the last five years; internal migrant, immigrant from abroad, or non-immigrant), as they may affect his or her ability to find a job. The number of children and adults in the household was included as the main determinant of family needs. The third group accounts for the head of household's attained educational level (i.e., number of years of schooling and its squared value) as the main determinant of his or her labor market opportunities. The fourth group measures household members' labor market attachment. It includes the head of household's labor force status (i.e., employed in regular work, employed in casual work, unemployed, self-employed, or not economically active) and occupation (one digit) and the household's adult dependency ratio, defined as the proportion of adults receiving earnings or pension benefits. The information in the PSLSD sample was organized in a very similar way but with some restrictions.[12] Further, we took into account that the current racial divide in well-being could also be the consequence of past inequalities. This is especially important here given the segregative regime that had, until recently, dominated the life of South Africans. Thus, we also included a sixth group of variables capturing family background: attained educational level and occupation of the mother and father, only available in NIDS.

2.4 Methodology: Counterfactual analysis

We first estimated different poverty and deprivation measures by race and then decomposed the racial gap resulting from comparing Africans with whites into the

[10] In some cases, a category for observations with missing values was also included to avoid the loss of information.

[11] We considered eight categories for province of residence in the NIDS sample, after having combined Free State and North West into one category due to sample size problems.

[12] More specifically, the demographic information differs in that marital status distinguishes among whether there was a spouse and if he or she was present, deceased, or absent. Immigration status only accounted for migration during the past five years. Note also that the provincial organization in South Africa changed after 1994, and thus, in the PSLSD, we considered four categories: Cape, Transvaal, Orange Free State, and the rest of the country.

explained (characteristics effect) and unexplained (coefficients effect) parts. This is the *aggregate* decomposition. Further, we ran a *detailed* decomposition of the characteristics effect by quantifying the contribution to the gap by the different potential explicative factors mentioned above: geographical location, demographic structure, labor market performance, education, and family background. To complete these decompositions, we estimated a counterfactual distribution in which members of the disadvantaged group (Africans) were given the relevant characteristics of the affluent group (whites) using the adaptation of a propensity-score technique (DiNardo et al. 1996) in Gradín (2010). This technique allowed for decomposition of the difference estimated for all statistics, such as poverty or deprivation indices across groups.[13] The differential between poverty/deprivation measures of whites and Africans provided the unconditional racial poverty/deprivation gap. The difference between poverty/deprivation in the observed distribution for Africans and in its counterfactual represented the explained (characteristics) effect, while the difference of poverty/deprivation between the counterfactual distribution and that of whites provided a measure of the conditional differential, or unexplained/coefficients effect. Below is a more in-depth explanation of the procedure.

Each individual observation was drawn from some joint density function f over (y, x, g), where y indicates the vector of per capita household income (alternatively expenditure or deprivation in any dimension), x is a vector of observed household characteristics, and g identifies whether the individual is white (the reference group, $g=w$) or African ($g=b$). The marginal distribution of income for each group g is given by the density

$$f^g(y) \equiv f(y \mid g) = \int_x f(y, x \mid g)dx = \int_x f(y \mid x, g) \cdot f_x(x \mid g)dx \,, \qquad \textbf{(4)}$$

This can be obtained as the product of two conditional distributions, where

$$f_x(x \mid g) \equiv \int_y f(y, x \mid g) \,. \qquad \textbf{(5)}$$

[13] This is clearly an advantage compared with other alternative techniques, such as the Oaxaca-Blinder approach (Oaxaca 1973; Blinder 1973), which only allows for the decomposition of the mean differential of a continuous variable (i.e., mean income or expenditure), or the extension to a bivariate variable, which would only allow one to compute differences in poverty rates or FGT(0) (Fairlie 1999; Yun 2004).

In other words, the actual income density for Africans or whites is determined by the marginal income density of members of the group having each combination of characteristics (a high level of education, living in Cape Town, and so on) times the proportion of group members having this set of characteristics.

Then, we defined the counterfactual income distribution $f^x(y)$ as the distribution of y that would prevail if Africans kept their own conditional income distribution (the probability of having an income level given their characteristics) but had the same characteristics (marginal distribution of x) of whites. We produced this counterfactual distribution by properly reweighting the actual income distribution of Africans:

$$f^x(y) = \int_x f(y \mid x, g = b) \cdot f_x(x \mid g = w)dx = \int_x f(y \mid x, g = b) \cdot \psi_x \cdot f_x(x \mid g = b)dz = \int_x \psi_x f(y, x \mid g = b)dx \quad \textbf{(6)}$$

Based on Bayes's theorem, the reweighting scheme ψ_x can be expressed as the product of two ratios:

$$\psi_x = \frac{f_x(x \mid g = w)}{f_x(x \mid g = b)} = \frac{\Pr ob(g = b)}{\Pr ob(g = w)} \frac{\Pr ob(g = w \mid x)}{\Pr ob(g = b \mid x)}. \quad \textbf{(7)}$$

where the ratio $\frac{\Pr ob(g = b)}{\Pr ob(g = w)}$ is given by the share of Africans and whites that belongs to each race in the pooled sample (and can be ignored because it is a constant) and the ratio $\frac{\Pr ob(g = w \mid x)}{\Pr ob(g = b \mid x)}$ is estimated using a logit model for the probability of being white conditional on x in the pooled sample of whites and Africans.[14,15] In other words, these weights increased the contribution to the index of interest made by Africans with characteristics more similar to those of whites and decreased the contribution of those with greater dissimilarity.

[14] Alternatively, the weight could be estimated non-parametrically based on $\frac{f_x(x \mid g = w)}{f_x(x \mid g = b)}$, the ratio between the respective frequencies of both groups across the cells resulting from the set of (discrete) variables. However, this ratio has several limitations: It becomes problematic if there are many categories or some empty cells, it does not allow one to deal with continuous variables, and there is no direct way of estimating the individual contribution of each variable to the overall effect.

[15] Since our regressions were estimated at the individual level, while characteristics were collected at the household level, the estimated robust standard errors took into account individuals being "clustered" across families. See, for example, Cappellari and Jenkins (2004) for a justification.

In parallel with the conventional Oaxaca-Blinder procedure, widely used in labor economics to estimate wage discrimination, we used the counterfactual distribution for the following decomposition of the differential between whites and Africans for any poverty index *P*:

$$P^b(y) - P^w(y) = \left(P^b(y) - P^x(y)\right) + \left(P^x(y) - P^w(y)\right). \quad \textbf{(8)}$$

The superscripts *b*, *w*, and *x* indicate whether poverty was measured for Africans, whites, or the counterfactual distribution (conditional on *x*). *P(y)* is a poverty index. Thus, the first term in the previous equation represents the part of the poverty differential by race explained by characteristics (or characteristics effect), while the second is the unexplained part (or coefficients effect). [16]

In the detailed decomposition, we wanted to quantify the impact on the poverty/deprivation differential of changes in a single covariate (or set of covariates) x_j instead of the whole vector. This could be achieved directly by computing a new counterfactual distribution $f^{x_j}(y)$ in which a reweighting factor ψ_{x_j} was obtained by setting all the other logit coefficients but this one to zero. Then, the explained contribution of characteristic x_j would be given by $\left(P^b(y) - P^{x_j}(y)\right)$. This would imply that each factor was the first to change when going from the actual distribution of Africans to the counterfactual; and the estimated individual effects would not sum up to the overall effect. Alternatively, we could shift all the coefficients in a specific sequence (first geographical factors, then demographic ones, etc.), computing the contribution of each factor as the result of changing its associated coefficients. This procedure would suffer from a path-dependency problem, well known in inequality decompositions, because the contribution of the different factors to the overall differential would depend on the precise order in which we considered them.[17] This difficulty could be overcome (in line with Gradín 2010) by computing the Shapley decomposition that

[16] See Gradín (2009, 2011) for a similar aggregate decomposition of a racial differential in poverty rates in Brazil and the United States, but where the counterfactual used in the aggregate decomposition was based on a different technique (Yun, 2004). There, a discussion is provided of other alternative approaches.

[17] For example, the contribution of education could be obtained by comparing the original distribution with the counterfactual in which only the coefficients of education were set different from zero. Alternatively, it could be done by comparing the case of the counterfactual in which only demographic coefficients have been set different from zero with the counterfactual in which both demographic and education coefficients have been set different from zero, and so on. Each of these alternatives are reasonable estimates of the contribution of education but will differ from one other.

results from averaging over all possible sequences (Chantreuil and Trannoy 1999; Shorrocks 1999). The resulting individual effects would be path independent and add up to the overall effect. This last procedure is the one followed in this paper.[18]

Using the same procedure described in this section, we could construct a counterfactual distribution for the J vectors of the dummy variables $d^j = \left(d_1^j, ..., d_N^j\right)$ describing deprivation across the population. Then, the differentials in the proportions of African and white populations deprived with respect to each attribute, or according to the composite indicator, could be decomposed accordingly.[19]

3. Poverty and Deprivation by Race in South Africa

In presenting our empirical analysis, we will first provide the results for income poverty and then discuss the main differences when using expenditure and material deprivation as well-being indicators.[20]

3.1 Income Poverty

3.1.a) Poverty differential by race

Racial segregation in South Africa left a legacy of huge differences in poverty across ethnic groups. As the first three rows of Table 1 illustrate, about 71 (87) percent of Africans were poor in terms of income in 1993 according to the lower (upper) bound poverty line, as compared with 2 (4) percent of whites. Fifteen years after the termination of Apartheid, poverty incidence using the thresholds (in real terms) was substantially reduced among Africans, especially more severe poverty, while poverty among whites remained constant (lower bound) or even increased (upper bound). Thus, the differential in poverty rates fell slightly, but still remained high in 2008: 57 (77) percent of Africans were poor according to the lower (upper) bound threshold, as compared with about 1.5 (7) percent of whites in a similar situation. This means that

[18] See Sastre and Trannoy (2002) for a formalization of the procedure to compute the Shapley decomposition. In this paper, the Shapley decomposition was implemented in two stages. First, we computed the contribution of each group of factors (e.g., location) to the overall poverty differential. Then, we computed the individual contribution of each specific factor (e.g., province and rural area) to the total group's contribution.

[19] The individual composite indicators of deprivation in the counterfactual distribution were computed using the same weights w^j estimated with the original distribution.

[20] The logit regressions used to construct the counterfactual distributions are shown in Table A2 in the Appendix.

Africans were still 38 (11) times more likely to be poor than whites in 2008, as compared with 42 (20) times in 1993. Poverty intensity and inequality among the African poor were reduced in parallel with poverty incidence in post-Apartheid South Africa, as can be inferred from the fact that poverty reductions among Africans were higher using indices accounting for not only incidence but also intensity and inequality (FGT(1) and FGT(2), respectively).

The main contribution of the present work is, however, a quantification of how much this high poverty (and its reduction) among Africans, as compared with whites, can be attributed to the unequal distribution of characteristics by race in South Africa.

3.1.b) Explained poverty differential by race in 2008

Aggregate effect

Our first main finding was that a large share of the differential in income poverty by race can be explained by the higher prevalence among Africans of those characteristics most strongly associated with poverty. In general, the proportion explained was larger with the lower than with the upper bound poverty line and increased as we incorporated sensitivity to intensity and inequality among the poor in the poverty index. Thus, extreme poverty was better explained by characteristics than moderate poverty. Table 1 illustrates the results of income poverty for the counterfactual distribution (row 4) and the corresponding aggregate decomposition of the racial differential in poverty into the unexplained and explained parts (rows 5 and 6). We first discuss the results for 2008. We will present an analysis of the trend in a later subsection.

More specifically, 86 (73) percent of higher poverty among Africans in 2008 can be attributed to their characteristics using the lower (upper) bound poverty threshold, with the share rising to 90 and 92 (79 and 83) percent in the cases of FGT(1) and FGT(2) (see Table A3 in the Appendix). The above proportions among Africans would have been about 9 (25) percent of the population had their characteristics been similar to those of whites (counterfactual). Consequently, we estimated the conditional differential in poverty rates with whites to be 8 (19) percentage points. This would be entirely the result of household characteristics having a different impact on the likelihood of being poor depending on the race. This could be a consequence of direct labor market discrimination, unobservable attributes, and the different quality of some

characteristics (e.g., attained educational level), etc. Note that these conditional poverty differentials were large compared with those of other countries with well-known black-white differences, such as the United States (about 4 percentage points estimated for 2006 in Gradín 2011) or Brazil (2 percentage points in 2005 according to Gradín 2009).

Detailed effect

After measuring the aggregate effect, we identified the main factors associated with the racial poverty differential and quantified their contribution. The results are shown from row 7 to the end of Table 1. Focusing first on the case of severe poverty (lower poverty line), education, demographic characteristics, and geographical location (the first level of disaggregation of the detailed effect) each accounted for a significant share of 24-28 percent of the differential, with labor-related factors relegated to explaining (globally) only an additional 7 percent. Thus, no unique source accounted for the differential in poverty rates based on race. Rather, higher poverty among Africans seems to be the result of the accumulation of several disadvantages, mostly pre-labor market endowments. The most salient single factor (the second level of disaggregation of the detailed effect) associated with the racial poverty gap was heads of African households dropping out of school earlier: Years of schooling explained 28.5 percent of the higher poverty incidence with respect to whites (or equivalently, almost 16 percentage points). The second most significant factor was Africans living in rural areas to a greater extent (23 percent of the differential, or 12.5 percentage points) and their families having more children (17 percent, or 10 percentage points) and a larger proportion of dependent adults (with a dependency ratio of 13 percent, or 7 percentage points). Thus, increasing attachment to school, combined with family planning, employment, and rural development policies would likely have the most significant impact on reducing the severe poverty gap based on race.

Some factors made a (small) negative contribution. That is, with values for these characteristics similar to those for whites, Africans would have even higher poverty rates than they actually have. This is the case for not only age (Africans are slightly younger on average than whites)[21] and migration (they have lower migration rates) but also the head of household's labor status and occupation. With the latter two, this is so

[21] See the Table A1 in the Appendix for average values of explicative variables between whites and Africans.

despite Africans having a larger incidence of unemployment and casual work and a higher likelihood of working low-skilled occupations. Note that what we measured here is the marginal contribution of these factors once we controlled for the others, so this indicates that the head of household's labor status and occupation add nothing in explaining the poverty of Africans after including education or geographical location, which proved to have a stronger association with higher poverty among Africans.

Table 1. Racial income poverty gap between Africans and whites in South Africa, FGT(0) (lower and upper poverty lines)

	Lower poverty line				Upper poverty line			
	NIDS, 2008		PSLSD, 1993		NIDS, 2008		PSLSD, 1993	
	FGT(0)	% Diff.	FGT(0)	% Diff.	FGT(0)	% Diff.	FGT(0)	% Diff.
Whites	1.5		1.7		6.7		4.3	
Africans	57.0		71.0		76.6		86.6	
Differential (Diff.)	55.5		69.3		69.9		82.3	
Counterfactual	9.2		4.2		25.4		12.3	
Unexplained	7.8	14.0	2.5	3.7	18.7	26.8	7.9	9.6
Explained (all charact.)	47.7	86.0	66.8	96.3	51.2	73.2	74.4	90.4
Geographic	14.4	25.9	9.2	13.2	8.4	12.0	6.1	7.5
Province	1.9	3.4	4.4	6.3	-2.9	-4.1	3.1	3.8
Rural	12.5	22.6	4.8	6.9	11.2	16.1	3.0	3.7
Demographic	13.5	24.3	12.6	18.2	14.1	20.1	13.3	16.1
Marital status	2.8	5.1	0.5	0.7	2.5	3.6	1.4	1.7
Immigration	-1.0	-1.8	0.5	0.7	-1.7	-2.4	0.2	0.3
Sex	1.3	2.3	-0.4	-0.6	2.2	3.2	-0.5	-0.6
Age	-2.1	-3.8	-1.0	-1.5	-4.6	-6.6	-1.9	-2.3
N. of Children	9.6	17.3	9.4	13.6	10.8	15.4	9.3	11.4
N. of Adults	2.9	5.3	3.7	5.3	4.9	7.1	4.7	5.8
Head's Education	15.8	28.5	30.9	44.6	25.0	35.8	35.8	43.5
Labor	4.0	7.3	14.1	20.3	3.7	5.3	19.2	23.3
Head's status	-1.1	-2.1	-8.0	-11.5	-2.8	-3.9	-8.3	-10.1
Head's occupation	-1.8	-3.2	17.9	25.8	-2.2	-3.2	22.5	27.3
Dependency ratio	7.0	12.6	4.2	6.0	8.7	12.4	5.0	6.0

The use of two poverty thresholds allowed us to check whether the explicative factors were similar for severe and for moderate poverty. The results for the upper bound poverty line, as compared with the lower, showed (the four columns on the right in Table 1) the following: i) the substantially larger relevance of education (25 percentage points of the poverty rate instead of 16), which explained 36 percent of the differential; ii) the slightly higher relevance of the dependency ratio (from 7 to 9 percentage points),

explaining 12 percent of the differential as before, and the lower importance of geographical location (8 percentage points, as compared with 14), now explaining (globally) only 12 percent of the differential, especially driven by the negative contribution of the province of residence; and iii) to a lesser extent demographic factors explaining around 20 percent of the differential (but a similar level of percentage points). Thus, in relative terms, education replaced location and demographic factors in explaining higher poverty rates among Africans as we pushed the poverty threshold upward. [22]

When it comes to including intensity and inequality in the measure of poverty (shifting from FGT(0) to FGT(1) and FGT(2)), the results were quite similar except for the lower role played by education and the corresponding larger relevance of the other factors (see Table A3 in the Appendix). This reinforces the idea that education is less associated with higher income poverty among Africans at the bottom of the distribution (whose members contribute more to poverty intensity and inequality than those near the poverty line). Consequently, the more decisive role of education for the upper bound poverty line was maintained but to a lower extent with FGT(1) and FGT(2).

Colored people

The situation for the colored population differed from that of Africans, as Table 2 shows. The poverty rates for colored people were higher than those for whites, but the magnitude of the gap was substantially smaller for colored people than for Africans: 26 (42.5) percentage points for the lower (upper) bound poverty line. The proportion of this differential that can be explained by household characteristics is however similar to that of Africans (87 percent) in the case of the lower bound poverty line and higher in the case of the upper bound (90 percent). Regarding which factors explain this differential, the educational gap made a larger contribution for colored people than for Africans, explaining 71 (62) percent of the observed gap with the lower (upper) bound poverty line. The impact of geographical distribution differed greatly, too. While Africans were more likely than whites to live in rural areas, which explained a significant share of the racial poverty gap, this is not the case for colored people, and

[22] This is in line with Gradín (2010), who pointed to the increasing relevance of education (at the expense of the other factors) in explaining the black-white income differential for higher percentiles in South Africa using the *2005/06 Income Expenditure Survey*.

their distribution by province has a large negative impact in explaining extreme poverty. That is, if they had a similar distribution as that of whites, the differential would be one-third larger than it actually was. In other words, colored people's specific geographical location masked part of its poverty differential with whites. The shares of the gap explained by other factors, such as number of children or dependent adults, were similar for both disadvantaged groups, even if the absolute contribution was higher for Africans, as their gap was also higher.

Table 2. Racial income poverty gap between colored and whites in South Africa, FGT(0) (lower and upper poverty lines)

	Lower poverty line				Upper poverty line			
	NIDS, 2008		PSLSD, 1993		NIDS, 2008		PSLSD, 1993	
	FGT(0)	% Diff.	FGT(0)	% Diff.	FGT(0)	% Diff.	FGT(0)	% Diff.
Whites	1.5		1.7		6.7		4.3	
Colored	27.9		30.1		49.2		58.0	
Differential (Diff.)	26.4		28.4		42.5		53.7	
Counterfactual	5.0		1.4		10.9		5.7	
Unexplained	3.5	13.2	-0.3	-1.2	4.2	9.8	1.3	2.5
Explained	22.9	86.8	28.7	101.2	38.3	90.2	52.3	97.5
Geographic	-8.2	-31.0	5.5	19.3	-3.3	-7.7	11.6	21.6
Province	-8.7	-32.9	5.8	20.4	-3.8	-8.8	12.1	22.5
Rural	0.5	1.9	-0.3	-1.1	0.5	1.1	-0.5	-0.9
Demographic	8.9	33.7	6.9	24.3	12.0	28.2	8.0	15.0
Marital status	7.4	28.1	1.4	4.8	10.7	25.2	1.0	1.9
Immigration	1.0	3.8	-0.1	-0.4	2.4	5.6	0.1	0.3
Sex	-0.2	-0.9	-0.3	-1.1	-0.4	-1.0	-0.3	-0.6
Age	-6.8	-25.7	-1.2	-4.1	-8.6	-20.2	-1.2	-2.1
N. of Children	5.3	20.0	5.9	20.8	3.6	8.6	6.4	11.9
N. of Adults	2.3	8.6	1.2	4.3	4.3	10.0	1.9	3.6
Head's Education	18.7	70.9	11.3	39.8	26.3	62.0	25.4	47.4
Labor	3.5	13.2	5.0	17.8	3.3	7.7	7.2	13.5
Head's status	0.3	1.3	8.8	31.0	0.3	0.7	10.1	18.8
Head's occupation	-0.3	-1.0	-4.0	-14.2	-1.2	-2.9	-3.1	-5.8
Dependency ratio	3.4	12.9	0.3	1.0	4.2	9.9	0.3	0.5

3.1.c) Explaining the poverty trend in post-Apartheid South Africa

As mentioned above, poverty among Africans and the differential with whites were larger right before the end of Apartheid in 1993, by about 14 (12) percentage points with the lower (upper) bound poverty line (see Table 1). Looking at the decomposition of the racial differential for each year, we observed that the explained part was notoriously reduced during the observed time span, by 19 (23) percentage points from

67 (74) to 48 (51). In contrast, the unexplained or conditional differential in poverty rates increased from 2.5 (8) to 8 (19) percentage points. This suggests that the reduction of poverty among Africans between 1993 and 2008 was driven by substantial progress in their relevant characteristics, thus catching them up with whites. But this reduction was not larger due to the opposite effect of these characteristics becoming less protective in terms of keeping Africans out of poverty, as compared with whites.

More specifically, this convergence process involved two main factors: years of schooling and the head of household's occupation. The contribution of education to higher poverty rates among Africans was virtually halved from 31 to 16 percentage points with the lower bound, thus being able to explain by itself the whole observed reduction in the poverty rate differential. The reduction in the racial poverty gap associated with education in the case of the upper bound was more limited, from 36 to 25 percentage points, but still able to explain the entire reduction. Indeed, African heads of household increased their years of education from 4.5 to 6.7 (as compared to the increase among whites from 11.9 to 12.7). Similarly, the head of household's occupation played a fundamental role in 1993, contributing significantly to the racial poverty differential that year, even after controlling for education and location (of 18 and 22.5 percentage points). This role vanished completely in 2008.[23] The contribution of demographic factors to higher poverty rates was barely similar in both years, while the contribution of the higher concentration of Africans in rural areas substantially increased between 1993 and 2008 (the share of rural population decreased more clearly for whites, from 8.5 percent to 2.9, as compared to the relatively smaller reduction from 66.7 to 61.9 among Africans).[24] Similar results can be found using the FGT(1) and FGT(2) indices, with an even stronger contribution of increasing educational attainment among Africans to reducing the racial poverty gap between 1993 and 2008 (see Table A3 in the Appendix).

[23] The change in occupational classification makes the comparison difficult. However, in 1993, the sum of managerial, professional, and technical occupations accounted for 12 percent of the employed African heads of household (40 percent for whites), as compared to only 7 percent in the closest occupations in 1993 (48 percent of whites).

[24] Obviously, ascertaining which factors changed their impact the most (detailed coefficients effect) would be quite interesting, as we have done with the characteristics effect. However, the disaggregation of the coefficients effect involves additional technical difficulties. There is no clear procedure to do it with our methodology. It could be done following, for example, Yun's (2004) approach consisting of estimating poverty regressions for both groups; yet the small number of poor whites observed, especially in the *NIDS* dataset, discouraged us from doing so.

The results for colored people (Table 2) also showed a reduction in the differential in poverty rates with respect to whites after Apartheid ended, especially in moderate poverty, 2 (14) percentage points for the lower (upper) bound. But the latter reduction was driven by a lower contribution of the province of residence.[25] The conditional racial poverty gap also increased, as for Africans, by about 3-4 percentage points.

3.2 Expenditure Poverty

How much of the previous results depend on the choice of income as the measure of well-being? The risk of expenditure poverty for both whites and Africans was higher, as compared with income poverty, and so was the differential, 61 (77) percentage points with the lower (upper) poverty line. Thus, expenditure poverty for Africans was about 25 times higher than for whites. The percentage of poverty in 2008 that was explained by characteristics was similar to that of income and expenditure, but the reasons differed. The main difference in using expenditure instead of income was the much more important role played by education in explaining the differential in poverty rates with the lower bound poverty line (25 percentage points, or 41 percent of the gap). This is because the educational level attained by the head of household was larger for those Africans identified as suffering from severe poverty with income but not with expenditure (7.7 years on average) than for those in the reverse situation (5.9 years).[26] Thus, the association between Africans' higher severe poverty and lower educational level was stronger when using expenditure rather than income.

The decline in expenditure poverty incidence for Africans between 1993 and 2008 was more limited, as compared to that of income, especially for severe poverty (lower bound) - from 68 to 64 percent of the population- but also for the upper bound poverty line - from 88 to 80 percent. Thus, the reduction in the differential in poverty rates was smaller with expenditure, or 6 (9) percentage points with the lower (upper) bound poverty line. As in the case of income, this was due to a reduction in the explained poverty gaps - 10 (25) percentage points- that was partially compensated for by an increase in the unexplained part - from 3 to 7 (from 9 to 25) percentage points. The impact of more years of schooling among Africans in reducing these differentials was

[25] Given the change in provincial organization, this should be viewed with caution.
[26] About 49 (28.5) percent of Africans in 2008 were identified as poor (non-poor) by both indicators using the lower poverty line. Thus, about 22.5 percent of Africans were classified as poor with only one indicator (14.5 percent with expenditure and 7.9 with income).

more limited than in the case of income: 4 (10) percentage points. In fact, in the case of expenditure, labor market attachment (mainly due to the head of household's occupation) turned out to be much more important in explaining the reduction in poverty, 8.5 (13) percentage points.

Table 3. Racial expenditure poverty gap between Africans and whites in South Africa, FGT(0) (lower and upper poverty lines)

	Lower poverty line				Upper poverty line			
	NIDS, 2008		PSLSD, 1993		NIDS, 2008		PSLSD, 1993	
	FGT(0)	% Diff.	FGT(0)	% Diff.	FGT(0)	% Diff.	FGT(0)	% Diff.
Whites	2.5		0.4		3.4		2.0	
Africans	63.6		67.9		80.1		87.7	
Differential (Diff.)	61.1		67.4		76.6		85.7	
Counterfactual	9.6		3.3		28.6		11.4	
Unexplained	7.1	11.6	2.9	4.3	25.2	32.8	9.3	10.9
Explained	54.1	88.4	64.5	95.7	51.5	67.2	76.3	89.1
Geographic	12.5	20.4	10.8	16.0	10.9	14.3	8.6	10.1
Province	-1.2	-2.0	6.5	10.7	-2.6	-3.4	6.0	7.9
Rural	13.7	22.4	5.9	9.7	13.5	17.6	4.9	6.4
Demographic	13.9	22.7	13.5	20.0	10.1	13.1	13.7	16.0
Marital status	2.2	3.6	1.0	1.7	2.7	3.5	1.0	1.2
Immigration	-1.3	-2.2	0.9	1.4	-1.5	-2.0	0.5	0.7
Sex	1.0	1.6	-0.5	-0.8	1.5	2.0	-0.4	-0.5
Age	-2.8	-4.6	-1.5	-2.5	-4.7	-6.2	-1.1	-1.4
N. of Children	9.7	15.8	9.6	15.7	7.6	9.9	6.6	8.6
N. of Adults	5.2	8.5	4.4	7.3	4.5	5.9	3.5	4.5
Head's Education	25.1	41.1	29.1	43.1	27.7	36.1	37.7	44.0
Labor	2.6	4.2	11.1	16.5	2.8	3.6	16.4	19.1
Head's status	-1.4	-2.3	-1.4	-2.4	-2.5	-3.3	-1.1	-1.4
Head's occupation	-1.1	-1.7	3.4	5.5	-0.7	-0.9	3.2	4.2
Dependency ratio	5.0	8.2	0.7	1.1	6.0	7.9	0.6	0.8

3.3 The role of family background

A person's growing up in a poor family generally increases the chances that he or she will experience poverty during adulthood through different channels (i.e., Hoelscher 2004; Magnuson and Votruba-Drzal 2009). For example, low parental investment or financial stress may, later in life, increase poor children's bad social behavior and reduce their academic achievement. This is an important issue given the segregative regime that dominated South Africa for so long and the low intergenerational mobility that can be expected from that situation. Obviously, some current characteristics, such

as education, will be correlated with family background, thus capturing part of the effect of the latter factor on the differential in poverty by race. But still, two households with similar current observed characteristics could have different economic outcomes on the basis of their families' having different economic backgrounds. This would in turn increase the explained poverty differential. Subsequently, ignoring past inequalities could lead to an underestimation of the proportion of the racial differential in poverty that is explained, as well as to an overestimation of the contribution of some current characteristics. The larger the proportion of the poverty differential explained by past inequalities, the slower the expected reduction in this differential because the reduction will be mainly driven by convergence in current characteristics, as illustrated by what happened after Apartheid. That is, not accounting for this factor could result in a naïve or overly optimistic view of by how much improving Africans' situation would reduce poverty differentials.

To explore the role of past inequalities, we included as an additional potential factor explaining poverty differentials by race a set of variables accounting for family background available in NIDS (but not in PSLSD), such as occupation and years of education of household head's parents.[27] As shown in Table 4, after taking into account past inequalities, i) the whole set of worker characteristics now explained 90 percent or more of the racial poverty gap; ii) family background turned out to be one of the main explicative factors; iii) the contribution of other factors, especially the head of household's years of schooling, dropped; and iv) the role played by family background was more relevant in explaining moderate than severe poverty and expenditure rather than income poverty.

Indeed, the whole set of worker characteristics explained around 93 (94) percent of the gap in income poverty incidence using the lower (upper) bound poverty lines. Additionally, family background accounted for 11 (20) percentage points of the gap in poverty rates, representing 19 (28) percent of that differential. Thus, past inequalities had similar relevance to that of the other main factors, such as the head of household's years of schooling - 21 (26) percent of the gap-, number of children – 19 (17) percent-, and living in rural areas - 20 (16) percent-, and their contributions shrunk. Consequently, the main difference in explaining racial differentials for moderate as

[27] These variables contain a large number of missing observations. For this reason, a category accounting for them was included in each case.

opposed to severe income poverty was the larger contribution of family background and, to a lesser extent, the head of household's education.

In the case of expenditure, worker characteristics explained 98 (90) percent of the racial gap in poverty rates using the lower (upper) threshold, and family background on its own explained 28 (31) percent, as compared to education, which accounted for 29 (28) percent, way above living in rural areas, 19 (15) percent, or number of children, 18 (11.5) percent.

Table 4. Racial (income and expenditure) poverty gap between Africans and whites in South Africa with family background, FGT(0) (lower and upper poverty lines)

	Africans				Colored			
	Income		Expenditure		Income		Expenditure	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Counterfactual FGT(0)	5.3	11.0	3.7	11.4	0.1	0.3	0.1	0.2
Unexplained differential (%)	7.0	6.2	2.0	10.4	-5.3	-15.1	-7.7	-6.5
Explained differential (%)	93.0	93.8	98.0	89.6	105.3	115.1	107.7	106.5
Geographic	24.6	16.4	20.3	15.7	-24.9	-9.4	-14.7	-3.7
Province	4.9	0.4	1.0	0.5	-21.6	-7.1	-11.8	-1.5
Rural	19.7	16.1	19.3	15.2	-3.3	-2.3	-2.8	-2.2
Demographic	23.2	18.2	19.6	12.4	31.9	25.9	23.4	19.8
Marital status	5.3	5.0	3.6	4.6	11.4	10.4	7.1	6.4
Immigration	-4.7	-6.0	-4.2	-4.7	1.9	2.1	-0.4	3.2
Sex	3.2	3.1	2.5	2.3	0.3	0.4	0.1	0.4
Age	-4.0	-5.7	-6.0	-5.4	-1.9	-7.4	-9.0	-5.6
N. of Children	19.4	16.8	17.7	11.5	17.0	13.7	17.0	9.2
N. of Adults	4.1	5.1	6.0	4.1	3.2	6.7	8.6	6.2
Head's Education	20.8	26.4	28.8	28.4	35.5	32.8	37.5	30.2
Labor	5.2	4.4	1.7	1.7	6.0	3.4	1.7	1.5
Head's status	-7.0	-7.7	-4.6	-6.7	-2.4	-2.9	-3.9	-1.9
Head's occupation	-0.4	0.6	0.2	1.3	0.5	-0.5	-0.7	-0.2
Dependency ratio	12.5	11.6	6.0	7.1	8.0	6.8	6.4	3.6
Family background	19.2	28.3	27.6	31.4	56.7	62.5	59.7	58.7

The percentage of the racial gap in income poverty explained by characteristics was about 96 (93) percent when using FGT(2), with family background contributing 16 (20) percent to the gap. Education played a similar role, explaining 18 (21) percent (see Table A4 in the Appendix). In the case of expenditure, characteristics explained 99 (97) percent of the gap in the case of FGT(2).

Family background was even more relevant in relative terms for colored people, because it explained 57 (62) percent of the racial gap in income poverty incidence. It was, in fact, the main explicative factor for this group, and its inclusion made the overall gap being explained account for more than 100 percent, indicating that poverty for this group would virtually vanish if they had the same characteristics as whites, including family background. The head of household's educational level and demographic structure both explained another 35.5 (33) and 32 (26) percent, respectively.

3.4 Deprivation

Finally, we took into account the growing consensus stressing that the experience of poverty transcends financial poverty. That is, we adopted a more multidimensional perspective. We measured the racial gap in material deprivation with regard to different aspects, including needs insufficiently met, lack of appliances, and lack of access to basic services. Table 5 presents the results. First, we measured the percentage of individuals in each racial group that were deprived with respect to each single attribute. In all cases, Africans were deprived in a much higher proportion than whites, with the largest differentials (60 percentage points or more) found in the lack of appliances (e.g., washing machine, motor vehicle, microwave, and/or computer) and the lack of access to basic services (such as piped water or flush toilets).

Household characteristics explained a large share of this racial gap in cases where the population lacked access to basic services, such as rubbish collection (99 percent) or flush toilets (84 percent); lacked an electric or gas stove (92 percent); or received inadequate healthcare (89 percent) and food (82 percent). However, in other cases, characteristics explained less than half of the racial gap in deprivation, such as lacking access to a cell (53 percent) or landline (27 percent) phone, a computer (36 percent), or a washing machine (41 percent).

Table 5. Racial gap between Africans and whites in indicators of material deprivation in South Africa, NIDS, 2008

Single indicator	Africans	whites	differential	counterf.	% differential explained by				
					all	geog.	demog.	educ.	labor
Access to									
formal dwelling	30.5	0.5	30.1	9.1	71.4	33.6	10.1	28.4	-0.7
piped water	66.8	5.5	61.4	75.8	69.5	44.9	2.9	23.1	-1.4
flush toilet	58.6	0.6	58.0	89.9	83.8	60.1	4.5	22.4	-3.3
electricity	23.2	1.4	21.8	93.3	75.7	50.7	-2.9	31.0	-3.1
landline telephone	94.0	49.0	45.0	18.3	27.3	11.6	6.3	6.1	3.3
cellphone	11.6	4.7	6.9	92.1	53.1	-60.9	-29.6	126.2	17.4
rubbish collection	55.0	4.3	50.7	95.0	98.6	73.8	1.3	24.8	-1.3
street lighting	66.6	11.9	54.7	71.7	70.1	55.1	0.6	17.7	-3.3
Insufficient needs									
Food	42.8	10.2	32.7	16.2	81.6	11.5	24.3	46.3	-0.6
Housing	42.9	10.9	32.0	21.1	68.0	10.1	12.2	35.7	10.0
Clothing	44.5	18.1	26.4	28.1	62.1	6.6	9.7	38.3	7.6
healthcare	44.6	19.4	25.2	22.2	88.7	16.1	30.7	39.3	2.7
schooling	32.9	5.6	27.3	11.2	79.6	12.6	29.7	35.7	1.5
Ownership									
radio	32.4	17.6	14.7	75.2	51.0	-19.3	27.0	43.2	0.2
TV	34.4	7.0	27.4	80.5	54.5	27.8	-5.0	32.4	-0.7
VCR/DVD	71.5	16.8	54.6	66.3	69.2	26.0	2.6	37.3	3.4
computer	93.6	33.9	59.7	28.0	36.3	6.2	3.6	22.4	4.0
electric/gas stove	36.1	9.8	26.3	88.1	92.0	45.1	-2.0	50.3	-1.4
microwave	72.7	14.3	58.4	68.1	69.9	30.1	5.5	31.7	2.6
fridge/freezer	46.5	5.6	40.9	84.2	75.0	31.5	4.5	35.2	3.8
washing machine	85.1	10.1	75.0	45.5	40.8	15.8	4.0	18.0	2.9
motor vehicle	88.1	18.7	69.4	45.7	48.7	9.3	8.0	25.2	6.2
Composite indicator									
average	0.58	0.13	0.45	0.30	62.8	28.4	5.6	27.0	1.8
p99	50.4	1.0	49.4	8.1	85.4	47.6	3.5	35.6	-1.2
p95	74.4	5.0	69.4	22.3	74.9	32.8	8.0	31.3	2.8
p90	87.5	10.0	77.5	45.7	53.5	18.4	6.5	25.2	3.3
p75	94.6	25.0	69.6	65.1	42.1	13.9	4.9	17.9	5.5
p50	98.6	50.0	48.6	86.9	23.9	3.0	7.9	11.6	1.5

The main factors explaining these deprivations varied in each case. Unequal geographical distribution is associated to a larger extent with deprivation in terms of access to basic services, such as rubbish collection (74 percent), flush toilets (60 percent), street lighting (55 percent), or piped water (45 percent), as well as lacking appliances, such as an electric/gas stove (45 percent). Education appeared responsible to a larger extent for insufficient provision of food (46 percent), healthcare (39 percent),

clothing (38 percent), and schooling and housing (36 percent), as well as for access to a cell phone (126 percent) or an electric/gas stove (50 percent) and a radio (43 percent). Family demographics were also relevant, to a lesser extent than education, for insufficient healthcare (31 percent), schooling (30 percent), and food (24 percent) and the lack of a radio (27 percent). Labor-related factors were relevant only in explaining the lack of a cell phone (17 percent), as well as sufficient housing (10 percent) and clothing (8 percent).

As a second step, we constructed for each individual a composite indicator defined as the weighted average of deprivation in each attribute, with weights estimated using MCA, as described in the previous section. This indicator measured the degree of accumulation of different forms of deprivation in the same individuals, accounting for 86 percent of the variability (principal inertia) of the original variables.[28] The last six rows of Table 5 display these results, jointly with the average of the indicator.

On average, deprivation among Africans was 58 percent of the maximum level (deprived in all attributes), as compared to 13 percent in the case of whites. To compare the distribution of this indicator for Africans and whites, we computed the percentage of Africans with a level of deprivation higher than that for whites at different percentiles of the whites' distribution.[29] Half of the African population experienced deprivation above the 99th white percentile (as compared to 1 percent of whites, by design), and this proportion increased to 74 percent at the 95th percentile, reaching 99 percent at the median of the whites' distribution. The higher deprivation of Africans at the 99th percentile could mostly (85 percent) be attributed to their household characteristics, but this share decreased sharply as we moved from more severe to more moderate deprivation (that is, from more to less accumulation of deprivation): 75 percent (95th), …, 24 percent (50th). Therefore, only severe deprivation was explained by the unequal distribution of characteristics by race. The share explained for the 99th

[28] The remaining 14 percent is accounted for by other three residual dimensions, not used for constructing the index, which are orthogonal with the main one, primarily explaining some rare profiles. The (negative) correlation of the individual composite indicator or deprivation with income and expenditure is of 47 and 50 percent, respectively.

[29] Table A5 in the Appendix reports basic information about the MCA. The square correlation of dummy categories with the indicator was on average 0.85, with the largest values (above 0.95) for formal dwelling, DVD, and microwave and the lowest values (between 0.6 and 0.7) for needs met insufficiently. The largest contribution was then made by the lack of a washing machine, microwave, vehicle, computer, or DVD or piped water (between 0.040-0.055), and the lowest by the lack of a cellular phone or radio (0.001-0.005).

(95th) percentile is in fact similar to the case of the lower (upper) bound financial poverty threshold. The main difference between material deprivation and poverty came, however, from the main contributors to the racial gap. The geographical factors turned out to be much more relevant in explaining extreme material deprivation than in the case of poverty, 48 (33) percent of the gap for the 99th (95th) percentile. The predominance of geographical factors for the deepest deprivation is related to the previous results in which this factor was shown to be crucial in gaining access to basic services. The contribution of this factor decreased sharply for lower percentiles (3 percent at the median). The second most important factor in explaining the gap in extreme deprivation levels by race was the head of household's educational level, which explained 36 percent of the gap at the 99th percentile. Its relevance also decreased with lower levels of deprivation, but less sharply than that of location: The contribution of both factors was similar for the 95th percentile, but the head of household's educational level became the main factor for lower percentiles. The results for the average deprivation showed that 63 percent of the racial gap was explained by characteristics, namely geographical and educational factors, in a similar proportion (28 and 27 percent), but this masked the different role that these factors played at different levels of the distribution of deprivation discussed above.

The inclusion of family background as an explicative factor had a similar effect in deprivation as with poverty (see Table 6). First, it substantially increased the percentage of the gap explained by characteristics by reducing the effect of unobservables. Deprivation in most attributes was explained by characteristics by 75 percent or more with few exceptions (only about 30 percent for lack of landline phone and computer and about 70 percent for lack of radio and washing machine). Second, family background turned out to be a factor as relevant as education and geographical location, explaining between 20 and 40 percent of the gap in most cases (except for the 10 percent explained by lack of a landline phone and computer and the 100 percent explained by the lack of a cellphone). Third, the proportion explained by the other two main factors were generally reduced but with the same qualitative relevance as before.

Table 6. Racial gap between Africans and whites in deprivation indicators in South Africa with family background, NIDS, 2008

Single indicator	counterfactual	% differential explained by					
		all	geographic	demographic	education	labor	family background
Access to							
formal dwelling	5.0	84.7	35.0	13.3	25.3	-7.5	18.7
piped water	81.2	78.2	40.3	3.2	18.8	-3.4	19.3
flush toilet	96.0	94.2	50.9	6.0	19.6	-5.0	22.6
electricity	96.2	89.1	41.5	1.5	25.8	-4.7	24.9
landline telephone	20.3	31.7	0.6	16.8	10.2	-6.3	10.4
cellphone	96.6	118.7	-23.3	-34.1	83.5	-8.3	100.8
rubbish collection	96.5	101.7	64.0	2.2	20.9	-6.0	20.6
street lighting	76.7	79.2	43.9	2.3	17.0	-3.4	19.4
Insufficient needs							
food	9.4	102.4	16.5	19.5	40.3	-6.8	32.9
housing	13.4	92.3	16.2	15.4	30.4	0.3	30.0
clothing	14.9	112.0	17.0	17.3	37.6	-2.6	42.7
healthcare	18.2	104.7	19.7	20.7	32.3	-2.6	34.6
schooling	5.2	101.4	16.3	23.4	31.0	-0.9	31.7
Ownership							
radio	78.1	71.3	-4.7	39.3	29.2	-12.1	19.6
TV	86.5	76.2	24.5	3.9	22.0	-2.2	28.1
VCR/DVD	77.2	89.0	21.1	5.7	28.9	3.5	29.9
computer	25.3	31.8	1.2	5.9	16.6	-5.1	13.1
electric/gas stove	91.8	106.4	37.6	1.4	37.4	0.2	29.8
microwave	74.9	81.6	26.0	6.6	24.2	-1.5	26.2
fridge/freezer	85.9	79.2	25.2	8.1	26.2	-0.5	20.2
washing machine	65.7	67.8	16.8	9.9	16.5	2.6	22.0
motor vehicle	63.9	74.9	11.7	12.8	21.2	6.3	23.0
Composite indicator							
average	0.24	77.1	25.0	8.6	22.4	-1.8	22.9
p99	3.2	95.2	40.7	8.0	27.8	-5.3	24.0
p95	18.9	79.9	28.8	8.7	22.4	0.9	19.1
p90	28.2	75.8	19.7	8.8	21.0	2.0	24.3
p75	43.4	73.0	16.8	8.6	17.3	3.3	27.1
p50	84.2	29.6	-2.8	13.4	11.7	-5.5	12.8

Similar results were found in the case of the composite indicator. Considering that, family background raised the share of the racial gap explained by characteristics on average and at all percentiles. Characteristics generally explained most of the gap, between 73 percent at the 75th percentile and 95 percent at the 99th (but still only 30 percent at the median). The qualitative roles of education and geographical location discussed above was preserved but with smaller shares. Family background explained

23 percent of the gap in average deprivation, similar to the other two main factors. But while the relevance of education and, especially, location still decreased for lower levels of deprivation, family background had no clear distributional profile (its largest share was at the 75th percentile and the lowest at the median). However, family background became the most important factor for the intermediate percentiles, 90th and 75th.

4. Conclusions

Africans in South Africa face higher poverty and deprivation than whites. These racial differentials are large even compared with those in other countries known for their high racial inequalities, such as Brazil and the United States. In this paper, we have investigated the extent to which the large racial poverty and deprivation differentials in South Africa can be explained by inequalities in distribution characteristics across races. To do so, we have estimated a counterfactual distribution in which Africans were given the characteristics of whites.

Our results showed that the higher levels of Africans' financial poverty and extreme material deprivation could be almost fully explained by the accumulation of past and present disadvantaged characteristics. We would underestimate the proportion of these differentials if we did not control for family background among the characteristics, which turned out to be a very relevant factor. Similarly, the role of current characteristics, especially education, was significantly overestimated. The effects of omitting past characteristics, such as occupation and years of schooling of household head's parents, were consistent with the fact that the reduction in the racial poverty differential after Apartheid was smaller than would be expected from the progress made by Africans in improving their characteristics so far, especially educational level and labor market outcomes. The trend in the estimation of the racial poverty differential, which cannot take family background into account, showed an increase in the unexplained part partially compensating for the big reduction in the explained differential, especially in income poverty. This inertia of past characteristics, which can be attributed to the specific history of racial inequality in this country, could burden future progress in reducing those racial gaps.

Regarding current characteristics, most of the poverty/deprivation differentials across groups were associated with the overrepresentation of Africans in rural areas, their

households having more children and dependent adults, and the head of household's having a lower educational level. The head of household's labor market status turned out to have a much lower degree of association with those differentials in post-Apartheid South Africa than previously. However, the role of each specific factor varied depending on which measure of well-being was used and, often, on the severity of poverty and deprivation being analyzed.

No factor took prominence in explaining the racial gap in poverty levels. Rather, the accumulation of mainly pre-labor market disadvantages among Africans produced higher poverty. Among the individual factors, educational level seemed the most important with income and expenditure poverty, but in the case of income, educational level was more important in explaining the differential in moderate than in severe poverty. In contrast, the predominance of Africans in rural areas and the poorest provinces was important in explaining poverty, but turned out to be the most important factor in explaining Africans' higher accumulation of deprivations, especially lack of access to basic services. Other forms of deprivation, such as insufficiently met needs, were more strongly associated, however, with lower educational level among heads of household. The head of household's educational level replaced location as the main factor associated with higher deprivation rates among Africans in more moderate forms of deprivation.

This studied further illustrated that gaps in poverty exist but are much lower for colored people. They were explained primarily by family background, jointly with educational level and family structure. In this case, educational level more clearly served as a proxy for family background and was the most important factor if not controlled for.

References

Agüero, J., M. R. Carter and J. Mayc (2007), "Poverty and Inequality in the First Decade of South Africa's Democracy: What can be Learnt from Panel Data from KwaZulu-Natal?", *Journal of African Economies*, 16 (5): 782-812.

Argent, J., Finn, A., M. Leibbrandt, and I. Woolard (2009), "Poverty: Analysis of the NIDS Wave 1 Dataset", NIDS Discussion Paper no. 13, South African Labour and Development Research Unit (SALDRU), School of Economics, University of Cape Town.

Asselin, L-M (2009), *Analysis of Multidimensional Poverty: Theory and Case Studies*, IDRC-CRDI and Springer, Economic Studies in Inequality, Social Exclusion and Well-Being, 7.

Bhorat, H., P. Naidoo and C. van der Westhuizen (2006), "Shifts in Non-income Welfare in South Africa, 1993-2004", DPRU Conference Paper 18-20, October, Johannesburg.

Blinder, A. S. (1973), ''Wage Discrimination: Reduced Form and Structural Estimates'', *Journal of Human Resources*, 8(4): 436–55.

Cappellari, L. and S.P. Jenkins (2004), "Modeling Low Income Transitions", *Journal of Applied Econometrics*, 19: 593–610.

Chantreuil, F. and A. Trannoy (1999), "Inequality Decomposition Values: the Trade-Off Between Marginality and Consistency", THEMA Working Papers 99-24, THEMA, Université de Cergy-Pontoise.

Desai, M. and A. Shah (1988), "An Econometric Approach to the Measurement of Poverty", *Oxford Economic Papers*, 40(3): 505-522.

DiNardo, J., N. M. Fortin, and T. Lemieux (1996), "Labor Market Institutions and the Distribution of Wages, 1973–1992: A Semiparametric Approach", *Econometrica* 64:1001–1044.

Fairlie, R. W. (1999), "The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-employment", *Journal of Labor Economics*, 17(1): 80-108.

Foster, J., J. Greer, and E. Thorbecke (1984), "A Class of Decomposable Poverty Measures", *Econometrica,* 52: 761-765.

Gradín, C. (2009), "Why Is Poverty So High Among Afro-Brazilians? A Decomposition Analysis of the Racial Poverty Gap", *Journal of Development Studies*, 45(9): 1-38.

Gradín, C. (2010), "Race and Income Distribution: Evidence from the US, Brazil and South Africa", Ecineq Working Paper Series 2010-179.

Gradín, C. (2011), "Poverty Among Minorities in the United States: Explaining the Racial Poverty Gap for Blacks and Latinos", forthcoming in *Applied Economics*.

Hoelscher, P. (2004), *A Thematic Study using Transnational Comparisons to Analyse and Identify what Combination of Policy Responses are Most Successful in Preventing and Reducing High Levels of Child Poverty*, Final report, European Commission, DG Employment and Social Affairs.

Hoogenveen, J., and B. Özler (2006), "Poverty and Inequality in Post-Apartheid South Africa: 1995- 2000", in H. Bhorat, and R. Kanbur, *Poverty and Policy in Post-Apartheid South Africa.* Cape Town: HSRC Press.

Klasen, S. (2000), "Measuring Poverty and Deprivation in South Africa", *Review of Income and Wealth*, 46(1): 33-58.

Leibbrandt, M., C. Woolard and I. Woolard (2009), "Poverty and Inequality Dynamics in South Africa: Post-Apartheid Developments in the Light of the Long-Run Legacy", Chapter 10, in: Aron, J., B. Kahn and G. Kingdon (eds.), *South African Economic Policy under Democracy*, Oxford, Oxford University Press.

Leibbrandt, M., I. Woolard, A. Finn, and J. Argent (2010), "Trends in South African Income Distribution and Poverty Since the Fall of Apartheid", OECD Social, Employment and Migration Working Papers No. 101.

Magnuson, K.A. and E. Votruba-Drzal (2009), "Enduring Influences of Childhood Poverty", in S. Danziger and M. Cancian (Eds.), *Changing Poverty, Changing Policies*, New York, NY: Russell Sage.

May, J. (Editor) (2000), *Poverty and Inequality in South Africa: Meeting the Challenge*, David Phillip Publishers, Cape Town, and Zed Books, London-New York.

Meth, C. (2006), "What was the Poverty Headcount in 2004 and how does it Compare to Recent Estimates by van der Berg *et al.*?", SALDRU Working Paper 01/2006, School of Economics, University of Cape Town.

Oaxaca, R. L. (1973), ''Male-female Wage Differentials in Urban Labor Markets'', *International Economic Review*, 14(3): 693–709.

Özler, B. (2007), "Not Separate, Not Equal: Poverty and Inequality in Post-Apartheid South Africa", *Economic Development and Cultural Change*, vol. 55(3): 487-529.

Tsakloglou, P. and F. Papadopoulos (2002), "Poverty, Material Deprivation and Multi-dimensional Disadvantage During Four Life Stages: Evidence from the ECHP", in M. Barnes, C. Heady, S. Middleton, J. Millar, F. Papadopoulos and P. Tsakloglou (eds) *Poverty and Social Exclusion in Europe*. Cheltenham: Edward Elgar.

Sastre, M. and A. Trannoy (2002), "Shapley Inequality Decomposition by Factor Components: Some Methodological Issues", *Journal of Economics* 9: 51-89.

Seekings, J. (2007), "Poverty and Inequality after Apartheid", Centre for Social Science Research, Working Paper No. 200, September, University of Cape Town.

Shorrocks, A. (1999), "Decomposition Procedures for Distributional Analysis: a Unified Framework Based on the Shapley Value", Mimeo, University of Essex.

Statistics South Africa (2000), *Measuring Poverty in South Africa*, Pretoria: Statistics South Africa.

Van der Berg, S., M. Louw and D. Yu (2008), "Post-transition Poverty Trends Based on an Alternative Data Source", *South African Journal of Economics,* 76(1): 58-76.

Van der Berg, S. and M. Louw (2004), "Changing Patterns of South African Income Distribution: Towards Time Series Estimates of Distribution and Poverty", *South African Journal of Economics*, 72(3): 546-572.

Yun, M-S. (2004), "Decomposing Differences in the First moment", *Economics Letters*, 82(2): 275-280.

Table A1 Regressors: average values and standard errors (s.e.) of continuous variables

	Africans		Whites			Africans		Whites	
NIDS, 2008	**mean**	**(s.e)**	**mean**	**(s.e)**	**PSLSD, 1993**	**mean**	**(s.e)**	**mean**	**(s.e)**
Western Cape	0.038		0.263		Cape	0.062		0.259	
Eastern Cape	0.155		0.043		Transvaal (ref.)	0.205		0.553	
Northern Cape	0.012		0.021		Orange F. S.	0.059		0.072	
Free State/North West	0.224		0.106		rest of the country	0.675		0.116	
Kwazulu Natal	0.149		0.089		rural area	0.667		0.085	
Gaunteg (ref.)	0.208		0.342		n. of children	2.93	(2.27)	1.07	(1.17)
Mpumalanga	0.081		0.103		n. of adults	4.58	(2.51)	2.81	(1.22)
Limpopo	0.133		0.032		dependency ratio	0.64	(0.29)	0.32	(0.28)
rural area	0.619		0.029		*Household head:*				
n. of children	2.23	(1.96)	0.76	(0.94)	female	0.321		0.094	
n. of adults	3.39	(2.10)	2.41	(0.95)	age (missing)	0.031		0.002	
dependency ratio	0.58	(0.33)	0.33	(0.30)	24 years old or less	0.013		0.030	
Household head:					25-55 years old	0.563		0.795	
Female	0.521		0.231		56+ years old	0.393		0.173	
24 years old or less	0.053		0.034		spouse present (ref.)	0.592		0.860	
25-55 years old (ref.)	0.642		0.654		deceased spouse	0.248		0.037	
56+ years old	0.305		0.312		absent spouse	0.099		0.038	
married (ref.)	0.408		0.721		no spouse	0.062		0.065	
single with partner	0.104		0.034		5-years migrant	0.070		0.214	
divorced/widow(er)	0.218		0.187		years of sch. (missing)	0.014		0.005	
never married	0.270		0.058		years schooling	4.53		11.83	
immigrant (missing)	0.056		0.078		labor status (missing)	0.174		0.015	
non-immigrant (ref.)	0.719		0.491		Not Economically Active (ref.)	0.335		0.117	
internal immigrant	0.197		0.343		discouraged unemployed	0.038		0.004	
immigrant from abroad	0.028		0.088		strictly unemployed	0.022		0.012	
5 years-migrant	0.135		0.294		formal employee	0.335		0.738	
years of sch. (missing)	0.024		0.038		self-employed	0.063		0.100	
years of schooling	6.50		12.27		casual employed	0.033		0.013	
labor status (missing)	0.122		0.212		no occupation (or missing) (ref.)	0.633		0.238	
Not Economically Active (ref.)	0.328		0.186		professional	0.026		0.240	
discouraged unemployed	0.033		0.021		manager	0.005		0.165	
strictly unemployed	0.092		0.028		clerical/sales	0.026		0.100	
formal employee	0.305		0.405		transport	0.040		0.027	
self-employed	0.075		0.125		service	0.061		0.044	
casual employed	0.045		0.023		farming	0.033		0.008	
no occupation (or missing) (ref.)	0.635		0.462		artisan	0.021		0.107	
manager	0.012		0.092		foremen	0.012		0.040	
professional	0.034		0.132		operator	0.039		0.025	
technician	0.006		0.057		laborer	0.105		0.004	
clerk	0.022		0.063						
service worker	0.047		0.026						
skilled farmer	0.021		0.005						
craft trade worker	0.062		0.127						
operator	0.047		0.023						
elementary occupation	0.113		0.013						

Table A2 Logit regressions of the probability of being white (vs. African): coefficients and standard errors (s.e.)

NIDS, 2008	Coefficient (1)	s.e.	Coefficient (2)	s.e.	PSLSD, 1993	Coefficient (3)	s.e.
Western Cape	2.08	0.31	1.61	0.40	Cape	1.29	0.17
Eastern Cape	-0.93	0.42	-1.01	0.53	Orange F. S.	-0.92	0.23
Northern Cape	0.59	0.45	0.14	0.57	rest of the country	-1.86	0.21
Free State /North West	0.39	0.35	0.24	0.51	rural area	-1.24	0.21
Kwazulu Natal	-0.89	0.45	-1.24	0.35	n. of children	-0.54	0.05
Mpumalanga	0.17	0.38	0.42	0.36	n. of adults	-0.23	0.05
Limpopo	-0.32	0.48	-0.25	0.44	dependency ratio	-1.13	0.25
rural area	-2.93	0.28	-2.67	0.29	*Household head:*		
n. of children	-0.60	0.11	-0.65	0.11	female	0.25	0.22
n. of adults	-0.32	0.09	-0.23	0.09	25-55 years old	-0.85	0.31
dependency ratio	-1.18	0.38	-1.54	0.45	56+ years old	-0.29	0.34
Household head:					deceased spouse	-1.56	0.27
female	-0.34	0.29	-0.48	0.28	absent spouse	-2.29	0.28
25-55 years old	-0.93	0.52	-0.18	0.57	no spouse	-1.68	0.23
56+ years old	-0.06	0.58	0.97	0.58	5-years migrant	0.84	0.18
single with partner	-2.14	0.40	-2.19	0.45	years schooling	-0.14	0.06
divorced/widow(er)	-0.14	0.32	0.05	0.31	years schooling^2	0.03	0.00
never married	-3.06	0.41	-3.09	0.48	discouraged unemployed	-1.77	0.66
internal immigrant	-0.11	0.27	-0.28	0.29	strictly unemployed	-0.27	0.43
immigrant from abroad	-0.70	0.47	-1.27	0.64	formal employee	-2.08	1.34
5 years-migrant	-0.18	0.27	-0.08	0.32	self-employed	0.66	0.24
years of schooling	1.07	0.20	0.95	0.22	casual employed	-3.15	1.39
years of schooling^2	-0.03	0.01	-0.03	0.01	professional	2.50	1.34
discouraged unemployed	-0.26	0.71	0.14	0.56	manager	4.69	1.38
strictly unemployed	-0.41	0.88	-0.87	0.79	clerical/sales	2.52	1.34
formal employee	-0.35	0.45	-0.96	0.61	transport	1.35	1.36
self-employed	0.61	0.39	0.10	0.52	service	1.31	1.34
casual employed	-0.94	0.74	-1.06	1.00	farming	1.57	1.23
manager	-0.16	0.52	0.34	0.53	artisan	3.25	1.34
professional	-0.36	0.47	-0.23	0.59	foremen	2.94	1.35
technician	0.82	0.60	0.70	0.68	operator	1.60	1.32
clerk	-0.18	0.51	-0.20	0.60	laborer	-0.59	1.48
service worker	-1.62	0.57	-1.34	0.72	intercept	0.22	0.44
skilled farmer	0.31	0.70	1.68	0.83			
craft trade worker	0.30	0.48	0.55	0.58			
operator	-1.50	0.62	-0.98	0.71			
elementary occupation	-2.78	0.67	-2.38	0.81			
intercept	-5.10	1.36	-7.56	1.72			
Pseudo R^2	0.60		0.72			0.70	
Wald $\chi^2(39; 61;34)$	467		410			1,177	
Prob > χ^2	0		0			0	
N. observations	23,586		23,586			39,171	

Notes: Some dummies have been added for variables with many missing values. Specification (2) includes controls for parents' education and occupation. Similar regressions have been run for whites vs. colored people but were omitted here. Reference: married male household head, 15-24 years old, non-migrant, formal employee in elementary occupation, in urban Gauteng for NIDS sample (Transvaal for PSLSD sample).

Table A3. Racial poverty gap between Africans and whites in South Africa, FGT(1) and FGT(2) (lower and upper poverty lines)

	FGT(1)								FGT(2)							
	Income				Expenditure				Income				Expenditure			
	Lower		Upper		Lower		Upper		Lower		Upper		Lower		Upper	
	2008	1993	2008	1993	2008	1993	2008	1993	2008	1993	2008	1993	2008	1993	2008	1993
Unexplained differential (%)	10.3	0.2	21.0	3.6	7.9	2.7	17.0	6.0	8.0	-29.5	16.7	-2.6	6.5	2.1	11.6	4.1
Explained differential (%)	89.7	99.8	79.0	96.4	92.1	97.3	83.0	94.0	92.0	129.5	83.3	102.6	93.5	97.9	88.4	95.9
Geographic	28.0	17.9	19.5	12.9	19.4	19.0	18.1	15.0	29.0	25.6	23.6	16.5	19.5	20.4	19.0	17.2
Province	4.0	10.0	-1.0	6.7	-2.5	10.0	-2.4	9.5	3.9	14.9	1.2	9.0	-2.6	10.1	-2.4	9.9
Rural	24.1	7.9	20.5	6.2	22.0	9.4	20.6	8.7	25.2	10.7	22.4	7.5	22.1	9.5	21.4	9.1
Demographic	27.0	20.0	22.5	18.1	28.8	20.8	20.8	18.7	28.8	26.1	24.5	19.9	30.8	21.6	24.9	20.0
Marital status	6.1	1.1	3.9	1.3	2.1	0.5	3.0	1.1	7.1	1.6	4.8	1.2	1.0	0.2	2.5	0.9
Immigration	-1.5	0.5	-2.0	0.5	-1.8	1.6	-2.0	1.1	-1.2	0.3	-1.8	0.5	-1.6	1.5	-1.9	1.3
Sex	2.4	-0.6	3.0	-0.6	1.6	-0.7	1.6	-0.7	2.4	-0.7	2.8	-0.6	1.6	-0.7	1.5	-0.7
Age	-2.7	-0.8	-5.3	-1.4	-4.8	-2.7	-4.9	-2.2	-1.9	-0.3	-4.2	-1.0	-4.6	-2.7	-4.6	-2.5
N. of Children	18.8	15.1	17.4	13.2	20.6	21.7	14.7	14.7	18.8	19.8	18.0	14.8	22.4	23.8	17.6	18.2
N. of Adults	4.1	4.7	5.5	5.1	11.0	8.5	8.3	6.6	3.6	5.4	4.8	5.0	12.1	8.7	9.7	7.6
Head's Education	26.5	41.2	30.5	43.9	40.5	40.5	40.5	42.2	25.0	50.5	28.0	44.3	40.1	39.1	41.0	41.3
Labor	8.1	20.6	6.5	21.4	3.3	16.9	3.5	18.0	9.2	27.3	7.2	21.9	3.1	16.7	3.5	17.4
Head's status	-1.6	-12.2	-3.1	-11.3	-2.0	-1.7	-2.3	-1.7	-1.3	-16.2	-2.5	-12.4	-1.8	-1.6	-2.0	-1.8
Head's occupation	-4.9	25.5	-3.8	26.4	-3.5	4.2	-2.1	4.4	-5.7	32.9	-4.4	27.1	-4.3	3.8	-2.8	4.4
Dependency ratio	14.6	7.3	13.4	6.3	8.8	0.9	7.9	0.9	16.2	10.6	14.1	7.2	9.1	0.9	8.3	0.9

Table A4. Racial poverty gap between Africans and whites in South Africa with family background, FGT(1) and FGT(2) (lower and upper poverty lines)

	FGT(1)				FGT(2)			
	Income		Expenditure		Income		Expenditure	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Unexplained differential (%)	5.9	7.3	1.1	4.7	4.3	7.0	1.1	2.8
Explained differential (%)	94.1	92.7	98.9	95.3	95.7	93.0	98.9	97.2
Geographic	25.2	20.8	18.6	18.2	25.5	23.0	18.1	18.6
Province	5.4	2.3	-0.1	0.6	5.4	3.7	-0.4	0.2
Rural	19.8	18.5	18.7	17.7	20.1	19.3	18.5	18.3
Demographic	24.0	21.5	21.7	16.9	25.6	22.8	22.3	19.3
Marital status	4.7	4.7	0.7	2.6	5.2	4.7	-0.2	1.6
Immigration	-4.0	-4.6	-3.0	-3.9	-3.5	-4.3	-2.5	-3.4
Sex	2.9	3.2	2.1	2.1	2.9	3.1	1.9	2.1
Age	-1.9	-4.2	-5.8	-5.4	-0.3	-3.0	-5.5	-5.5
N. of Children	19.1	18.3	20.7	15.9	18.4	18.6	21.3	18.3
N. of Adults	3.2	4.0	7.0	5.5	2.8	3.6	7.3	6.3
Head's Education	19.5	22.5	28.7	29.6	18.1	20.6	28.9	29.3
Labor	7.8	5.6	1.5	1.1	10.3	6.8	1.5	1.2
Head's status	-7.0	-7.6	-4.8	-4.5	-7.0	-7.4	-5.3	-4.6
Head's occupation	-1.1	0.0	-0.8	-0.1	-1.1	-0.5	-1.4	-0.5
Dependency ratio	15.9	13.2	7.0	5.6	18.4	14.7	8.2	6.3
Family background	17.6	22.3	28.4	29.5	16.2	19.8	28.0	28.8

Table A5. MCA: deprivation composite indicator of Africans and whites in South Africa

Burt/adjusted inertias

Dimension	principal inertia	percent	cumulative percent
dim 1	0.07608	86.33	86.33
dim 2	0.00500	5.67	92.00
dim 3	0.00064	0.72	92.72
dim 4	0.00054	0.61	93.33
Total	0.08812	100	
(22,193 obs.)			

Statistics for column categories in standard normalization

Categories		coordinate	square correlation	contribution	Categories		coordinate	square correlation	contribution
formal dwelling	no	0.586	0.966	0.011	healthcare	no	0.611	0.639	0.01
	yes	-1.56	0.966	0.03		yes	-0.849	0.639	0.014
piped water	no	1.513	0.928	0.041	schooling	no	0.489	0.658	0.008
	yes	-0.997	0.928	0.027		yes	-1.141	0.658	0.018
flush toilet	no	1.336	0.862	0.039	radio	no	0.239	0.858	0.002
	yes	-1.211	0.862	0.035		yes	-0.538	0.858	0.004
electricity	no	0.509	0.895	0.009	TV	no	0.704	0.914	0.015
	yes	-1.931	0.895	0.035		yes	-1.533	0.914	0.034
landline telephone	no	2.678	0.936	0.035	VCR/ DVD	no	1.6	0.959	0.04
	yes	-0.324	0.936	0.004		yes	-0.837	0.959	0.021
cellphone	no	0.119	0.86	0.001	computer	no	2.75	0.919	0.044
	yes	-0.978	0.86	0.005		yes	-0.401	0.919	0.006
rubbish collection	no	1.169	0.835	0.031	electric/ gas stove	no	0.744	0.916	0.017
	yes	-1.189	0.835	0.032		yes	-1.49	0.916	0.034
street lighting	no	1.245	0.85	0.028	microwave	no	1.768	0.954	0.048
	yes	-0.803	0.85	0.018		yes	-0.891	0.954	0.024
food	no	0.676	0.681	0.013	fridge/ freezer	no	0.959	0.929	0.024
	yes	-1.042	0.681	0.019		yes	-1.319	0.929	0.033
housing	no	0.675	0.66	0.013	washing machine	no	2.306	0.928	0.055
	yes	-1.035	0.66	0.019		yes	-0.684	0.928	0.016
clothing	no	0.679	0.631	0.012	motor vehicle	no	2.329	0.925	0.048
	yes	-0.951	0.631	0.017		yes	-0.557	0.925	0.011