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Social stratification, life chances and vulnerability to poverty in South Africa

by
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Social stratification, life chances and vulnerability to poverty in South Africa

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Abstract

The wave of upbeat stories on the developing world's emerging middle class has reinvigorated a debate on how social class in general and the middle class in particular ought to be defined and empirically measured. The contribution this paper makes to this literature is both conceptual and empirical. The conceptual contribution consists in proposing a schema of social stratification with particular relevance for the emerging and developing country context marked by high economic insecurity. Building on a recently developed framework that defines the middle class in relation to their (in)vulnerability to poverty, in this paper, we propose a multi-layered class model that differentiates five social classes: (i) the chronic poor, characterised by high poverty persistence, (ii) the transient poor, who have above average chances of escaping poverty, (iii) the non-poor but vulnerable, whose basic needs are currently being met but who face above average risks of slipping into poverty, (iv) the middle class, who are in a better position to maintain a non-poor standard of living even in the event of negative shocks, and (v) the elite, whose living standards situate them far above the average. The empirical contribution consists in the application of this conceptual innovation to the South African case using a model of poverty transitions that is fitted to four waves of panel data from the National Income Dynamics Study (NIDS) covering 2008 through to 2014/15. Given the classification derived in this paper, we find that only about 20 per cent of the South African population can be considered as stably middle class. Africans remain underrepresented in the middle class, and race is still one of the strongest predictors of poverty in South Africa. Members of larger, female headed, or rural households face a higher risk of poverty, and are less likely to enter the ranks of the middle class. Having access to stable labour market income, by contrast, is a key determinant for households to achieve economic stability in South Africa.

Keywords: South Africa; social class; poverty dynamics; vulnerability

JEL Classification: D31, I32, C32, C35

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1. Introduction

What defines the middle class? While seemingly countless interpretations exist, most definitions of what constitutes the middle class relate in some way to the degree of economic security and self-sufficiency that people experience. There is a common understanding that being middle class entails being free from poverty, which means being able to afford the basic things in life – not only today, but also tomorrow. It is actually this very confidence which many people will name first when being asked what makes them self-identify as middle class.² It is about the freedom they have to decide what to spend their money on, and the stability needed to engage in mid- and long-term planning. It is also about the opportunities they are given to move ahead in life, which some people never get, and about the financial cushion that allows them to take risks and to cope with adverse shocks.³

This understanding of the middle class as an ‘empowered’ and economically secure part of society is indeed inherent to many of the expectations commonly placed on this class’s role in politics and economic development. Besides its purchasing power and potential to boost domestic consumption, the list of favourable value orientations often ascribed to the middle class is long. It includes traits such as a commitment to saving and investment, a belief in meritocracy, entrepreneurial spirit and the importance attached to education (Cárdenas et al. 2011). Broadly, in the tradition of modernisation theory, a sizeable and well-established middle class has been associated with a shift in public priorities away from a focus on ‘basic needs’ towards so-called ‘higher order’ goods, which may benefit the creation and consolidation of good institutions in general and democratic rule in particular (Inglehart 1990, Easterly 2001, Birdsall 2010). Sharply lower levels of economic scarcity and physiological insecurity are indispensable prerequisites – albeit no guarantees – for the middle class to live up to these ascribed tasks.

In face of the ambitious hopes placed in the middle class as torchbearers of both democracy and long-term economic growth, it is little wonder that upbeat stories about a rapidly expanding new middle class in Africa (AfDB 2011) have been excitedly embraced by the business community, policymakers and the media alike (Giesbert and Schotte 2016). However, much of this enthusiasm depends crucially upon the exact way in which the middle class is identified. In spite of a considerable body of research highlighting the dynamic nature of poverty (see, e.g., Dercon, 2006; Klasen and Waibel, 2012), more than a few studies in the economics literature statically locate the middle class just above the poverty line (for an extensive review of different approaches, see Zizzamia et al., 2016). These studies fail to acknowledge that being able to afford a certain basket of goods at a given point in time provides an insufficient indication of whether the same will be true in the near future, and even those who are currently non-poor may face a non-negligible risk of falling into poverty. Similarly, not all households below the poverty line are alike. Poverty tends to be self-perpetuating, but while some households may have always been poor, others may have suffered some negative financial shock that only temporarily pushed them into poverty (Glewwe and Gibson, 2006).

² See Phadi and Ceruti (2011) for a sociological study interviewing 2559 residents of Soweto. While interpretations of what constituted ‘basic goods or needs’ differed considerably, the notion of economic security was pervasive amongst the heterogeneous group which self-identified as middle class.

³ Evidence from the psychological and health literature has shown that vulnerability to poverty can reduce the well-being of households, even if a deterioration in material well-being does not materialise (Cafiero & Vakis, 2006). It is not only current income or consumption that matter for actual welfare, “but also the risks a household faces, as well as its (in)ability to prevent, mitigate and cope with these” (Klasen & Waibel, 2012: 17).

Based on these considerations, in this paper, we link the demarcation of social strata to an in-depth analysis of poverty transitions. In doing so, our contribution is both conceptual and empirical:

The *conceptual contribution* consists in proposing a class schema with particular relevance for the emerging and developing country context marked by high economic insecurity. While the idea of defining the middle class using a vulnerability criterion is not novel (see López-Calva and Ortiz-Juarez, 2014), we aim to strengthen and expand existing approaches in the economics literature in three ways: First, to our knowledge, this paper is the first that incorporates the differentiation between the middle class and a non-poor but vulnerable group into a social stratification schema that additionally differentiates between transient and chronic poverty. Second, we argue that the simple modelling framework used by existing studies to derive a vulnerability index that identifies the middle class lacks robustness, as it ignores a number of important findings from the poverty dynamics literature. Following Cappellari and Jenkins (2002, 2004, 2008), we employ a multivariate regression model that explicitly allows for possible feedback effects from past poverty experiences and accounts for potential endogeneity of initial conditions, unobserved heterogeneity, and non-random panel attrition – four factors insufficiently addressed in existing studies when estimating poverty risks. Third, we show that traditional social stratification variables (such as education and occupation) and demographic characteristics (such as race, gender, and household composition) are important predictors of poverty risks, which cannot be fully captured by current income or consumption levels alone. Therefore, we refrain from the definition of absolute monetary thresholds to identify class-layers and instead base our analysis directly on estimated risk cut-offs.

The *empirical contribution* consists in the application of the proposed conceptual framework to the South African case. The multivariate model of poverty transitions is fitted to four waves of panel data from the National Income Dynamics Study (NIDS) covering the period from 2008 to 2014/15. Four key findings emerge from this analysis: First, with an average population share close to 20 per cent between 2008 and 2014/15, the middle class that we identify is considerably smaller than the range of 30 to 55 per cent that other studies suggest (Visagie and Posel, 2013; Burger et al., 2014; Burger et al., 2015). Second, there is substantial genuine state dependence of poverty in South Africa. That is, the experience of poverty itself, independent of other household characteristics and resources, leads to a higher risk of future poverty. Third, we find that the transient poor, who were (temporarily) pushed into poverty but have above average chances of poverty exit, and the non-poor but vulnerable, who face above average risks of slipping into poverty, are highly similar in average household characteristics. For policy purposes, it may make sense to think of these two classes as one group that is characterised by comparatively high volatility and frequent movement into and out of poverty, which is clearly distinguishable from both the chronically poor and the stable middle class and elite – not only in terms of household characteristics, but likely also in policy needs.

The remainder of this paper is structured as follows: In Section 2 we provide a brief review of the existing literature, focusing on the interrelationship between class and social mobility. In Section 3 we develop our schema of social stratification based on a model of poverty transitions fitted to NIDS data. Section 4 profiles the five identified social classes for the South African case in terms of their relative size, growth, racial composition and other demographic characteristics, geographic location, labour market resources, and mobility patterns. Section 5 summarizes and concludes.

2. Enduring social inequality versus social mobility in class analysis

Theories of class and social stratification generally seek to account for patterns of systematised and enduring social inequality, understood as a condition whereby actors have unequal access to desired (economic or non-economic) resources (Arthur, 2014; Southall, 2016; Vandecasteele, 2015). Despite this common ground, it is widely acknowledged that class remains a contested concept with multiple definitions, understandings, and applications (see *inter alia* Burger et al., 2014; Southall, 2016; Zizzamia et al., 2016 for an overview). In what follows, we briefly review some key approaches to the study of social class from the theoretical and empirical literature. We concentrate on studies that assess the interrelationship between class and social mobility and that are of specific relevance for the South African context. While our focus is on the economic literature, to which this paper aims to add, we also attempt to provide a conceptual bridge to some contributions from sociology.

The conceptual roots of most class analyses can be traced back to the writings of Karl Marx and Max Weber. Unlike Marx, for whom individual movements between the capitalist and the working class were limited and with negligible consequences for the underlying class schema, Weber considered political and economic advancement of the working class to be possible. Accordingly, he interposed a continuum of groups whose positions were determined not only by property ownership (or the lack of it), but also by other factors that determine someone's life-time opportunities or 'life chances'.

Located in the Weberian line of thought, in the sociological literature there has emerged a well-established tradition of class and social mobility research that is centred on Goldthorpe's class schema.⁴ Goldthorpe's seven defined occupational categories are ranked by the type of tasks and skill levels, such that workers within each category should typically be comparable in terms of their earnings, degree of employment security, promotion opportunities, and degree of task autonomy (Goldthorpe, 1980). While the schema has been mainly confined to developed country analyses, several authors have proposed similar occupation-based approaches for the specific South African context (see, e.g., Crankshaw, 1997; Garcia-Rivero et al., 2003; Seekings and Nattrass, 2005). Among these, for example, the class schema suggested by Southall (2016) additionally differentiates between employment in the private and public sector as two distinct sources of economic and political power.

An important disadvantage of these occupation-based approaches, however, is that they create a large and highly heterogeneous, non-classifiable "residual" group of households without any direct link to the labour market. Visagie and Posel (2014) circumvent this problem by using a much less fine-grained three-tier class schema, where South Africa's "affluent" middle class is located in an income range equivalent to the expected income for households where the highest income earner is in an occupation that has typically been associated with the middle class.⁵ Households with incomes below or above this range are respectively considered as lower or upper class. The authors contrast this conceptualisation with a relative definition that identifies the middle class as the three middle

⁴ Goldthorpe (2000): (i) professional, administrative and managerial employees, higher grade; (ii) professional, administrative and managerial employees, lower grade; technicians, higher grade; (iii) routine non-manual employees, higher grade; (iv) small employers and self-employed workers; (v) supervisors of manual workers; technicians, lower grade; (vi) skilled manual workers; (vii) semi- and unskilled manual workers.

⁵ Middle class occupations include white collar professions such as managers, senior officials, legislators, professionals (e.g. teachers and nurses), associate professionals, technicians and clerks; whereas working class occupations would include plant and machinery operators, craft and related trade workers, skilled agriculture and fishery workers, service and market sales workers and all elementary occupations (Visagie, 2013a).

quintiles of the national income distribution (as suggested by Easterly, 2001 and Solimano, 2008 in cross-national studies; similar measures had been suggested by Levy et al., 2014 and Finn et al., 2013 for South Africa specifically). While the latter can be useful to assess progress at the median and the inclusiveness of economic growth, the authors argue that the affluence measure captures “those in society who have achieved a standard of living associated with economic stability and prosperity” (Visagie and Posel, 2014: 166). Other scholars focusing on the emerging and developing countries context, similarly argued that those in the actual middle will likely still be poor in absolute terms and are “unlikely to be the middle class as either historically defined or understood” (Bhalla 2007, p. 94).

In view of the above, the definition of absolute class thresholds appears preferable. However, an important decision researchers are confronted with in this case is whether the middle class starts just where poverty ends (Banerjee and Duflo, 2008; Ravallion, 2010), or whether there should be some intermediate group that separates those who can satisfy their most basic needs (but remain on the verge of falling into poverty) from a more economically stable middle class (AfDB, 2011). Arguing in favour of the latter, López-Calva and Ortiz-Juarez (2014) proposed an approach to defining the middle class anchored in the notion of economic security. For a set of Latin American countries, they find that a minimum income level of \$10 a day (in 2005 PPPs) is required for households to face a maximum risk to poverty of 10 per cent, which they consider the maximum acceptable degree of vulnerability for being considered middle class. Replicating the approach for South Africa, Zizzamia et al. (2016) locate the country’s middle class in an expenditure range of R3,104 to R10,387 (in January 2015 prices), equivalent to about \$13 to \$43.3 a day (in 2005 PPPs), which overlaps with Visagie and Posel’s (2014) affluence-based middle class definition. An important limitation to this approach, however, is that it assumes that the risk to poverty that a household faces can ultimately be summarised in an absolute income threshold. This simplifying assumption ignores that households with the same current income level can diverge substantially in their characteristics and associated poverty risks. A similar critique applies to Visagie and Posel’s (2014) affluence-thresholds.⁶

Alternatively, some scholars have used asset indices to proxy for both current household wealth and the ability to cope with negative economic shocks (for South Africa, e.g., see Udjo, 2008; McEwan et al., 2015). However, despite providing a comprehensive understanding of the standard of living of those in the middle class, these approaches remain silent on the sources of wealth as they give no indication where the assets originally came from or how there were financed. Burger et al. (2015) partly overcome this shortcoming by proposing a combined multi-dimensional approach to defining the middle class that closely builds on Sen’s capability approach. However, the functionings used to operationalise the capabilities considered essential for being middle class tend to capture very basic needs rather than a situation of economic empowerment (see Zizzamia et al., 2016).⁷ Building on the idea that members of the same class should share common life chances, Schotte (2017) recently suggested another multidimensional approach that combines an asset index with a measure for

⁶ There is no guarantee that the household that falls within the income bands defined by Visagie and Posel (2014) actually derive their income from the (relatively stable) occupations that have typically been associated with the middle class (compare Southall, 2016).

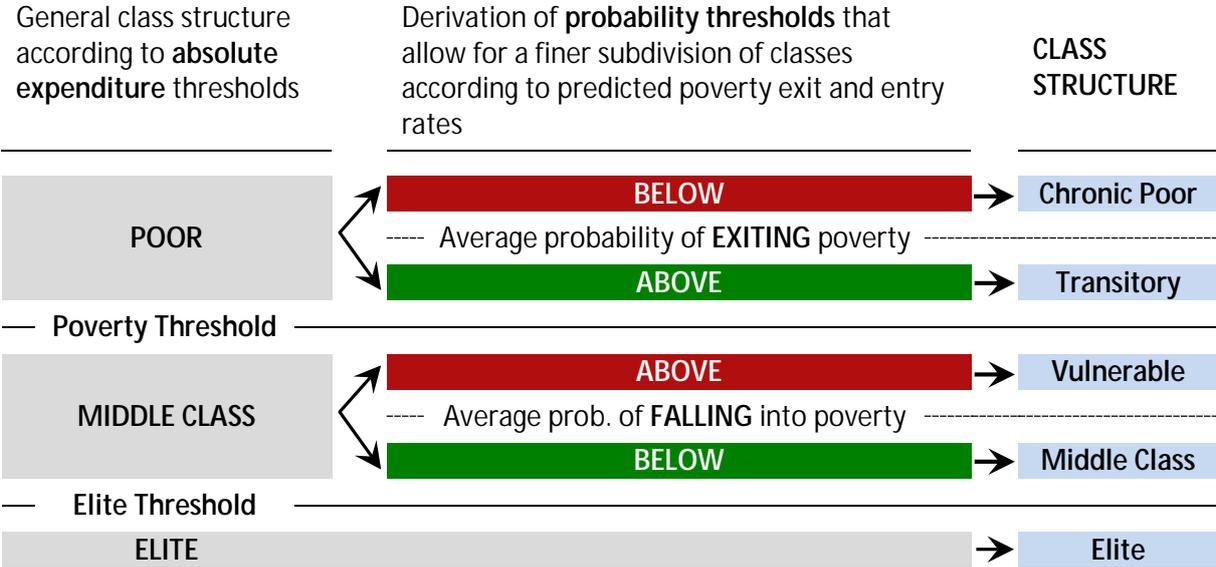
⁷ The four core capabilities Burger et al. (2015) define for being considered middle class include: (i) freedom from concern about survival and meeting basic needs, (ii) financial discretion and buying power, (iii) labour market power, and (iv) access to information and the ability to process information. The four core functionings are: (i) adequate sanitation and clean water, (ii) ownership of a stove and fridge, (iii) at least one employed member of the household, and (iv) TV and radio ownership, and literacy.

subjective well-being and a measure of perceived chances for social upward mobility. In this paper, we build on this and other preceding work (López-Calva and Ortiz-Juarez, 2014; Zizzamia et al., 2016).

3. A model of multi-layered social classes in South Africa

In what follows, we propose a multi-layered class schema for South Africa (see Figure 1), which takes expected upward and downward mobility and particularly vulnerability to poverty explicitly into consideration. The five defined classes diverge both in their absolute average standard of living and their risk of remaining in or falling into poverty.

Figure 1: Schema of social stratification based on current living standards and mobility patterns



Source: Authors' representation.
 Note: Solid lines denote absolute expenditure thresholds. Dashed lines denote probability thresholds.

We begin by assuming a standard division of society into three main classes: the poor or the lower class, the middle class, and the elite or the upper class. We understand the poor as those who are in an economically precarious situation in the present period, which does not allow them to satisfy their basic needs. In other words, the poor are those who fall below some commodity-based poverty line reflecting the average estimated cost of a consumption basket that is deemed to be adequate, with respect to both food and non-food components (see section 3.2 for details on the definition of the poverty line). Similarly, we understand the elite as those in society who enjoy a standard of living well above the national average (we arbitrarily fix the elite-threshold at two standard deviations above the average per capita household expenditure in our data).⁸

⁸ The definition of the upper- or elite-threshold is not the focus of this paper. The size of the middle class can be expected to be relatively robust to minor variations in this threshold, given that it lies in the upper tail of the distribution. However, while we consider the exact cut-off point to be less of a concern, we believe the definition of an elite to be particularly relevant in the South African context, marked by an outstanding concentration of wealth at the top of the distribution, particularly in the top quintile (see Zizzamia et al., 2016).

Taking on a dynamic perspective, we introduce two further sublayers (see Figure 1) that conceptually follow a similar idea as Sen’s capability approach to well-being (Sen 1993) or the Weberian concept of shared ‘life chances’ (1968). Based on our model of poverty transitions presented below, for each person we can predict the propensity to remain in or fall into poverty within a two-year time horizon – conditional on the household characteristics and the observed poverty status at present. We believe that these forward looking scores provide a more comprehensive understanding of a person’s (medium term) welfare prospects, than what we could gain by focusing on reported expenditure levels exclusively. Based on these latent poverty propensities, we distinguish those with chances of exiting poverty below the observed average exit rate and thus comparatively high risk of poverty persistence – the *chronically poor* – from those with above average chances of making it out of poverty – the *transient poor*.⁹ Analogously, among the ones currently above the poverty line, we distinguish those who face an above average risk of slipping into poverty – the *vulnerable* – from the more secure ‘actual’ *middle class* with a risk to entering poverty below the observed average entry rate and thus better chances to sustain a living above subsistence.

3.1 Modelling poverty entry and exit probabilities

We examine the determinants of transitions into and out of poverty following an approach developed by Cappellari and Jenkins (2002, 2004, and 2008) drawing on Stewart and Staffield (1999). In order to simultaneously account for initial condition effects, unobserved heterogeneity, and non-random panel attrition, the authors suggest using a multivariate probit model that jointly estimates a system of three equations, including (1) a first-order Markov process of poverty transitions between two consecutive panel waves, $t - 1$ and t , (2) the poverty status at $t - 1$ (in order to account for potential endogeneity of initial conditions), and (3) an equation for sample retention (to consider potential non-random attrition), allowing free correlation between the unobservables affecting each of these three processes.¹⁰ By specifying the current poverty status to be a function of the realised discrete poverty outcome in the last period (following a standard approach pioneered by Heckman, 1981b), we allow the impact of the variables that explain current poverty to vary conditional on whether the individual or household was initially poor or not. This way, the specification provides estimates for both poverty persistence and entry rates.

For each individual, $i = 1, \dots, N$, define P_{it} and P_{it-1} to be binary variables summarising the individual’s poverty status at time t and $t - 1$ respectively (measured at the household level), equal to one if i is poor and zero otherwise. Let R_{it} be a binary variable summarising panel retention, taking

⁹ Note that the extent of chronic poverty according to this relative, forward looking definition will be about five percentage points lower than what standard measures of chronic poverty – such as the *spells* (see, e.g., Bane and Ellwood, 1986) or the *components approach* (see Jalan and Ravallion, 1998) – suggest for South Africa.

¹⁰ Controlling for the observed and unobserved determinants of initial poverty status is important in presence of state dependence; this is, if there are reasons to believe that households who have experienced poverty in the past face a higher risk to experience poverty in the future (Heckman 1981a) – for example due to a poverty- or risk-related change in behaviour, constraints relevant for future choices, the depreciation of human capital, and alike. The need to control for unobserved heterogeneity in this respect results from the fact that individuals or households with more favourable characteristics will tend to leave poverty earlier (Heckman 1981a). In practice, the initial poverty status can hardly be considered exogenous. In other words, those who are observed to be poor in the first wave of data tend to be a non-random sample of the population, given that individuals with a higher tendency to remain permanently poor are likely to be overrepresented in the sample (Cappellari and Jenkins 2004; 2008). In addition, endogenous selection may occur with regard to the sub-sample of individuals for whom the poverty status is observed at two consecutive points in time.

a value of one if i is observed at both $t - 1$ and t , and zero if only observed at $t - 1$ (i.e. if i attrited from the sample). For each pair of consecutive waves, individuals can be characterised by the latent poverty propensities p_{it}^* and p_{it-1}^* , and a latent propensity of retention r_{it}^* that take the form:

$$p_{it}^* = [(P_{it-1})\gamma'_1 + (1 - P_{it-1})\gamma'_2]\mathbf{x}_{it-1} + u_{it} \quad \text{with } u_{it} = \mu_i + \delta_{it} \sim N(\mathbf{0}, \mathbf{1}) \quad (1)$$

$$p_{it-1}^* = \beta' \mathbf{z}_{it-1} + v_{it-1} \quad \text{with } v_{it-1} = o_i + \pi_{it-1} \sim N(\mathbf{0}, \mathbf{1}) \quad (2)$$

$$r_{it}^* = \psi' \mathbf{w}_{it-1} + \varepsilon_{it} \quad \text{with } \varepsilon_{it} = \eta_i + \xi_{it} \sim N(\mathbf{0}, \mathbf{1}) \quad (3)$$

and

$$P_{it} = I(p_{it}^* > 0) \quad \text{if } R_{it} = 1; \text{ unobserved otherwise} \quad (4)$$

$$P_{it-1} = I(p_{it-1}^* > 0) \quad (5)$$

$$R_{it} = I(r_{it}^* > 0) \quad (6)$$

where \mathbf{x}_{it-1} , \mathbf{z}_{it-1} , and \mathbf{w}_{it-1} are vectors of explanatory variables characterising individual i in her household in terms of base year vales, $\gamma'_1, \gamma'_2, \beta'$ and ψ' are vectors of parameter, and u_{it}, v_{it-1} and ε_{it} are the error terms defined as the sum of a normal individual-specific effect (μ_i, o_i, η_i) plus a normal orthogonal white noise error $(\delta_{it}, \pi_{it-1}, \xi_{it})$ where the latter follows a standard normal distribution. $I(\cdot)$ are binary indicator functions equal to one if the underlying latent propensity exceeds some unobserved value (which can be set to zero without loss of generality) and equal to zero otherwise. Note that for those individuals who drop out of the panel ($R_{it} = 1$), equation (4) if incidentally truncated, i.e. equation (6) describes a selection mechanism governing whether respondents enter the balanced 2-wave pooled panel and thus contribute to the estimation of poverty transitions.

For the model to be identified, exclusion restrictions are required. In other words, we will need to find a set of instrumental variables that affect the initial poverty status or panel retention (i.e. that enter equation (2) or (3)), but have no direct effect on poverty transitions (i.e. that are excludable from equation (1)). This is, we need to find variables entering \mathbf{z}_{it-1} or \mathbf{w}_{it-1} but not \mathbf{x}_{it-1} (see Section 3.2 for details). An alternative sufficient condition for identification would be to constrain the cross-equation correlations to zero from the outset. However, we follow Cappellari and Jenkins (2002, 2004, 2008) in estimating a general model with free correlation. This is we assume that the joint distribution of the unobservables $(u_{it}, v_{it-1}$ and $\varepsilon_{it})$ is trivariate standard normal with zero means and an unrestricted (and estimable) correlation structure. There are thus three correlations of interest to be estimated:

$$\begin{aligned} \rho_{21} &\equiv \text{corr}(u_{it}, v_{it-1}) = \text{cov}(\mu_i, o_i) && \text{the correlation between the unobservable} \\ &&& \text{factors affecting } P_{it-1} \text{ and } P_{it} \\ \rho_{31} &\equiv \text{corr}(v_{it-1}, \varepsilon_{it}) = \text{cov}(o_i, \eta_i) && \text{the correlation between the unobservable} \\ &&& \text{factors affecting } R_{it} \text{ and } P_{it} \\ \rho_{32} &\equiv \text{corr}(u_{it}, \varepsilon_{it}) = \text{cov}(\mu_i, \eta_i) && \text{the correlation between the unobservable} \\ &&& \text{factors affecting } R_{it} \text{ and } P_{it-1} \end{aligned} \quad (7)$$

The estimate of the correlation coefficient (ρ_{21}) that summarises the association between the unobservable individual or household-specific factors determining current poverty (error term equation (1)) and base year poverty status (error term equation (2)) will provide a test for initial conditions exogeneity. Here, a positive (resp. negative) sign indicates that individuals or households who are more likely to be initially poor (due to unobservable factors, holding observable characteristics fixed), are more (resp. less) likely to be poor in the next period. Similarly, a positive

(resp. negative) estimated correlation coefficient (ρ_{32}) between the error terms of equations (2) and (3) provides information on whether individuals or households who were more likely to be initially poor had a higher (resp. lower) likelihood of remaining in the sample. Finally, the estimated correlation coefficient (ρ_{31}) between the error terms of equations (1) and (3) tests for exogeneity of sample retention to poverty transitions, such that a positive (resp. negative) sign indicates that individuals or households who were more likely to be observed in two successive waves were more (resp. less) likely to either remain poor or fall into poverty.

The likelihood-ratio test of no correlation between the cross-equation error terms may allow for a simplification of the suggested model. Other things being equal, if $\rho_{21} = \rho_{32} = 0$, then there is no initial conditions problem, i.e. the initial poverty status may be treated as exogenous. Likewise, if $\rho_{31} = \rho_{32} = 0$, then the process governing panel attrition can be ignored. In both cases, the model would then reduce to a bivariate probit regression. Lastly, if $\rho_{21} = \rho_{31} = \rho_{32} = 0$ then poverty entry and exit equations may be estimated using simple univariate probit models (see Cappellari and Jenkins 2002, 2004, 2008).

The estimated parameter values allow predicting for each individual the *poverty persistence rate*, $s_{it} \equiv \Pr(P_{it} = 1 | P_{it-1} = 1)$, and the *poverty entry rate*, $e_{it} \equiv \Pr(P_{it} = 1 | P_{it-1} = 0)$, irrespective of the observed initial poverty status. The conditional probabilities are given by:

$$s_{it} \equiv \Pr(P_{it} = 1 | P_{it-1} = 1) = \frac{\Phi_2(\gamma_1' \mathbf{x}_{it-1}; \beta' \mathbf{z}_{it-1}; \rho_{12})}{\Phi(\beta' \mathbf{z}_{it-1})} \quad (8)$$

and

$$e_{it} \equiv \Pr(P_{it} = 1 | P_{it-1} = 0) = \frac{\Phi_2(\gamma_2' \mathbf{x}_{it-1}; -\beta' \mathbf{z}_{it-1}; -\rho_{12})}{\Phi(-\beta' \mathbf{z}_{it-1})} \quad (9)$$

where $\Phi_2(\cdot)$ and $\Phi(\cdot)$ denote respectively the cumulative density functions of the trivariate and the bivariate standard normal distribution (see Cappellari and Jenkins 2002, 2004, 2008).

3.2 Data, definitions and estimation

The econometric model specified above is fitted to panel data from the South African National Income Dynamics Study (NIDS) implemented by SALDRU at the University of Cape Town (SALDRU 2016a, b, c, d). NIDS is South Africa's first national panel study, which started with a nationally representative sample of over 28,000 individuals in 7,300 households. At present, there are four waves of data available, which are each spaced approximately two years apart, with the first survey being conducted in 2008. Data from pairs of consecutive waves $t - 1$ and t were pooled, such that the determinants of poverty persistence and entry rates are derived by analysing transitions from 2008 to 2010/11, 2010/11 to 2012 and 2012 to 2014/15 controlling for period specific fixed effects.¹¹

Households were classified as being poor versus non-poor using Statistics South Africa's (StatsSA) upper bound poverty line set at R992 (in January 2015 prices) per person per month, equivalent to about \$5.5 a day (in 2011 PPPs). The line is one of three national poverty lines published by StatsSA

¹¹ The post-stratified survey weights have been adjusted such that each period of wave-to-wave transitions accounts for the same share of observed transitions. This way, we aim to prevent our results to be over-proportionally influenced by transition periods for which more respondents could be tracked (note that attrition from the NIDS panel was highest in 2010). This adjustment is however found to have only a minor effect on the calculated average statistics (generally less than 0.5 percentage points difference).

in 2015 using a cost-of-basic-needs (CoBN) approach to capture different degrees of poverty. Among these, the food poverty line (FPL) is the level of consumption below which individuals are unable to purchase sufficient food to fulfil their caloric requirements, even if all expenditure is dedicated to food. The lower-bound poverty line (LBPL) allows for spending on non-food items, but requires that individuals sacrifice some food consumption in order to fulfil these non-food needs. Only at the upper-bound poverty line (UBPL), individuals can purchase both adequate food and non-food items. Given that we understand the satisfaction of basic needs a necessary condition for being considered middle class, we consider the UBPL the most adequate benchmark for our purposes.

Before moving on to the analysis, it is important to briefly highlight some of the limitation of the data at hand. The 2008 sample was drawn on a nationally representative basis and the poverty headcount (UBPL) calculated from this data based on per capita household income (56.7) or expenditure (60.1 per cent) closely matches official statistics (56.8 per cent).¹² However, the poverty trends observed over subsequent waves should be treated with caution. Using household expenditure, poverty increased up to 2010/11 and decreased subsequently up to 2014/15, with the strongest fall observed from 2012 to 2014/15. This general trend is consistent across key variables and robust across subsamples.¹³ Nevertheless, the data may overstate the reduction in poverty over the last two years of NIDS, given that it was not mirrored by a major event at the macro-level.¹⁴ As discussed below, our model explicitly controls for the observable and unobservable factors that are associated with both poverty dynamics and penal retention. This way we aim to limit the potential attrition bias resulting from the observation that NIDS over time may be capturing a certain section of the population that is somewhat more likely to be upwardly mobile. The observed dynamics in transitions matrices for the chances to exit poverty exit should thus be treated as an upper bound.

Before proceeding to the model, we aim to illustrate the relevance of issues such as state dependence, initial conditions, and selective attrition that have been ignored in previous attempts to define the middle class based on a vulnerability criterion. For this purpose, panel (a) of Table 1 shows the raw poverty transition matrix constructed using the restricted sample of individuals for whom two consecutive NIDS waves with non-missing expenditure data are available (74,217 observations).

¹² Using the 2008-2009 living conditions survey, a poverty headcount of 56.8 was estimated (http://www.statssa.gov.za/?page_id=739&id=1).

¹³ When using incomes instead of expenditures, an even stronger fall in the poverty headcount by more than ten percentage points between 2008 and 2014/15 is observed. A similar pattern emerges when restricting the sample to respondents that were successfully interviewed in all four waves.

¹⁴ By using a pooled panel of wave-to-wave transitions, the influence of the last survey wave should be limited.

Table 1: Poverty inflow and outflow rates (row %) between survey waves

Poverty status, year $t - 1$	Poverty status, year t		
	Non-poor	Poor	Missing
(a) Sample with non-missing expenditure at t			
Non-poor	73.97	26.03	
Poor	16.59	83.41	
<i>All</i>	35.55	64.45	
(b) All individuals			
Non-poor	55.34	19.47	25.19
Poor	14.20	71.42	14.37
<i>All</i>	29.05	52.67	18.28

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights).

Notes: Respondents are classified as poor if their household's per capita expenditure falls below the StatsSA UBPL of R992 (in January 2015 prices). Missing expenditure data at t arise either from sample attrition or incomplete response (see text for further details). The post-stratified survey weights used here have not been corrected for panel attrition.

As can be seen, the chances of being poor in a given year (not controlling for anything) differ substantially depending on the previous period's poverty status. Less than two in ten individuals who were poor in one wave were no longer poor in the next wave. By contrast, about seven in ten who were initially non-poor remained out of poverty. On average, the poverty rate among the former is more than 50 percentage points higher than the poverty rate among the latter. Note that this measure does not yet control for unobserved heterogeneity between individuals, an issue that the applied modelling framework will specifically account for (Jenkins, 2011).

Panel (b) of Table 1 draws attention to the issue of non-random attrition because of sample drop-out or item non-response. The potential arises not so much from the fact that about 18 per cent of the full pooled sample (90,674 observations) are not being retained from one wave to the other, but more from the observation that retention rates differ by poverty status in $t - 1$, with the initially non-poor showing a higher propensity of attrition. This raises questions of representativeness of the sample of 'stayers'. Our multivariate probit model allows for non-random retention and for its joint determination along with the initial conditions and poverty transition processes (Jenkins, 2011).

In proceeding to the endogenous switching regression, the choice of regressors follows the previous literature. Because the individual poverty status is identified using per capita household expenditure, all explanatory variables in our poverty transition equation (1) were also measured at the household level. They mostly summarize the demographic composition and labour market attachment of the household in which the individual lives. In this regard, the covariates either refer to the household head including demographics (age, age squared, gender, and race), level of education, and labour market status or occupation, or the household itself, including a set of variables capturing the composition and age structure of the household, the number of employed members and controls for geographic location. All variables were measured in the base year (wave $t - 1$) prior to a potential poverty transition (experienced in wave t) and, in line with most of the poverty modelling literature, are thus assumed to be pre-determined. For this very reason, variables summarising the occurrence of economic shocks or other types of 'trigger events' are not used in this specification.

As explained in the previous section, statistical identification of the model parameters requires exclusion restrictions. Specifically, we need to find a set of instrumental variables that affect initial poverty status or sample retention, but have no direct effect on poverty transitions. For the base-

year poverty status, we follow the previous literature in using a set of instruments summarising both the mother's and father's highest level of education attained (also including variables to indicate missing information on the items of interest). We add controls for the kind of work usually done by the parent in the current or last job in order to separate these labour market effects likely adding to the current income situation from the factors determining the respondent's parental background. Thus, the explanatory variables for initial conditions include all the variables to explain poverty transitions plus the parental background indicators, which are assumed to have a direct impact on the initial poverty status in the base-period, but not on poverty entry or exit in subsequent waves.

Following Cappellari and Jenkins (2002, 2004, and 2008) and Jenkins (2011), the set of instruments for sample retention includes a binary variable indicating whether the respondent is an original sample member (OSM) who has been in the NIDS panel since the first wave, or joined the survey later as temporary sample member (TSM) by moving in with or being born into an OSM household. Thus, the explanatory variables for the panel retention equation include all the variables to explain poverty transitions plus the sample membership control, which is assumed to affect panel retention or attrition, but be orthogonal to the poverty transition propensity.

Regarding the parental background indicators, the test results reported in Table 2 indicate that mother's schooling is significantly correlated with the initial poverty status and excludable from the poverty transition equation, whereas father's schooling does not satisfy the exclusion restriction. The variable for original sample membership can be excluded from the poverty transition equation, and is statistically significant in the sample retention equation.¹⁵ We are confident that the controls for mother's schooling and original sample membership allow identifying the system of equations.

¹⁵ We tried adding a dummy variable to the set of instruments for whether the respondent was classified by the interviewer as friendly and very attentive, or not. However, this variable did not fulfil the exclusion restriction.

Table 2: Estimates of model correlations, and model test statistics

	Estimate	s.e.
(a) Correlation coefficients between unobservables		
Base year poverty status and conditional current poverty status (ρ_{21})	-0.319***	0.053
Sample retention and conditional current poverty status (ρ_{31})	0.018	0.025
Sample retention and base year poverty status (ρ_{32})	0.059*	0.025
Null hypotheses for tests		
	Test statistic	p-value
(b) Wald test for exogeneity of selection equations		
Exogeneity of initial conditions, $\rho_{21} = \rho_{32} = \mathbf{0}$	41.48***	0.0000
Exogeneity of sample retention, $\rho_{31} = \rho_{32} = \mathbf{0}$	6.09**	0.0476
Joint exogeneity, $\rho_{21} = \rho_{31} = \rho_{32} = \mathbf{0}$	43.83***	0.0000
(c) Instrument validity		
Exclusion of mother's schooling from transition equation (d.f. = 10)	8.97	0.5397
Exclusion of sample membership status from transition equation (d.f. = 2)	4.69	0.1157
Exclusion of mother's schooling and sample membership status from transition equation (d.f. = 20)	13.74	0.3176
Inclusion of mother's schooling in initial conditions equation (d.f. = 5)	28.49***	0.0000
Inclusion of sample membership status in retention equation (d.f. = 1)	352.74***	0.0000
(d) Test of state dependence		
No state dependence, $\gamma'_1 = \gamma'_2$	249.59***	0.0000

Asymptotic standard errors are robust for the presence of repeated observations on the same individual.
*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights).

Note: Simulated pseudo maximum likelihood estimation with 250 random draws.

In order to assess the exogeneity of the two selection mechanism to the process of poverty transitions, in addition, we tested the separate and joint significance of the correlation coefficients. In Table 2, panel (a) reports the estimates of the cross-equation correlations between unobserved characteristics per se. In line with previous findings in the literature, we observe the correlation between unobservables affecting initial poverty status and conditional current poverty (ρ_{21}) to be negative and statistically significant, which can be interpreted as an example of Galtonian regression towards the mean (Stewart and Swaffield, 1999). The correlation coefficients between the unobservables affecting poverty transitions and sample retention (ρ_{32}) is not significantly different from zero. However, there is a significant positive correlation between the unobservables affecting initial poverty and sample retention (ρ_{32}).

The related exogeneity tests are reported in panel (b) of Table 2. Exogeneity of initial condition would imply that that ρ_{23} and ρ_{32} are jointly zero – a hypothesis that is strongly rejected (Wald test $p < 0.000$). Exogeneity of sample retention in return would imply that ρ_{31} and ρ_{32} are jointly zero. Here, the null hypothesis is rejected at the 5 per cent significance level (Wald test $p < 0.0476$). Both initial conditions and sample retention will thus be considered endogenous to the model. We will use the coefficient estimates from the panel retention equation to adjust the survey weights in the pooled panel to account for unfolding attrition. This is, respondents that were tracked over two consecutive waves will received a new weight calculated as the product of the original post-stratified weight of the initial period and the inverse of the conditional probability of re-interview.

The impacts of the explanatory variables on poverty transition (equation (1)) from the multivariate probit model are summarised in Table 3. (The estimates for the initial poverty status and sample retention are provided in Tables A.1 and A.2 in the Appendix). Given that we could not reject the hypothesis that there is state-dependence (see Table 2), we report two sets of estimates, depending

on the initial poverty status in $t - 1$. The first column of each set shows the coefficient estimate of a change in each explanatory variable in \mathbf{x}_{it-1} on the probability of poverty persistence (s_{it}) and poverty entry (e_{it}) respectively. By construction, the probability of the conditioning event, which is being poor in the former case and non-poor in the latter, is held constant in these estimations.

Our coefficient estimates indicate that, everything else being equal, individuals living in households where the head is older on average face a lower risk to poverty. Particularly for the non-poor, having an older household head generally tends to be associated with a more stable socio-economic position, whereas having a younger head is associated with a higher risk to falling into poverty. Members of female headed households are on average about ten per cent more likely to slip into poverty and two per cent less likely to escape poverty than members of households where the head is male. Moreover, we observe that race remains a strong predictor of poverty in South Africa, with Africans being at the highest risk of being poor, even after controlling for differences in education and employment. In comparison, whites are 28.7 per cent less likely to fall into poverty and 42.6 per cent less likely to remain poor, even after controlling for differences in education. Higher levels of education of the household head are strong predictors for a lower vulnerability to poverty, although the effect sizes vary considerably between initially poor versus non-poor households.

With respect to the labour market controls, we estimate that persons living in non-poor households where the head is (strictly) unemployed face a 5.6 per cent higher risk to poverty than those with an economically inactive head. However, having a working head not necessarily goes line with a lower vulnerability to poverty. The effect rather seems to crucially depend on the type of employment that the head engages in, especially with regard to its stability and duration. Everything else being equal, we find that members of households where the head engages in subsistence farming are just as vulnerable to poverty as those where the head is inactive. Those living in households where the head is casually employed or helps other people with their business are on average 2.9 per cent more likely to remain poor than those with inactive heads. More substantial is yet the difference among the presently non-poor, where such an unstable job position of the household head is associated with a 14.8 per cent higher risk of falling into poverty, thus constituting an important vulnerability factor. Self-employment of the household head can provide an important avenue out of poverty. However, this effect is only statistically significant for businesses registered in the formal sector (this activity is associated with an up to ten per cent lower risk of poverty persistence). Among the non-poor, the sector difference is yet more pronounced. While self-employment of the household head in the informal sector is associated with a 7.6 per cent higher risk to poverty, self-employment in the formal sector goes in line with a 14.1 (=21.7-7.6) per cent lower risk of becoming poor.

Also for members of households where the head works as an employee, the stability of the employment relationship is decisive. This is, members of households where the head is employed in the private sector with a temporary work contract (or a contract of unspecified duration) and without union coverage, *ceteris paribus*, have the same chances to exit poverty and an even higher risk of falling into poverty as members of household where the head is not economically active. This is likely explained by the higher stability of grant income, which is the dominant source of income among households with inactive heads. By contrast, having a head of household with a permanent work contract is associated with a 3.2 per cent lower risk to chronic poverty and a 4.3 (=9.0-4.7) lower risk of falling into poverty in first place. Similarly, union membership of the household head is, everything else equal, related to a 2.5 lower risk of remaining poor and a 5.1 (=9.8-4.7) per cent lower risk of slipping into poverty. A yet stronger effect is observed for public sector employment of

the household head, which (*ceteris paribus*) is associated with a 5.7 per cent higher chance to exit poverty and a 10.6 percent higher chance to remain out of poverty.¹⁶ Thus, living in a household where the head has a permanent job in the public sector with union coverage, would on average be associated with an 11.2 per cent lower risk to remain persistently poor and a 20.1 per cent lower risk of falling into poverty. This effect is likely explained by both higher wages and higher job security.

With respect to the household composition, as one may expect, larger households generally face a higher risk to poverty and particularly the presence of economically dependent household members goes in line with an elevated vulnerability to poverty. Among the non-poor, adding an additional member to the household is on average associated with a 3.7 per cent higher risk of falling into poverty. There is no statistically significant difference with respect to whether the additional household member is below 18 years old (eligibility threshold for child support grant) or a dependent member in working age. Among the poor, by contrast, large households with a high number of children are the most likely to remain chronically poor. This observation underscores the importance that child support programs have in South Africa.

Holding the household size, the number of employed household members has an important vulnerability reducing effect. Everything else equal, each household member who is working (excluding the household head, whose employment status has been assessed in detail above) goes in line with a 2.1 per cent lower average risk to remain poor and a 5.8 per cent lower average risk of falling into poverty. Given this difference in effect, in addition to the explanations suggested earlier, we may imagine that being poor can bring difficulties in finding good quality jobs, for example through social network effects, reducing in turn the probability of exiting poverty.

Despite the presence of a large and comparatively generous social pension program (with maximum benefits of R1500 a month), we find that an increase in the number of elderly household members, everything else equal, comes with a 5.7 per cent higher risk of falling into poor, but has a negligible effect on the likelihood of poverty persistence. We assume this result to be primarily driven by changes in the household composition and composition of income sources that tend to occur between periods $t - 1$ and t . Households with a larger share of elderly members may be more likely to experience a loss in labour market income due to the retirement of respective members. Furthermore, some evidence suggests that household formation responses may play an important role. State transfers (particularly non-contributory old age pensions) tend to take on the function of a private safety net in South Africa, and may attract additional dependents to the households (Klasen and Woolard, 2009). However, more research would be needed to fully understand the mechanisms behind this result and particularly the differences observed between poor and non-poor households.

¹⁶ Public sector employment is not reported in NIDS. Therefore, we calculate the share of public sector employment in total employment at the industry level (we distinguish 10 sectors) from the Quarterly Labour Force Surveys (QLFS) by sub-period (2008, 2010/11, 2012, 2014/15) and use this as a proxy in the regression.

Table 3: Multivariate probit model: Poverty transitions

Probability of being poor in t conditional on poverty status in $t-1$	Poverty persistence			Poverty entry		
	Average Marginal Effect	Coeff. Estimate	s.e.	Average Marginal Effect	Coeff. Estimate	s.e.
Characteristics of the household head (HoH) in $t-1$						
HoH age	0.001	0.006	(0.004)	-0.005	-0.018**	(0.008)
HoH age squared (x0.01)	-0.002	-0.009**	(0.004)	0.000	-0.001	(0.008)
HoH is female	0.017	0.070***	(0.024)	0.095	0.330***	(0.041)
HoH race group (base: African)						
Coloured	-0.005	-0.022	(0.053)	-0.121	-0.411***	(0.064)
Asian/Indian	-0.407	-1.278***	(0.153)	-0.293	-1.144***	(0.116)
White	-0.426	-1.336***	(0.279)	-0.287	-1.109***	(0.107)
HoH education (base: no schooling)						
Less than primary completed	0.011	0.050	(0.032)	-0.110	-0.356***	(0.088)
Primary completed	0.023	0.102**	(0.044)	-0.128	-0.415***	(0.096)
Secondary not completed	-0.027	-0.113***	(0.034)	-0.202	-0.656***	(0.085)
Secondary completed	-0.067	-0.265***	(0.051)	-0.288	-0.952***	(0.101)
Tertiary	-0.215	-0.752***	(0.078)	-0.340	-1.147***	(0.107)
HoH employment status (base: inactive)						
Unemployed (discouraged)	0.021	0.094	(0.059)	-0.066	-0.233**	(0.110)
Unemployed (strict)	0.002	0.007	(0.039)	0.056	0.194**	(0.079)
Subsistence farmer	0.010	0.045	(0.064)	0.003	0.010	(0.149)
Casual worker/ helping others	0.029	0.127**	(0.061)	0.148	0.511***	(0.181)
Self-employed	-0.021	-0.087	(0.054)	0.076	0.262***	(0.079)
Self-employed # Formal ^a	-0.066	-0.322*	(0.174)	-0.217	-0.493***	(0.134)
Employee	0.000	0.001	(0.041)	0.047	0.161**	(0.069)
Employee # Permanent contract	-0.032	-0.128**	(0.052)	-0.090	-0.150**	(0.061)
Employee # Union member	-0.025	-0.101*	(0.062)	-0.098	-0.178***	(0.057)
Employee # Share public sector ^b	-0.057	-0.225**	(0.093)	-0.153	-0.372***	(0.093)
Characteristics of the household (HH) in $t-1$						
Composition of the HH						
No. of HH members	0.007	0.027***	(0.008)	0.037	0.125***	(0.020)
No. of employed members (excl. HoH)	-0.021	-0.087***	(0.015)	-0.058	-0.208***	(0.029)
No. of children (<18 years)	0.024	0.099***	(0.011)	0.005	0.016	(0.025)
No. of elderly members (60+ years)	-0.002	-0.007	(0.021)	0.057	0.200***	(0.037)
HH has access to basic goods and services (shelter/water/sanitation/electricity)	-0.040	-0.165***	(0.032)	-0.027	-0.095**	(0.046)
Geographic location (base: traditional) ^c						
Urban	-0.006	-0.026	(0.032)	-0.058	-0.198***	(0.055)
Farms	0.031	0.138***	(0.048)	0.060	0.205**	(0.091)
Constant		0.825***	(0.123)		0.923***	(0.205)
Province fixed effects		YES			YES	
Time fixed effects		YES			YES	
Log-likelihood			-97,980,000			
Model chi2 (d.f.=174)			23,842			
Number of observations			67,117			

Asymptotic standard errors are robust for the presence of repeated observations on the same individual.
*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights).

Notes: Simulated pseudo maximum likelihood estimation with 250 random draws.

^a For self-employed, formal businesses are registered for income tax &/or VAT.

^b The average share of public sector employment by industry and survey year has been calculated from the 2008, 2010/11, 2012, and 2014/2015 Quarterly Labour Force Surveys.

^c In line with the 2011 census, three settlement types are distinguished in NIDS:

1. Urban - A continuously built-up area that is established through cities, towns, 'townships', small towns, and hamlets.
2. Traditional - Communally-owned land under the jurisdiction of traditional leaders. Settlements within these areas are villages.
3. Farms - Land allocated for and used for commercial farming including the structures and infrastructure on it. Those parts of the country falling under the jurisdiction of traditional authorities (or traditional chiefs) are considered as rural, mainly due to their lack of infrastructure due to past legacy.

In terms of geographic patterns, having access to basic services is associated with a four per cent lower risk to chronic poverty and 2.7 per cent lower risk to become poor. Despite many efforts to address the past, the spatial patterns of segregation remain visible in post-apartheid South Africa. For the initially non-poor, the risk to falling into poverty is about 5.8 per cent lower in urban than in the "deep rural" or "traditional" areas of the country, comprising traditional villages and communally-owned land, which includes those areas where the former "homelands" were located. The chances to escape poverty, however, are not significantly different between regions.

While the effects for most of the explanatory variables point into the same direction for both sets of estimates, the size of the effect on the poverty propensities differs importantly, depending on whether the individual was already poor in the initial period or not (a test of whether the two sets of coefficients are identical can be rejected at all common significance levels, compare Table 2). The results reported in Table 3 suggest that one of the channels through which a past poverty experience seems to increase the risk to future poverty is the depreciation of human capital, as well as potential signalling effects – in the sense that employers may consider past experiences of (long-term) unemployment as negative signals in a recruitment process with respect to the applicant's capacity or productivity – and the potential acceptance of low quality job offers that may be associated with future unemployment spells. Yet, everything else equal, initially poor (non-poor) had a lower (higher) poverty propensity, indicating some regression towards the mean. Put simply, following an extreme random event, the next random event may likely be expected to be less extreme.

3.3 Predicted poverty transition probabilities and class thresholds

We use the estimates from the presented endogenous switching model to predict poverty exit and entry probabilities of initially poor versus non-poor individuals). These are evaluated against two probability thresholds, displayed in Table 4 panel (a), based on the actual observed rates of poverty exit and entry in our data. We observe that, on average, 16.52 per cent of the initially poor escaped poverty from one wave to the next in the pooled sample. This is set as the cut-off point separating the chronically poor from the transient poor. Analogously, we observe that the average probability of falling into poverty for those who were initially non-poor was 25.91 per cent in our pooled sample. This is set as the cut-off point separating vulnerable from the middle class.¹⁷

For comparative purposes, we also give an indication of the monetary thresholds associated with these probability cut-off points. We calculate the average monthly per capita household expenditure of those respondents with a predicted poverty transition probability that falls within the 95-per cent confidence interval of the respective probability threshold. We find that the average probability of exiting poverty is associated with a monetary threshold of R543 per person per month, which falls between StatsSA's food poverty line (R441) and the lower bound poverty line (R647) (in January 2015 prices). The average probability of entering poverty is associated with a monetary threshold of

¹⁷ Note the slight difference to the transition probabilities reported in Table 1, which arises from the use of attrition adjusted weights based on the results from the retention equation (see p.12 details).

R2,590 per person per month. Thus, on average, respondents living in households with expenditure levels above this threshold could be considered reasonably secure against falling into poverty.

Table 4: Probability thresholds and associated monetary thresholds

	(a) Probability threshold (%)				(b) Associated monetary threshold			
	Mean	Std. Err.	[95% Conf. Int.]		Mean	Std. Err.	[95% Conf. Int.]	
Average probability of EXITING poverty for those who were poor in the last period	16.52	0.16	16.21	16.84	543	6	532	555
Average probability of FALLING into poverty for those who were non-poor in the last period	25.91	0.36	25.21	26.61	2,590	85	2,422	2,757

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition). Note: Poverty transition probabilities are predicted using parameter estimates from our regression model. The associated monetary thresholds are calculated as the average per capita household expenditure of those falling into the 95% confidence interval around the respective probability threshold. All monetary values are expressed in January 2015 Rands.

Using these monetary thresholds as cut-off points however would mask a substantial degree of variation in the predicted poverty transition probabilities among individuals living in households with similar current expenditure levels, as Table 5 illustrates. Although the transient poor tend on average to be better off than the chronically poor, members of both groups can be found anywhere below the poverty line, spanning the full range. Similarly, while the middle class is on average better off than the vulnerable, members of both groups can be located anywhere between the poverty line and the elite cut-off fixed at R10,484 per person per month.

Table 5: Monthly household expenditure per person by social class, 2008 to 2014/15

	Min	Max	Median	Mean	[95% Conf. Interval]	
Chronic Poor	29	992	342	390	388	391
Transient Poor	24	991	617	617	613	620
Vulnerable	992	10,418	1,586	2,045	2,024	2,066
Middle class	993	10,470	3,319	3,987	3,946	4,029
Elite	10,488	131,514	15,347	19,251	18,693	19,809

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition). Note: All monetary values are expressed in January 2015 Rands.

In consequence, by applying a monetary threshold to distinguish those who are non-poor but vulnerable from those who are stably middle class, we would risk making two misclassification errors. First, there may be households that fall below the vulnerability thresholds, but have access to a relatively secure income flow, which will help them to sustain their living standard over time. As Table 6 illustrates, almost one in four out of ten individuals who would be classified as vulnerable by their income position, we would classify as middle class given their household characteristics. Second, there may be households for which we observe a current consumption level above the vulnerability threshold, potentially in reaction to some type of shock, but which face an elevated risk to poverty and will likely not be able to sustain their current living standard over time. This applies to

two out of ten individuals who would be classified as middle class by their income position, but who we would consider to be vulnerable given their household characteristics. The same logic applies to the distinction between chronic versus transient poverty. For about one out of ten individuals with per capita household expenditures of less than R543 we would predict above average chances to exit poverty, while five out of ten individuals with expenditures above that threshold we would see at an above average risk to remain poor in the future.

Table 6: Classes identified by poverty propensity versus monetary thresholds, 2008 to 2014/15

Pooled Sample (two consecutive waves)		Probability Threshold					Total
		Chronic	Transient	Vulnerable	Middle Class	Elite	
Monetary	Chronic poor	88.72	11.28	0	0	0	100
	Transitory poor	58.39	41.61	0	0	0	100
	Vulnerable	0	0	60.44	39.56	0	100
	Middle class	0	0	18.53	81.47	0	100
	Elite	0	0	0	0	100	100
	Total	49.44	12.80	14.37	19.69	3.70	100

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

In Table 7 we compare the relative size of the five social classes, when using probability thresholds as opposed to monetary thresholds to distinguish the class sublayers. We observe that the middle class, which we identify using the latent poverty propensity, is about five percentage points larger (and the group of the vulnerable accordingly five smaller) than when a monetary threshold was applied. This is, by using a monetary threshold to identify the middle class, we risk missing out on a non-negligible share of the population, who falls below that threshold by still is relatively secure against falling into poverty. Despite the identified middle class being larger, on average, only 9.5 per cent (as compared to 9.7 per cent) fell below the poverty line within a two-year time horizon. In particular, by directly basing the classification on the latent poverty propensity scores, we are better able to identify those with an elevated risk to poverty than by relying on monetary measures alone. Almost every second person who we classify as vulnerable actually fell into poverty within two-years' time.

Table 7 also shows that the extent of chronic or extreme poverty would have been underestimated if a monetary threshold had been used. About 80 per cent of the poor in South Africa, equivalent to about 50 per cent of the population, have an average chance of exiting poverty of about ten percent, while the transient poor share has an average chance to exit poverty of about 40 per cent.

Table 7: Average class size and mobility patterns by identification method, 2008 to 2014/15

	Probability Thresholds			Monetary Thresholds		
	Population Share (%)	Share (%) that fell into poverty	Share (%) that moved out of poverty	Population Share (%)	Share (%) that fell into poverty	Share (%) that moved out of poverty
Chronic Poor	49.44	..	10.63	43.21	..	10.53
Transient Poor	12.80	..	40.28	19.03	..	31.02
Vulnerable	14.37	49.72	..	19.24	40.24	..
Middle class	19.69	9.54	..	14.82	9.72	..
Elite	3.70	2.80	..	3.70	2.80	..

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).
 Note: All monetary values are expressed in January 2015 Rands.

Table 8 further illustrates the higher stability of the middle class that we identify using latent poverty propensity scores. We observe that using this approach, on average, about 71 per cent of those that the classify as middle class in one survey wave would still be classified as middle class two years later, while 12.1 had entered the group of the vulnerable. When a monetary boundary was applied, only 56.2 per cent of all middle class individuals would still enter this categorisation two years later, while 25 per cent had fallen below the vulnerability threshold.

Table 8: Stability of the middle class by identification method, 2008 to 2014/15

Pooled Sample (two consecutive waves)		wave t					Total
		Chronic	Transient	Vulnerable	Middle Class	Elite	
wave $t-1$	Middle class (Probability Threshold)	2.15	7.39	12.11	70.95	7.40	100
	Middle class (Monetary Threshold)	4.06	5.65	25.02	56.20	9.07	100

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

3.4 Sensitivity analysis and comparison to alternative approaches

As indicated in the introduction, the approach presented in this paper, in order to identify a South African middle class that is acceptably secure against falling into poverty, expands an approach that was pioneered by López-Calva and Ortiz-Juarez (2014). For comparative purposes, we replicate their approach here.¹⁸ We use a simple probit model to regress the poverty status at time t against the same set of household-level characteristics observed at time $t-1$, \mathbf{x}_{it-1} , but without distinguishing between initially poor versus non-poor households and without controlling for sample attrition. This is, only a single parameter vector, γ , will be estimated as:

¹⁸ Note that this has been done before by Zizzamia et al. (2016), though using a different poverty line and a different set of regressor variables and using only the first and the last waves of NIDS.

$$p_{it}^* = \gamma' \mathbf{x}_{it-1} + e_{it} \quad \text{and} \quad P_{it} = I(p_{it}^* > 0) \quad (10)$$

where the error term e_{it} follows a standard normal distribution and $I(p_{it}^* > 0)$ denotes an indicator function which takes on the value of one if the corresponding latent variable exceeds some observed threshold (which can be set equal to zero without loss of generality), and zero otherwise. In a second step, for each individual i we predict the probability of being poor in period t based on the coefficient estimates from equation (10) and base year characteristics (the estimation results are reported in Table A.3 of the Appendix).

Third, using the same predictor variables as in the probability model, we fit a linear regression model to estimate a cross-sectional income equation (using expenditure as a proxy for permanent income) for the base year $t - 1$ at the household level as:

$$\ln Y_{it-1} = \omega' \mathbf{x}_{it-1} + \pi_{it-1} \quad (11)$$

where $\ln Y_{it-1}$ is the household per capita income in logarithmic scale at $t - 1$.

For each individual i we then predict the per capita income in $t - 1$ associated to each probability, using the coefficient estimates from equation (11) and initial household characteristics. To derive the vulnerability threshold, following López-Calva and Ortiz-Juarez (2014), we calculate the predicted average per capita income level associated with a predicted poverty propensity of 10 per cent, which is considered to present the maximum acceptable risk to poverty to be identified as middle class (the estimation results are reported in Table A.4 of the Appendix). To reduce the sensitivity of the calculated threshold to the 10 per cent cut-off point, and to have enough observations to get a more robust estimate of the mean income level associated with this probability estimate, we calculate the vulnerability threshold as the mean predicted per capita income in $t - 1$ for all individuals with a predicted poverty propensity in of 8 to 12 per cent.¹⁹ It may be worthwhile to note that by translating the ten per cent probability threshold to a monetary threshold, rather than directly working with the predicted poverty propensities, the approach will suffer from the same misclassification errors as outlined above. This is, some of those identified as middle class by their income level will face a predicted risk to poverty that exceeds the ten per cent cut-off point, and some of those classified as vulnerable will face a predicted risk to poverty of less than ten per cent.

Applying their approach to two waves of panel data from three Latin American countries (Chile, Mexico and Peru), López-Calva and Ortiz-Juarez's (2014) find that a minimum income level of \$10 a day (at purchasing power parities (PPP) at 2005 prices) is required to face a maximum risk to falling into poverty of ten per cent. This would translate to a monthly threshold of R2,657 in January 2015 prices if the 2011 PPP rate (5.07 Rand per Int. \$) is applied (R2,397 if the 2005 PPP rate was applied). Replicating their approach for the South African context using the same explanatory variables as in the regression framework above, we estimate a monetary threshold for being middle class of R2,670, which is surprisingly close to the original thresholds suggested by López-Calva and Ortiz-Juarez (2014).²⁰ However, a somewhat lower threshold of R2,409 is obtained once control variables for

¹⁹ The derived vulnerability threshold is relatively robust to the choice of the ± 2 percentage-points probability interval around the 10-percent cut-off point and similar thresholds are obtained when using narrower bands.

²⁰ The threshold is also quite close to the average income level that we observe at the probability threshold defined in this paper (R2,590). However, note that we are looking at actual income levels, whereas the approach suggested by López-Calva and Ortiz-Juarez (2014) looks at predicted income. The actual observed

changes in the household size and changes in the number of employed household members from $t - 1$ to t are added to the regression, as done in the original paper.²¹

Using these monetary thresholds, the size of the middle class ranges between 14.4 and 16 per cent, as compared to 19.7 per cent using the approach presented in this paper. The share of the group of the vulnerable in return is larger, ranging between 18.1 and 19.6 per cent, as compared to 14.4 per cent suggested by us (see Table 9). As explained above, this difference by approximately five percentage points primarily results from our model's ability to identify households whose household characteristics enable them to maintain a level of economic stability, despite the fact that their observed consumption level falls below the R2,670 or R2,409 cut-off.

Table 9: Average class size by identification method, 2008 to 2014/15

	Multivariate Probit	Simple probit	Simple probit with change variables
Monetary threshold for being middle class	Probability Threshold	R2,670	R2,409
Poor	62.24	62.24	62.24
Vulnerable	14.37	19.62	18.11
Middle class	19.69	14.44	15.95
Elite	3.70	3.70	3.70
Total	100	100	100

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

Note: All monetary values are expressed in January 2015 Rands.

As a useful way of exploring how consequential the classificatory mismatch between the approaches is, in Table 10 we look at the share that fall into poverty (UBPL) and extreme poverty (FPL) out of the respectively identified vulnerable group and middle class. We observe that both our approach and the one by López-Calva and Ortiz-Juarez (2014) perform similarly well in terms of identifying a middle class which is fairly secure against falling into poverty. For both approaches, the middle class which is identified faces an average risk of about ten per cent to fall into poverty over time. It is worth noting that this similarity holds despite the larger size of the middle class that we identify. This middle class furthermore faces only half the risk of falling into extreme poverty (below the FPL), as compared to the middle class that would have been identified using conventional methods. In return, the vulnerable group that we identify faces an about ten percentage points higher risk of falling below the UBPL, and an almost five percentage points higher risk to falling below the FPL, as compared to the one that would have been identified using the standard vulnerability approach.

income for those with a predicted poverty propensity of 8 to 12 per cent using the simple probit model would have been R3,983.

²¹ We would caution against the use of these variables due to potential endogeneity concerns (all variables in the regression should be pre-determined).

Table 10: Average risk of falling into poverty by identification method, 2008 to 2014/15

		wave <i>t</i>					
		Probability Threshold		Monetary Threshold (R2,670)		Monetary Threshold (R2,409)	
		Poor UBPL (R992)	Poor FPL (R441)	Poor UBPL (R992)	Poor FPL (R441)	Poor UBPL (R992)	Poor FPL (R441)
wave <i>t</i> -1	Vulnerable	49.72	17.86	40.21	13.20	41.40	13.45
	Middle class	9.54	1.36	8.87	2.16	10.35	2.90

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

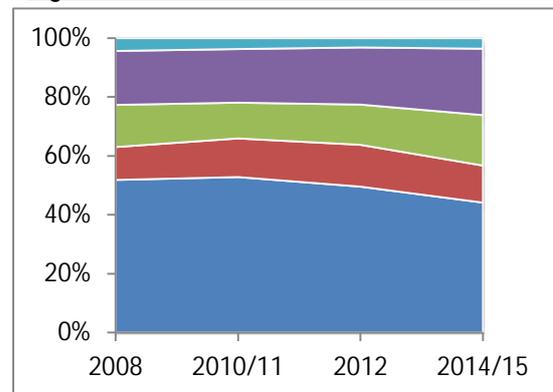
4. Class formations, social inequality and mobility in South Africa

In this section, we provide a profile of the five identified social strata in South Africa – the chronically poor, the transient poor, the vulnerable, the middle class, and the elite – in terms of their relative size, growth performance, racial composition, and labour market resources.

4.1 Class characteristics and inequality patterns

As Figure 2 illustrates, we find that according to the suggested stratification schema, on average, about one in four (24 per cent) South Africans could be classified as stably middle class or elite between 2008 and 2014/15. Their combined share has remained relatively stable over this period. In addition, about 14 per cent of the population fell into the group of the vulnerable between 2008 and 2014/15. That is, a substantial share of the non-poor was still facing a considerable risk to falling into poverty. On the other hand, among the poor, about 80 per cent could be considered chronically poor (comprising half of the South African population), whereas the remaining 20 per cent (accounting for 13 per cent of the

Figure 2: Class sizes, 2008 to 2014/15



Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

population between 2008 and 2014/15) could be classified as transient poor. The poverty reducing trend between 2012 and 2014/15 and associated growth in the share of the vulnerable (and to a lesser extent the middle class) might in part be explained by changes in the NIDS sample (as explained in Section 3.2 above), and should therefore be interpreted with caution.

Table 11 and Table 12 provide an overview of the key average characteristics of the household in general and the household head in particular among the five social classes. By construction, the characteristics closely mirror the determinants of poverty transitions reported in Table 3 above.

In terms of the household composition, an important observation from Table 11 is that larger households not only face a higher risk to experience a poverty spell, but poverty also tends to be

more persistent.²² Specifically, those classified as chronically poor live in households that on average count seven members, which is about twice the size compared to those in the middle class. Of the seven members, about half (3.5) are below age 18 and three are below age 15. Accordingly, we observe that poverty in general and chronic poverty in particular over-proportionally affects children in South Africa. About three out of four children (74.6 per cent) below age 15 live in poverty, with about two in three (64.9 per cent) growing up in a situation of persistent poverty. By contrast, only 14 per cent of all children below 15 years can be classified as stably middle class or elite. This is particularly worrisome as it has been shown that being raised in poverty places children at a higher risk for a number of factors – ranging from inadequate nutrition over decreased cognitive stimulation to violent crime and abuse – which can hamper the cognitive, social, and emotional development of the child and increase the risk to poverty in adulthood (Brooks-Gunn and Duncan, 1997).

In Table 11 we furthermore observe that most households, independent of their size, rely on a single-income earner. The working poor thus not only have to take care of an importantly higher number of dependents, but average labour market earnings are also much lower. In return, poverty tends to be a more temporary phenomenon for those with access to (higher) earnings from the labour market. The close similarity between the transient poor and the vulnerable is striking both in terms of household composition and composition of income sources available to the household. Consistent with the existing literature, we moreover find that the middle class is the class that most heavily relies on the labour market for its welfare. Labour market income makes up 84.2 per cent of total household income in the middle class and 87.7 per cent of all individuals in the middle class live in households for which labour market earnings constitute the main source of income.

Interestingly, in absolute terms, income from government grants is fairly stable across all five classes, being highest among the chronic poor, at R1,688 (though this income is shared among substantially larger households) and, strikingly, lowest among the vulnerable, at R1,240 (see Table 11). While fairly constant in absolute terms (probably because of very broad access to old age pensions), the relative importance of social grants in the lives of the poor evidently remains very significant. Specifically, the chronic poor derive more than half (54 per cent) of their income from government grants. By comparison, grant makes up one fourth (25.1 per cent) of the income of the transient poor and one fifth (19.4 per cent) of the income of the vulnerable. In the middle class, 6.5 per cent of total household income is derived from grants (see Table 11).

A key difference between the chronic poor and the transient poor seems to lie in their geographic location. While 55.8 per cent of South Africans classified as chronically poor reside in traditional areas, the same applies to only 16.8 per cent of those in the transient poor class. Similarly, 26.5 of those in the vulnerable group live in traditional areas, as compared to 4.6 per cent of those among the middle class. Relatedly, we observe that the chronic poor are the most deprived in terms of their access to basic goods and services. As reported in Table 11, only one out of five members of the chronic poor class had access to electricity, flowing water, a flushable toilet and formal housing, as compared to three out of five among the transient poor and three out of four among the middle class.

²² This finding resonates with previous studies that exposed the presence of dependants as an important risk factor of poverty entrance and poverty persistence (Finn and Leibbrandt, 2016; Woolard and Klasen, 2005).

Table 11: Average household (HH) characteristics by social class, 2008 to 2014/15

	Chronic Poor	Transient Poor	Vulnerable	Middle Class	Elite	Total
Weighted share of respondents	49.4%	12.8%	14.4%	19.7%	3.7%	100%
- As percentage of poor	79.4%	20.6%	n.a.	n.a.	n.a.	n.a.
Weighted share of respondents under 15 years old	64.9%	9.7%	11.4%	12.7%	1.3%	100%
Mean household expenditure per capita	390	617	2,045	3,987	19,251	2,063
Median household expenditure per capita	342	617	1,586	3,319	15,347	658
No. of members in HH	7.0	4.3	3.9	3.4	2.7	5.3
No. of workers in HH	0.9	1.3	1.1	1.5	1.2	1.1
Age composition						
No. of children (<18 years)	3.5	1.4	1.5	1.1	0.5	2.3
No. of members in working age (18-60 years)	3.1	2.7	2.2	2.1	1.8	2.7
No. of elderly members (60+ years)	0.4	0.3	0.3	0.3	0.3	0.4
Income by source ^a						
Share of income derived from source						
Labour	37.0%	68.0%	68.8%	84.2%	81.6%	56.6%
Government grants	54.0%	25.1%	19.4%	6.5%	1.9%	33.9%
Remittances	6.4%	5.4%	8.5%	2.9%	1.7%	5.7%
Subsistence agriculture	0.9%	0.2%	0.4%	0.1%	0.1%	0.5%
Investments	1.7%	1.3%	3.0%	6.3%	14.7%	3.3%
Mean income from source (if non-zero)						
Labour	3,414	5,237	6,887	16,091	38,347	3,414
Government grants	1,688	1,240	1,195	1,486	1,326	1,688
Remittances	1,357	1,055	1,811	1,966	16,249	1,357
Subsistence agriculture	208	169	476	829	1,367	208
Investments	1,684	1,446	2,989	11,395	17,008	1,684
Access to services						
House, cluster, town house	60.0%	74.2%	68.2%	79.7%	88.4%	67.9%
Tap water in house/on plot	58.7%	87.8%	83.1%	97.4%	98.1%	75.0%
Flush toilet in/outside house	31.6%	75.2%	66.9%	95.3%	97.9%	57.3%
Access to electricity	76.8%	88.2%	88.4%	96.4%	97.3%	84.6%
HH has access to basic goods and services (shelter/water/sanitation/electricity)	20.0%	57.4%	44.5%	74.7%	84.5%	41.4%
Geographic location ^b						
Traditional	55.8%	16.8%	26.5%	4.6%	3.0%	34.6%
Urban	39.4%	78.2%	67.9%	91.7%	95.2%	60.8%
Farms	4.8%	5.0%	5.5%	3.7%	1.8%	4.6%

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

Notes: All monetary values are expressed in January 2015 Rands.

^a Imputes rental income has been excluded. Government grants include i) State old age pension, ii) Disability, iii) Child Support, iv) Foster Care, and v) Care dependency grant. Other income from government includes i) Unemployment Insurance Fund and ii) Workmen's compensation. Investment Income includes i) Interest/dividend income, ii) Rental income, and iii) Private pensions and annuities.

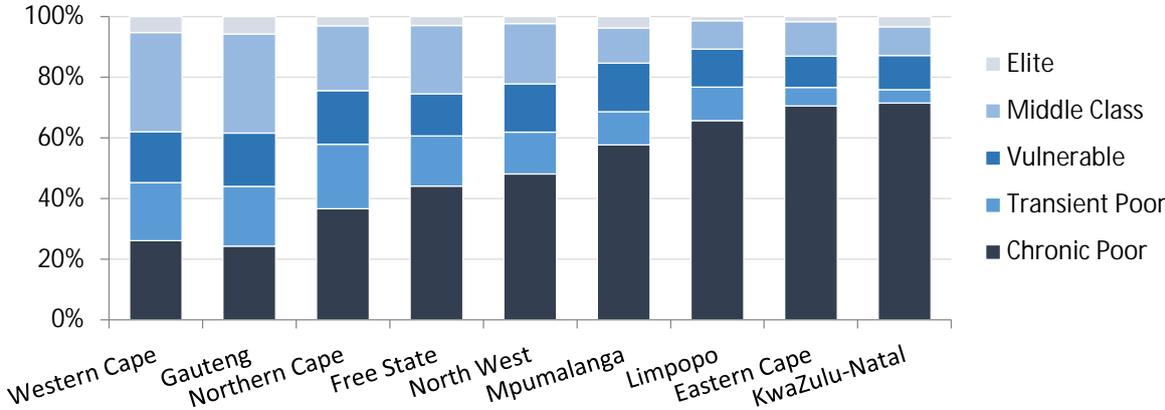
^b In line with the 2011 census, three settlement types are distinguished in NIDS:

1. Urban - A continuously built-up area that is established through cities, towns, 'townships', small towns, and hamlets.
2. Traditional - Communally-owned land under the jurisdiction of traditional leaders. Settlements within these areas are villages.
3. Farms - Land allocated for and used for commercial farming including the structures and infrastructure on it. Those parts of the country falling under the jurisdiction of traditional authorities (or traditional chiefs) are considered as rural, mainly due to their lack of infrastructure due to past legacy.

As Figure 3 displays, among South Africa's nine provinces, KwaZulu-Natal has the highest incidence of chronic poverty and the second smallest middle class (after Limpopo). At the same time, however, KwaZulu-Natal also has the fourth largest elite (after Gauteng, the Western Cape, and Mpumalanga), indicating a substantial degree of local social inequality. Chronic poverty is lowest in the Western Cape and in Gauteng – which are also the two provinces with the strongest middle class and elite.

While vulnerability is substantial in all provinces, including those provinces with low levels of chronic poverty, we observe a negative relationship between the extent of chronic and transient poverty across the provinces (see Figure 3).

Figure 3: Geographic split of South Africa’s five social classes, 2008 to 2014/15



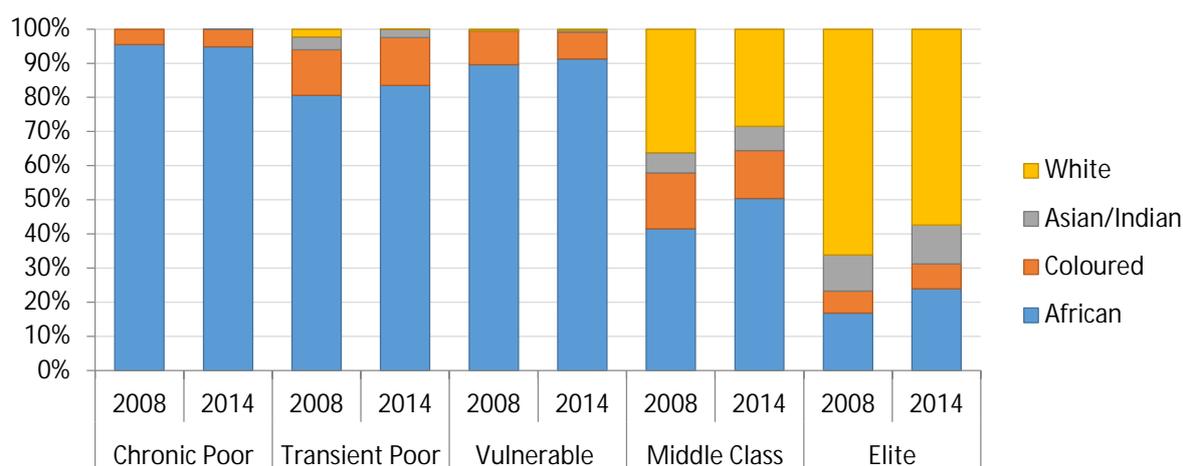
Source: Authors' calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights).

Table 12 explores the average characteristics of the head of household by social class. With 42 years, household heads in the vulnerable class tend to be younger than those in the other classes, which may be associated with a less stable position in the labour market. With 50 years, household heads tend to be oldest among those living in chronic poverty. This may link to processes of household formation, where adult children or grandchildren co-reside with (grant-)parents that receive the old-age pension, thus forming larger, intergenerational households (see Klasen and Woolard, 2009).

Furthermore, seven out of ten chronically poor individuals live in households where the household head is female, as compared to five to six out of ten among the transient poor and vulnerable classes, and three out of ten among the middle class and elite. This reflects the higher incidence of poverty and vulnerability to poverty among single mothers in South Africa.

Given that race tends to be a strong predictor of poverty in South Africa, it is unsurprising that the chronically poor group is almost exclusively made up by Africans and Coloureds. These two groups also constitute the vast majority of the transient poor and the vulnerable. However, coloureds seem to be more heavily concentrated amongst the transient poor (note that this lower chance to be persistently poor was not statistically significant in the regression results) and the stable middle class, facing lower risks of downward mobility. Although Africans also constitute the largest proportion of the middle class – with a growing trend in recent years illustrated in Figure 4 – their share among the two top groups remains far from demographic representivity. That is, while Africans make up about 80 per cent of the total population, in 2014/15 they made up just above 50 per cent of the middle class. On the other hand, while whites constitute a mere 10 per cent of the South African population, almost one in three members of the middle class and two in three members of the elite are white.

Figure 4: Racial composition of South Africa's five social classes, 2008 and 2014/15



Source: Authors' calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights).

As one may expect, Table 12 reveals a strong relationship between the educational attainment of household heads and the incidence and persistence of poverty (similar patterns are observed when looking at individual education levels). Given that higher levels of education tend to be accompanied by a lower risk to poverty, heads of chronically poor households are on average the least educated with no more than five years of primary education, while the transient poor and the vulnerable tend to have some secondary education. A household head in the middle class generally has completed secondary schooling, while those in the elite tend to have some tertiary education.

There is also a clear differentiation between classes in terms of access to the labour market: The more disadvantaged the class that a household belongs to, the more likely it is that the household head is unemployed or economically inactive. Only 30.8 of household heads amongst the chronically poor are in employment, with the remainder being economically inactive or unemployed. Amongst the transient poor and the vulnerable, about 50 per cent are in employment. This figure rises substantially when the middle class and elite are considered. About 80 per cent of the household heads in these two classes are economically active and the employment rate is high at above 75 per cent.

Table 12: Average characteristics of the head of household (HoH) by social class, 2008 to 2014/15

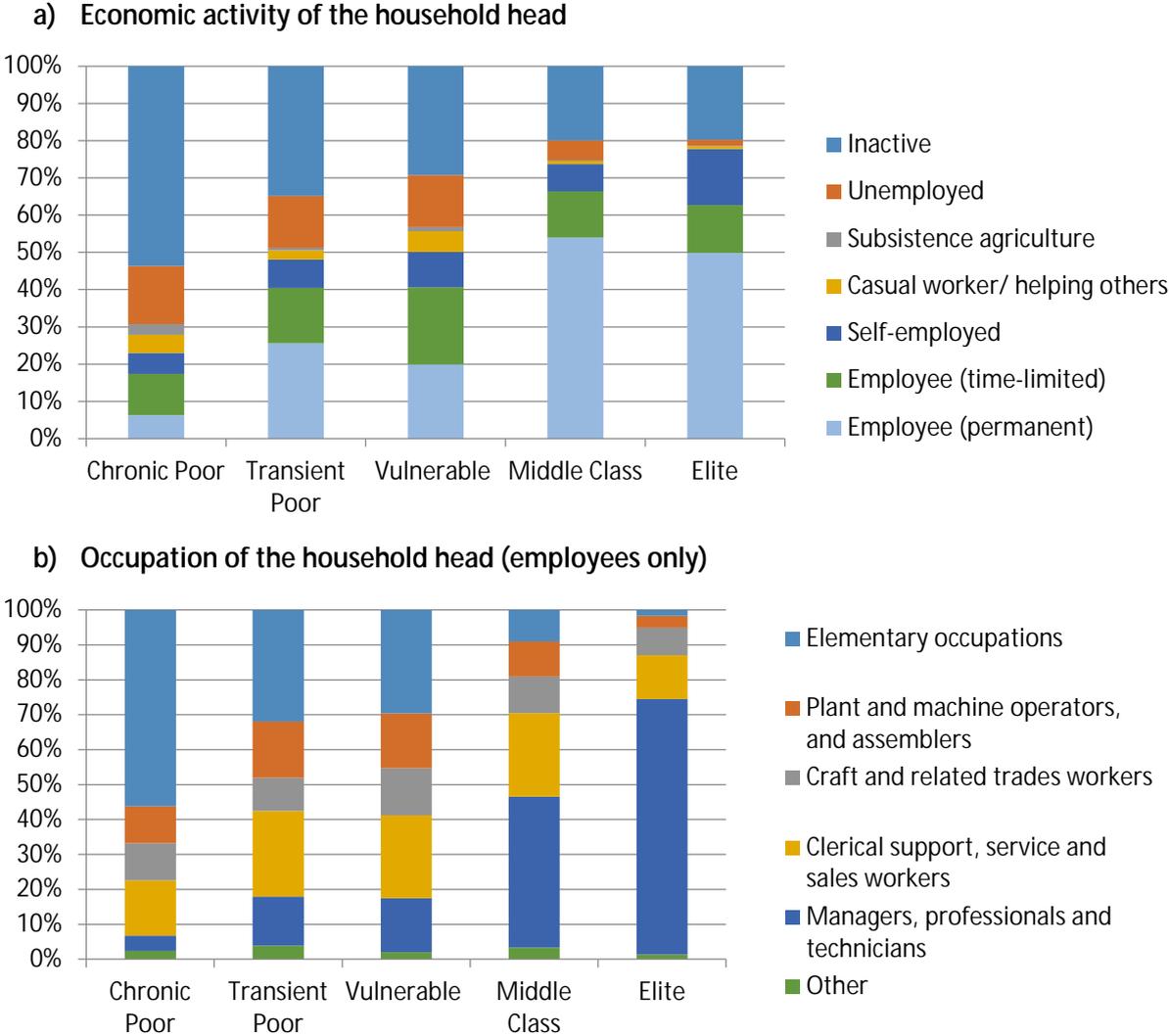
	Chronic Poor	Transient Poor	Vulnerable	Middle Class	Elite	Total
Age	50	45	42	46	48	47
Female	69.4%	51.6%	58.3%	31.4%	28.1%	56.5%
Race						
African	94.8%	81.6%	89.7%	45.7%	17.7%	79.9%
Coloured	5.2%	14.0%	9.2%	14.0%	7.0%	8.7%
Asian/Indian	0.0%	2.5%	1.0%	7.7%	10.0%	2.3%
White	0.0%	1.9%	0.1%	32.7%	65.4%	9.1%
Education (average level if 25 years or older)	5	9	9	12	14	8
No schooling	25.5%	10.0%	8.7%	0.2%	0.7%	15.2%
Less than primary completed (grades 1 to 6)	27.0%	14.0%	15.5%	2.5%	1.3%	17.8%
Primary completed (grade 7)	11.7%	3.2%	8.3%	2.0%	1.9%	7.8%
Secondary not completed (grades 8 to 11)	31.0%	43.1%	45.6%	32.6%	8.9%	34.0%
Secondary completed (grade 12)	4.6%	14.3%	13.0%	24.0%	16.2%	11.3%
Tertiary	0.2%	15.4%	8.9%	38.8%	71.1%	13.8%
Employment status						
Inactive	53.6%	34.9%	29.2%	19.9%	19.7%	39.9%
- of which share of pensioners	35.6%	37.5%	27.3%	33.3%	35.6%	34.7%
Unemployed (discouraged)	3.6%	1.3%	2.0%	1.8%	0.5%	2.6%
Unemployed (strict)	12.0%	12.7%	12.0%	3.5%	1.2%	10.1%
Employed	30.8%	51.2%	56.7%	74.8%	78.6%	47.4%
Employment type (if EMPLOYED)	6.5%	6.3%	8.6%	6.9%	10.2%	7.2%
Employee	55.3%	77.3%	69.9%	85.5%	75.5%	71.4%
- of which share in formal sector	52.6%	75.6%	71.2%	94.8%	92.3%	77.3%
- of which share with permanent contract	36.2%	63.4%	48.9%	81.2%	79.6%	61.8%
- of which share member in trade union	13.8%	33.3%	23.9%	51.0%	29.7%	33.3%
- of which expected share in public sector	12.9%	21.1%	15.0%	28.9%	23.7%	21.1%
Self-employed	17.7%	14.7%	16.3%	9.4%	18.1%	14.5%
- of which share in formal sector	2.6%	14.4%	12.6%	63.1%	70.0%	23.0%
Casual worker/ helping others	15.7%	4.6%	9.6%	1.0%	0.7%	7.7%
Subsistence agriculture	9.1%	1.3%	1.8%	0.3%	0.3%	3.5%

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

Amongst those who are employed, we differentiate between five types of economic activity, including subsistence agriculture (which accounts for a marginal share of total employment in South Africa), casual work, self-employment, employees with a temporary or time-limited work contract, and employees with a permanent work contract. We find that precarious forms of work including casual employment and employment without a permanent work contract constitute the largest share of all jobs among the poor and the vulnerable, whereas among the middle class and elite 80 per cent of all household heads who work as employees have a permanent contract (see Table 12 and Figure 5a). In line with the observed education patterns, among those who engage as employees, household heads of chronically poor households are most likely to be employed in elementary occupations. Similarly, for household heads belonging to transient poor and vulnerable households, elementary occupations also dominate, followed in significance by service and sales

occupations. Among the middle and elite classes, a very high proportion of household heads are employed in high skilled occupations, such as managers, professionals, or technicians (see Figure 5b).

Figure 5: South Africa's five social classes in the labour market, 2008 to 2014/15



Source: Authors' calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights).
 Note: Figures represent employment status and occupational category limited to heads of households.

4.2 A dynamic perspective on the determinants of social class and inter-class transitions

The net changes in South Africa's class structure reported above may mask a substantial degree of inter-class mobility. Tables 11 and 12 illustrate these mobility patterns.

In line with our classification schema, 80.5 per cent of those who were considered chronically poor remained poor from one survey wave to the other, 8.9 per cent improved their chances of exiting poverty and were considered transient poor, and only about one in ten individuals actually exited poverty. By contrast, approximately every fourth among the transient poor moved above the poverty line from one survey wave to the next. More than half the respondents in the vulnerable group slipped into poverty over time, with most of these seemingly falling into a trap of chronic poverty. The middle class were largely stable, with about 71 per cent of all members maintaining their status

over time. Of the less than 10 per cent who slipped below the poverty line, only a small fraction fell into a trap of chronic poverty. The elite was also largely stable at the top. In ten members of the elite, on average five were able to maintain their positions, while most of the rest entered the middle class. Very few of those among the elite fell into poverty or the vulnerable class. Table 14 also illustrates the importance of the overall macroeconomic framework in determining poverty risks. On average, more (less) respondents exited (fell into) poverty between 2012 and 2014/15 than in the years before between 2008 and 2012, which may partly be attributed to the global economic crisis that hit South Africa in 2009/10.

Table 13: Movements across classes, 2008 to 2014/15

Pooled Sample (two consecutive waves)		wave t					
		Chronic	Transient	Vulnerable	Middle Class	Elite	Total
wave t - 1	Chronic poor	80.46	8.91	8.97	1.53	0.14	100
	Transitory poor	23.57	36.15	23.44	16.46	0.37	100
	Vulnerable	29.43	20.28	31.8	17.23	1.25	100
	Middle class	2.15	7.39	12.11	70.95	7.4	100
	Elite	0.94	1.86	3.41	45.86	47.93	100
	Total	50.98	13.59	14.31	18.35	2.77	100

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

Table 14: Poverty entry and exit, 2008 to 2014/15

Share (%) by class that...		Pooled	2008-2010	2010-2012	2012-2014
1) ...exited poverty:	Chronic Poor	10.64	8.37	8.58	14.98
	Transient	40.27	31.21	40.22	46.39
2) ...fell into poverty:	Vulnerable	49.71	58.80	53.35	38.55
	Middle class	9.54	9.79	9.83	9.09
	Elite	2.80	4.94	2.52	1.61

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

An intuitive way of exploring the determinants of class membership and inter-class transitions is to examine the predicted probabilities of poverty entry and exit and associated expenditure levels for persons with different combinations of characteristics. The various predictions are summarised in Table 15, and were derived using the point estimates of the poverty transition equation reported in Table 3 above. By construction, the estimates control for the selection biases associated with initial poverty status and retention.

Our reference person, case (1), can be seen to represent a 'typical' member of the middle class in South Africa. In line with the average class characteristics reported in Table 11 and Table 12 above, a typical middle class household has two working adults and one child, the head of household is male, African, 46 years old, has completed secondary education (12 years of schooling), is employed with a permanent work contract and union coverage, and resides in an urban area in Gauteng. Using the

results from our multivariate probit model we predict that this reference person, if initially non-poor, faces a probability of falling into poverty over time of 8 per cent, and, in case of being initially poor, would have a probability of exiting poverty of 37.8 per cent.

For illustrative purposes, we predict the average per capita expenditure conditional on household characteristics for this middle-class reference person using the income model presented in section 3.4 (see Table A.4 Appendix). The predicted expenditure level for our middle-class reference person is R2,959 per month, which is about three times the basic-needs requirement captured by the poverty line (R992). A yet more stable job in the public sector would further half the risk to falling into poverty and raise the predicted chances of poverty exit to just below 50 per cent (case (2)).

In the following, we first investigate how the predicted poverty entry and exit probabilities and the expenditure level change, as we stepwise modify the reference person's household characteristics (case (1)) to represent a 'typical' member of the vulnerable class (case (7)).²³ Compared to the middle class, household heads in the vulnerable group are often somewhat younger and female, which leads to a moderate decline in the predicted expenditure level (from R2,959 to R2,495), but almost doubles the predicted likelihood of falling into poverty from 8 to 15.8 per cent. Reducing the level of education attained by the head to nine years of schooling (secondary education not completed) leads to a further contraction of the predicted expenditure level to R1,812 and an increase in the propensity to enter poverty to 24 per cent, which pushes the person from being middle class to the edge of entering the group of the vulnerable (note that the probability cut-off value is fixed at an poverty entry rate of 25.9 per cent). Vulnerable households are moreover larger, normally counting two adults and two children, and often there is only a single earner. This is associated with an increase in the risk of slipping into poverty to 36.1 per cent, and a reduction in the probability of escaping poverty once having fallen to 22.6 per cent.

Higher job insecurity also presents an important source of vulnerability. Among the vulnerable and the transient poor class, time-limited work contracts and casual employment are more common, and a larger share is either unemployed or economically inactive. These less stable employment relationships are associated with an elevated risk to poverty. A typical member of the vulnerable class living in a household where the head has a time-limited work contract and no union coverage would face an average risk to poverty to 48.9 per cent – confirming that the vulnerable group is often only one income shock away from falling into poverty. In case of having fallen into poverty, this stylised person would have an average probability of exiting poverty of 16.3 per cent, indicating a substantial degree of poverty persistence that places the members of this stylised household just to the edge of chronic poverty. If the head loses her job and is forced to move into casual employment, the predicted risk to falling into poverty surges to 62.6 per cent and, once in poverty, the probability of escaping poverty is reduced to 13.4 per cent.

In line with the preceding simulations, we also investigate the effects of modifying the middle-class reference person's characteristics to represent a 'typical' member of the elite in South Africa. Here we observe that, while higher levels of education and smaller household sizes play a role, race remains key in explaining elite status. Merely being white dramatically increases predicted per capita household expenditure, and decreases the probability of falling into poverty. Like middle class households, for an elite household, a job loss of the household head tends to go in line with a

²³ As discussed in section 4.1, when taking a look at the average characteristics of the transient poor and the vulnerable, we observe striking similarities between the two groups.

notable scaling down of living standards. However, this generally implies a descent into the middle class, leaving the household with a risk of falling into poverty of less than one per cent.

Table 15: Predicted poverty probabilities for persons with different combinations of characteristics

	Predicted per capita household expenditure	Predicted probability of FALLING into poverty	Predicted probability of EXITING poverty	Class
(1) A typical middle class household has two working adults and one child, the head of household is male, African, 46 years old, has completed secondary education, is employed with a permanent work contract and union coverage, and resides in an urban area in Gauteng.	2,959	8.01%	37.82%	Middle Class
(2) As (1), except household head employed in public sector	3,474	3.78%	46.60%	Middle Class
Gradually adjust the characteristics in (1) to represent a typical member of the vulnerable group				
(3) As (2), except household head is female and 42 years	2,495	15.84%	34.91%	Middle Class
(4) As (3), except household head did not complete secondary schooling	1,812	24.04%	29.46%	At the edge to vulnerability
(5) As (4), except one additional child in the household	1,570	28.65%	25.25%	Vulnerable
(6) As (5), except only the household head is in employment	1,366	36.13%	22.55%	Vulnerable
(7) As (6), except no union coverage of the household head	1,091	42.95%	19.62%	At the edge to transient poverty
As in (7), but higher job insecurity				
(8) As (7), except household head has a time-limited (i.e., non-permanent) work contract	900	48.88%	16.27%	At the edge to chronic poverty
(9) As (8), except household head is in casual employment	706	62.60%	13.35%	Chronic Poor
Gradually adjust the characteristics in (1) to represent a typical member of the elite				
(10) As (1), except household head is 48 years old	2,995	7.48%	38.00%	Middle Class
(11) As (10), except household head has tertiary education	4,549	5.09%	57.22%	Middle Class
(12) As (11), except household head is white	14,480	0.30%	93.55%	Elite

Source: Own simulations based on coefficient estimates reported in Table 3.

Note: To be considered middle class, individuals must have a maximum predicted risk to falling into poverty of 25.89%.

Transient poor have a chance of exiting poverty of 16.54% or above.

4.3 The distribution of risks and coping mechanism across class categories

This section analyses in greater depth the routes by which individuals and households move into and out of the middle class. Building on the conceptual foundations laid in the vulnerability literature – which, with few exceptions (see, for example, Azomahou and Yitbarek, 2015), is mostly agriculture-oriented and focusses on the occurrence of covariate weather-related shocks (see, e.g., Carter and May, 2001; Dercon, 2006; Klasen and Waibel, 2013; Ward, 2016) – we attempt to identify shocks and

insurance mechanisms with particular relevance to inter-class transitions and stability in the South African urban setting.²⁴

Our approach closely relates to the method developed by Bane and Ellwood (1986) in an analysis for the United States that has since been used repeatedly to study the determinants of poverty transitions and low income dynamics (see e.g. Jenkins and Schuller, 2003; Jenkins and Rigg 2001). Drawing on Jenkins (2011), we modify the original approach using a non-exhaustive compilation of not mutually exclusive trigger events that may explain middle class entries and exists. These events include variations in the number of employed household members and other sorts of changes in the household composition, changes in labour earnings and non-labour incomes, and changes in the geographic location. In addition, we look into the insurance mechanisms and financial instruments that can be associated with staying in the middle class.

To our knowledge, ours is the first study that uses this approach to provide an assessment of the events that may trigger middle class entries and exists. Through such an analysis, we aim to give an indication of the mechanisms that might improve economic stability in South Africa, with a view to allowing more people to join the ranks of an economically stable middle class. While the analysis of these associations is undoubtedly informative, we are aware that issues such as reverse causation, confounding shocks and simultaneity make identifying causal relations exceptionally difficult. Our aim is thus to provide a first idea of the potential mechanisms at play, and provide an understanding of the kinds of issues that will need to be taken up in further research.

For the correlation exercise presented in this section, we group together the middle class and elite, on the one hand, and the poor and vulnerable, on the other. In the following, for the sake of simplicity, we will use the term “middle class entries” to refer to entries into the middle class or elite from below and “middle class exits” to refer to falls out of the middle class or elite into poverty or vulnerability. All changes will refer to wave-to-wave transitions in the pooled panel dataset using the first four waves of NIDS. This means that, by construction, the analysis considers class transitions over intervals of approximately two years.

The tabulation of middle class entries by event type is shown in Table 16. In total, a share of 7.3 per cent of the individuals who were classified as poor or vulnerable in 2008, 2010, or 2012, entered into the middle class or elite within a two-year time span. This small share is primarily explained by the fact that the chronically poor, who constitute the largest group in the sample, on average had a chance of less than one per cent to move up into the middle class or elite. Middle class entries were considerably more common among the transient poor and the vulnerable (compare section 4.2).

We observe that more than every third middle class entry in our dataset can be associated with a rise in the number of workers present in the household. On average, those households who experienced this trigger event had an average likelihood to move into the middle class of 9.5 per cent, which is slightly higher compared to the unconditional average of 7.3 per cent. Some of these switches arise because a working adult joins the household (or the individual moved to another household with a larger number of working adults) and some arise because existing members find employment. The associated likelihood of entering the middle class is importantly higher in cases where the increase in the number of workers occurs without an accompanying change in the household size. While this

²⁴ In South Africa, both subsistence agriculture and the informal sector are very small relative to most countries in the developing world. See Chapter 3, Seekings and Nattrass (2005) for a historical account of the ‘deagrarianisation’ of South African society in the 1950s and 1960s.

conditional event tends to occur less frequently, those households for which we can assume that an existing member found a job on have an average chance of making it to the middle class of 14.5 per cent. In addition, increases in labour earnings (by at least 10 per cent), holding the number of workers in the household unchanged, can be associated with an average likelihood to enter the middle class of 9.8 per cent. By contrast, those who experienced an increase in their non-labour incomes, particularly government grants and remittances, will most likely not be middle class entrants. While these increases may play an important role in buffering negative economic shocks and securing the lives of the poor and the vulnerable, they generally do not (and are not intended to) present an avenue into the middle class or elite.

With regard to the household composition, decreases in household size and changes from a female to a male household head are among the most frequently experienced events. Especially the latter tends to be associated with elevated chances to enter the middle class. We may note that there is some overlap between those who see a change in the household head from female to a male and those who see an increase in the number workers. These would be cases in which either an existing male member found employment and took over the headship or a working male joined the household and became the head. While geographic movement from traditional to urban areas as well from other provinces of the country to Gauteng or the Western Cape appear much less frequently compared to other trigger events, those who move see their chances of entering the middle class increase considerably. One reason behind this pattern may be that people decide to move because they find new or better paying jobs in these areas.

Table 16: Events associated with entries into the middle class (or elite), 2008 to 2014/15

Entries into the middle class (or elite) from below		Number of cases	Weighted Share (%)
Individuals, who were poor or vulnerable to poverty in $t - 1$:		57,571	
Entries into middle class from below between $t - 1$ and t :		2,850	7.26

Household event type	Event prevalence		Middle class entries conditional on event		Middle class entries associated with event
	Number of cases	Weighted Share (%)	Number of cases	Weighted Share (%)	Weighted Share (%)
<i>Labour market events</i>					
§ Rise in the number of workers	17,268	31.69	1,062	9.54	41.66
§ Rise in the number of workers (household size constant)	5,993	12.05	487	14.51	24.07
§ Rise in labour income ($\geq 10\%$) (number of workers constant)	5,975	10.99	540	9.84	14.90
<i>Non-labour income events</i>					
§ Rise in income from public grants ($\geq 10\%$)	4,762	7.75	74	1.25	1.34
§ Rise in income from remittances ($\geq 10\%$)	286	0.57	11	6.42	0.50
<i>Demographic events</i>					
§ Change in the household head (from female to male)	7,069	13.05	871	18.09	32.52
§ Decrease in the household size	18,116	29.51	1,265	9.27	37.71
§ Movement from traditional to urban area	1,736	2.49	248	15.42	5.30
§ Movement to Gauteng or Western Cape from other provinces	787	1.26	162	22.94	3.98

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

Mirroring the analysis of the potential determinants of middle class entry, in Table 17 we report the correlations between middle class exits and specified trigger events. We observe that 30.2 per cent of all middle class exits are associated with a fall in the number of workers present in the household. Holding the household size constant, the associated risk is somewhat higher at 31.4 per cent. By contrast, cuts in labour earnings (by at least 10 per cent), while holding the number of workers unchanged, do not seem to be a driving force behind exits out of the middle class. Similarly, we also cannot relate the observed middle class exits to a decline in non-labour income sources.

In terms of demographic trigger events, changes from a male to a female household head can be associated with about every third middle class exit. This event often coincides with the loss of an adult working household member. Overall, 20.4 per cent of all middle class (or elite) households experienced an increase in household size and, of those who did, more than every third household fell into poverty or vulnerability. It is worth noting that this effect would be more moderate if adult equivalence scales were used in measuring poverty instead of a per capita poverty measure. Despite the negative association between household size and risk to poverty, the death of a household member can trigger a fall out of the middle class, especially when the deceased household member brought in income in the form of labour earnings. However, life insurance can help to moderate this negative shock.

Table 17: Events associated with exits out of the middle class (or elite), 2008 to 2014/15

Exits out of the middle class (or elite) into poverty or vulnerability		Number of cases	Weighted Share (%)		
Individuals, who were middle class (or elite) in $t - 1$:		7,052			
Exits out of the middle class (or elite) between $t - 1$ and t :		1,709	18.81		
Household event type	Event prevalence		Middle class exit conditional on event		Middle class exit associated with event
	Number of cases	Weighted Share (%)	Number of cases	Weighted Share (%)	Weighted Share (%)
<i>Labour market events</i>					
§ Fall in the number of workers	1,648	21.25	577	30.17	34.09
§ Fall in the number of workers (household size constant)	767	9.46	251	31.35	15.77
§ Fall in labour income ($\geq 10\%$) (number of workers constant)	1,115	17.37	276	18.30	16.90
<i>Non-labour income events</i>					
§ Fall in income from public grants ($\geq 10\%$)	80	0.36	43	34.21	0.66
§ Death of a non-resident family member, who assisted financially	247	3.24	73	14.82	2.55
<i>Demographic events</i>					
§ Change in household head (from male to female)	1,175	16.82	522	34.34	30.70
§ Increase in the household size	1,638	20.38	707	35.46	38.41
§ Birth of a child (0 to 2 years)	994	11.98	472	40.96	26.10
§ Death of a household member	306	3.82	93	22.72	4.61
§ Death of a household member (with life insurance)	125	1.58	24	7.69	0.65

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).

Finally, the association between the chances of staying in the middle class and the possession of selected insurance mechanisms and credit instruments is reported in Table 18. Among the formal insurance mechanisms, health and life insurance is widely used and can be respectively related to 42.8 and 45.5 per cent of the cases where individuals stayed in the middle class. Individuals in possession of a private pension, retirement annuity, unit trusts, stocks and/or shares also have above average chances of staying in the middle class. Regarding ex-post consumption smoothing strategies, personal loans from banks are the most frequently used instrument. Having access to a bank loan importantly increases the chances of staying in the middle class. However, access to these financial services is limited to a relatively small portion of the population, mostly concentrated amongst the elite and upper end of the middle class. The observed higher financial stability among this group may thus simply reflect their rather elevated economic standing and is not necessarily a direct outcome of the possession of financial assets and insurance mechanisms

In contrast, belonging to a Stokvel or savings club appears insufficient to buffer larger economic shocks and does not relate to a higher likelihood of staying in the middle class. Also informal loans from family members or friends appear insufficient to keep someone in the middle class. These instruments, however, tend to be concentrated amongst the lower middle class and may thus primarily reflect the already compromised economic position of this group. Unfortunately, we did not observe sufficient cases to give an indication of the stabilising effect which loans from micro-lenders or from informal money lenders could have. Also asset sales, which may offer a potential coping strategy for households without access to financial markets, were barely observed in the data at hand. Clearly, more work will need to be done in investigating the effectiveness of various formal and informal risk coping mechanisms in South Africa. The existing quantitative data, however, is ill-suited to answering these more complex questions, especially for those informal coping strategies which are the main form of insurance amongst the lower social classes. There is significant scope for further research - both quantitative and qualitative - in identifying what kinds of coping mechanisms are being used, and which of these have the scope to be strengthened and improved to improve the economic security of those who fall outside of the stable middle class.

Table 18: Instruments associated with staying in the middle class (or elite), 2008 to 2014/15

Staying in the middle class (or elite)		Number of cases	Weighted Share (%)
Individuals, who were middle class (or elite) in $t - 1$:		7,052	
Continuance in the middle class (or elite) between $t - 1$ and t :		5,343	81.19

Household event type	Event prevalence		Middle class persistence conditional on event		Middle class persistence associated with event
	Number of cases	Weighted Share (%)	Number of cases	Weighted Share (%)	Weighted Share (%)
<i>Insurance mechanisms</i>					
§ Have a health insurance	2,573	38.72	2,196	89.72	42.78
§ Have a life insurance	3,023	42.09	2,496	87.79	45.52
§ Have a pension/retirement annuity	572	9.59	493	91.93	10.86
§ Have unit trusts, stocks and shares	160	2.77	154	97.79	3.34
§ Belong to a Stokvel/ Savings Club	232	2.94	165	78.35	2.83
<i>Credit instruments</i>					
§ Personal loan from bank (in t and not in $t - 1$)	520	7.72	441	89.04	8.46
§ Loan from a family member/friend (in t and not in $t - 1$)	84	1.46	62	83.89	1.51

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights corrected for panel attrition).
Notes: Insurance mechanisms are identified *ex ante* (in $t - 1$), while credit instruments are identified *ex post* (in t).

5 Conclusion

Given the social stratification schema derived in this paper, we argue that only one in four South Africans can be considered stably middle class or elite, whereas the other three are either poor or face an elevated risk of falling into poverty. The size of the middle class is thus considerably smaller and growth has been more sluggish than suggested by other studies. Consistent with the existing empirical evidence, we find that there has been rapid growth in the African share of the middle class. However, despite this change in racial composition, Africans are still underrepresented in the middle class relative to their share in the overall population, and race remains a strong predictor of poverty in South Africa, with Africans being at the highest risk to (chronic) poverty even after controlling for differences in education and employment. Members of larger, female headed, or non-urban households also face a higher vulnerability to poverty and lower chances to enter the middle class.

A higher level of education of the household head and having access to stable labour market income, by contrast, are key determinants for households to achieve economic stability in South Africa. From this we may conclude that improving access to quality higher and tertiary education, easing labour market access, and improving both the quantity and quality of employment opportunities would be important prerequisites to spur the growth of a larger and more stable middle class in South Africa. In this regard – given that casual and precarious forms of work do little in reducing poverty risks – policymakers are likely to face an important trade-off between flexible labour market arrangements to foster job creation, and the creation of fewer, but better and more stable jobs that will allow more South Africans to escape poverty over the longer term.

While the transient poor and the vulnerable classes may importantly benefit from these measures, there is also a substantial share of the population that must be considered as chronically poor. Characterised by exceptionally low levels of human capital and financial assets as well as their geographical isolation from markets and employment opportunities, members of this class are unlikely candidates for fruitful integration into the productive economy in the short term. In addition to the provision of basic services for ensuring that their health, education and nutritional needs are met, for many of South Africa's chronic poor, cash transfers (currently in the form of pensions, disability grants and child support grants) will remain an indispensable source of income, which has the crucial advantage of being highly predictable and dependable (Dercon, 2001; Mkandawire, 2005).

Last but not least, our analysis also indicates that the poor and the vulnerable are not only more exposed to several risk factors, but they also seem to be disproportionately deprived in terms of their access to effective insurance mechanisms and coping strategies to deal with socio-economic shocks. Noting the importance of trigger events and the inadequacy of existing coping mechanisms opens the possibility of improving the efficiency of targeted social protection measures. However, for this to be accomplished, policy makers will require a closer investigation into the distribution, frequency and intensity of poverty triggering events as well as their interrelationship with social class. In addition, more work will need to be done in investigating the effectiveness of informal coping strategies (which are the main forms of insurance amongst poor) given that existing quantitative data has been shown to be ill-suited to answering these more complex questions.

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Appendix

Table A1: Multivariate Probit model: Initial Poverty Status

Dependent variable: Poverty status in <i>t-1</i> (binary)	Estimate	s.e.
Characteristics of the individual in t-1		
Mother education (base: no schooling)		
0-7 years	-0.151***	(0.051)
8-11 years	-0.254***	(0.059)
matric +	-0.321***	(0.087)
Don't know	-0.101*	(0.052)
Missing	0.037	(0.095)
Father education (base: no schooling)		
0-7 years	-0.125**	(0.059)
8-11 years	-0.011	(0.063)
matric +	-0.262***	(0.079)
Don't know	0.007	(0.043)
Missing	0.072	(0.067)
Kind of work usually done by mother (base: never worked)		
Elementary	0.004	(0.041)
Non-Elementary	-0.148**	(0.061)
Don't know	0.095	(0.076)
Missing	-0.013	(0.088)
Kind of work usually done by father (base: never worked)		
Elementary	-0.172***	(0.054)
Non-Elementary	-0.242***	(0.044)
Don't know	-0.111**	(0.044)
Missing	-0.263***	(0.060)
Characteristics of the head of household (HoH) in t-1		
HoH age	-0.003	(0.004)
HoH age squared (x0.01)	-0.008*	(0.004)
HoH is female	0.185***	(0.024)
HoH race group (base: African)		
Coloured	-0.295***	(0.049)
Asian/Indian	-1.713***	(0.090)
White	-1.310***	(0.127)
HoH education (base: no schooling)		
Less than primary completed	-0.172***	(0.040)
Primary completed	-0.261***	(0.049)
Secondary not completed	-0.587***	(0.040)
Secondary completed	-1.035***	(0.050)
Tertiary	-1.358***	(0.055)
HoH employment status (base: inactive)		
Unemployed (discouraged)	-0.062	(0.065)
Unemployed (strict)	0.112***	(0.042)
Subsistence farmer	-0.033	(0.068)
Casual worker/ helping others	0.255***	(0.060)
Self-employed	-0.217***	(0.047)
Self-employed # Formal ^a	-0.703***	(0.144)
Employee	-0.043	(0.038)
Employee # Permanent contract	-0.308***	(0.039)
Employee # Union member	-0.299***	(0.039)
Employee # Share public sector ^b	-0.599***	(0.066)

Characteristics of the household (HH) in t-1		
Composition of the HH		
No. of HH members	0.201***	(0.011)
No. of employed members (excl. HoH)	-0.191***	(0.017)
No. of children (<18 years)	0.065***	(0.014)
No. of elderly members (60+ years)	-0.056**	(0.024)
HH has access to basic goods and services (shelter/water/sanitation/electricity)	-0.395***	(0.029)
Geographic location (base: traditional)		
Urban	-0.079**	(0.032)
Farms	0.356***	(0.051)
Constant	0.969***	(0.123)
Province fixed effects		YES
Time fixed effects		YES
Log-likelihood		-97,980,000
Model chi2 (d.f.=174)		23,842
Number of observations		67,117

Robust standard errors clustered at the individual level.

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights).

Notes: Simulated pseudo maximum likelihood estimation with 250 random draws.

^a For self-employed, formal businesses are registered for income tax &/or VAT.

^b The average share of public sector employment by industry and survey year has been calculated from the 2008, 2010/11, 2012, and 2014/2015 Quarterly Labour Force Surveys.

Table A2: Multivariate Probit model: Panel retention

Dependent variable: Sample member in t (binary)	Estimate	s.e.
Characteristics of the individual in t-1		
Cooperative during interview	0.456***	(0.038)
Original sample member	0.842***	(0.045)
Characteristics of the head of household (HoH) in t-1		
HoH age	-0.001	(0.007)
HoH age squared (x0.01)	-0.003	(0.007)
HoH is female	-0.057	(0.038)
HoH race group (base: African)		
Coloured	-0.237***	(0.083)
Asian/Indian	-0.414***	(0.156)
White	0.022	(0.110)
HoH education (base: no schooling)		
Less than primary completed	0.123**	(0.055)
Primary completed	0.045	(0.069)
Secondary not completed	-0.020	(0.054)
Secondary completed	-0.057	(0.081)
Tertiary	-0.023	(0.088)
HoH employment status (base: inactive)		
Unemployed (discouraged)	0.393***	(0.093)
Unemployed (strict)	-0.015	(0.066)
Subsistence farmer	-0.058	(0.077)
Casual worker/ helping others	-0.048	(0.088)
Self-employed	-0.077	(0.074)
Self-employed # Formal ^a	-0.121	(0.168)
Employee	0.007	(0.066)
Employee # Permanent contract	0.172**	(0.076)
Employee # Union member	-0.051	(0.095)
Employee # Share public sector ^b	-0.440***	(0.136)
Characteristics of the household (HH) in t-1		
Composition of the HH		
No. of HH members	-0.192***	(0.013)
No. of employed members (excl. HoH)	0.195***	(0.023)
No. of children (<18 years)	0.281***	(0.019)
No. of elderly members (60+ years)	0.024	(0.034)
HH has access to basic goods and services (shelter/water/sanitation/electricity)	-0.060	(0.044)
Geographic location (base: traditional)		
Urban	-0.112**	(0.057)
Farms	-0.031	(0.089)
Constant	0.957***	(0.216)
Province fixed effects		YES
Time fixed effects		YES
Log-likelihood		-97,980,000
Model chi2 (d.f.=174)		23,842
Number of observations		67,117

Robust standard errors clustered at the individual level.

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights).

Notes: Simulated pseudo maximum likelihood estimation with 250 random draws.

^a For self-employed, formal businesses are registered for income tax &/or VAT.

^b The average share of public sector employment by industry and survey year has been calculated from the 2008, 2010/11, 2012, and 2014/2015 Quarterly Labour Force Surveys.

Table A3: Simple probit model of current poverty status

Dependent variable: Poverty status in <i>t</i> (binary)	(1)		(2)	
	Estimate	s.e.	Estimate	s.e.
Characteristics of the head of household (HoH) in t-1				
HoH age	-0.001	0.001	-0.001	0.001
HoH age squared (x0.01)	-0.001	0.002	-0.001	0.002
HoH is female	0.058***	0.010	0.049***	0.011
HoH race group (base: African)				
Coloured	-0.081***	0.019	-0.072***	0.017
Asian/Indian	-0.419***	0.026	-0.410***	0.029
White	-0.374***	0.046	-0.314***	0.043
HoH education (base: no schooling)				
Less than primary completed	-0.014	0.016	-0.016	0.016
Primary completed	-0.010	0.018	-0.015	0.019
Secondary not completed	-0.090***	0.015	-0.096***	0.016
Secondary completed	-0.184***	0.020	-0.177***	0.020
Tertiary	-0.287***	0.026	-0.262***	0.025
HoH employment status (base: inactive)				
Unemployed (discouraged)	0.005	0.024	0.003	0.022
Unemployed (strict)	0.026	0.016	0.033**	0.017
Subsistence farmer	-0.001	0.029	-0.025	0.032
Casual worker/ helping others	0.081***	0.028	0.087***	0.028
Self-employed	0.002	0.018	0.009	0.017
Self-employed # Formal ^a	-0.168***	0.054	-0.176***	0.046
Employee	0.005	0.016	0.024	0.016
Employee # Permanent contract	-0.055***	0.018	-0.048***	0.018
Employee # Union member	-0.060***	0.017	-0.051***	0.016
Employee # Share public sector ^b	-0.117***	0.026	-0.108***	0.025
Characteristics of the household (HH) in t-1				
Composition of the HH				
No. of HH members	0.025***	0.004	0.060***	0.005
No. of employed members (excl. HoH)	-0.041***	0.007	-0.080***	0.008
No. of children (<18 years)	0.024***	0.006	0.002	0.006
No. of elderly members (60+ years)	0.011	0.009	-0.001	0.01
HH has access to basic goods and services (shelter/water/sanitation/electricity)	-0.249***	0.06	-0.316***	0.069
Geographic location (base: traditional)				
Urban	-0.133**	0.063	-0.112	0.073
Farms	0.217**	0.088	0.300***	0.098
Change in HH characteristics from t-1 to t				
Change in no. of HH members			0.058***	0.002
Change in no. of employed members (excl. HoH)			-0.055***	0.006
Province fixed effects	YES		YES	
Time fixed effects	YES		YES	
R-squared	0.36		0.42	
Number of observations	67,117		67,117	

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights).

^a For self-employed, formal businesses are registered for income tax &/or VAT.

^b The average share of public sector employment by industry and survey year has been calculated from the 2008, 2010/11, 2012, and 2014/2015 Quarterly Labour Force Surveys.

Table A4: Linear model of logarithmised per capita household expenditure

Dependent Variable: Log. per capita household expenditure in t	Estimate	s.e.
Characteristics of the head of household (HoH) in t		
HoH age	0.005	(0.003)
HoH age squared (x0.01)	0.001	(0.003)
HoH is female	-0.146***	(0.020)
HoH race group (base: African)		
Coloured	0.286***	(0.062)
Asian/Indian	0.958***	(0.104)
White	1.158***	(0.066)
HoH education (base: no schooling)		
Less than primary completed	0.099***	(0.034)
Primary completed	0.157***	(0.038)
Secondary not completed	0.356***	(0.031)
Secondary completed	0.676***	(0.044)
Tertiary	1.094***	(0.048)
HoH employment status (base: inactive)		
Unemployed (discouraged)	-0.008	(0.055)
Unemployed (strict)	-0.090***	(0.031)
Subsistence farmer	-0.002	(0.045)
Casual worker/ helping others	-0.128***	(0.037)
Self-employed	0.180***	(0.035)
Self-employed # Formal ^a	0.547***	(0.102)
Employee	0.115***	(0.028)
Employee # Permanent contract	0.193***	(0.027)
Employee # Union member	0.224***	(0.035)
Employee # Share public sector ^b	0.161***	(0.051)
Characteristics of the household (HH) in t		
Composition of the HH		
No. of HH members	-0.128***	(0.011)
No. of employed members (excl. HoH)	0.139***	(0.013)
No. of children (<18 years)	-0.015	(0.012)
No. of elderly members (60+ years)	0.050***	(0.018)
HH has access to basic goods and services (shelter/water/sanitation/electricity)	0.273***	(0.032)
Geographic location (base: traditional)		
Urban	0.063*	(0.035)
Farms	-0.155***	(0.047)
Constant	6.287***	(0.099)
Province fixed effects	YES	
Time fixed effects	YES	
R-squared	0.6978	
F-Test (d.f.=39)	338.99	
Number of observations	19,315	

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations using NIDS waves 1 to 4 pooled sample (post-stratified weights).

Note: The regression is estimated at the household level.

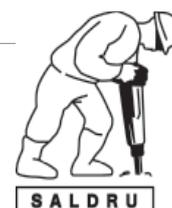
^a For self-employed, formal businesses are registered for income tax &/or VAT.

^b The average share of public sector employment by industry and survey year has been calculated from the 2008, 2010/11, 2012, and 2014/2015 Quarterly Labour Force Surveys.

southern africa labour and development research unit

The Southern Africa Labour and Development Research Unit (SALDRU) conducts research directed at improving the well-being of South Africa's poor. It was established in 1975. Over the next two decades the unit's research played a central role in documenting the human costs of apartheid. Key projects from this period included the Farm Labour Conference (1976), the Economics of Health Care Conference (1978), and the Second Carnegie Enquiry into Poverty and Development in South Africa (1983-86). At the urging of the African National Congress, from 1992-1994 SALDRU and the World Bank coordinated the Project for Statistics on Living Standards and Development (PSLSD). This project provide baseline data for the implementation of post-apartheid socio-economic policies through South Africa's first non-racial national sample survey.

In the post-apartheid period, SALDRU has continued to gather data and conduct research directed at informing and assessing anti-poverty policy. In line with its historical contribution, SALDRU's researchers continue to conduct research detailing changing patterns of well-being in South Africa and assessing the impact of government policy on the poor. Current research work falls into the following research themes: post-apartheid poverty; employment and migration dynamics; family support structures in an era of rapid social change; public works and public infrastructure programmes, financial strategies of the poor; common property resources and the poor. Key survey projects include the Langeberg Integrated Family Survey (1999), the Khayelitsha/Mitchell's Plain Survey (2000), the ongoing Cape Area Panel Study (2001-) and the Financial Diaries Project.



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