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SOCIAL CLASS, 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. In economics, this debate has been focused on locating the middle class within a particular income or expenditure range, where debate over how to define appropriate class boundaries – especially the cut-off that separates the poor from the middle class – remains highly contested. The dynamic nature of poverty, however, has been largely overlooked in existing approaches. This paper aims to address this shortcoming.

We link the definition of social class to an in-depth analysis of social mobility with a focus on poverty persistence and vulnerability to poverty. Our assessment provides a more differentiated picture of the rigidity or fluidity of social structures than that which could be obtained by relying exclusively on absolute monetary thresholds. By doing so, we aim to provide a bridge between existing economic approaches and sociological class theory – particularly the Weberian concept of shared ‘life chances’. In this sense, the contribution this paper makes is both conceptual, by proposing a class schema with particular relevance for the emerging and developing country context, and empirical, presenting an application to South Africa using recently available nationally representative panel data.

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

JEL Classification: D31, I32, C32, C35

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1. Introduction

The emerging middle class in Africa in general and in South Africa in particular has been touted by a number of commentators as a torchbearer of democracy and economic progress, and as a new and powerful consumer market. This resonates with an established international literature which sees the middle class as having the potential to play an important social, political, and economic role in a country's development process. In Africa, optimism has been fuelled by a number of reports which have claimed that the region's middle class has experienced rapid growth in the past decades and now makes up a considerable share of the population (AfDB, 2011; Deloitte, 2012; McKinsey, 2012). However, recent research across the continent is increasingly calling for a more differentiated picture of this so-called new middle class that tends to be less homogeneous than sometimes claimed (see inter alia Corral et al., 2015; Giesbert and Schotte, 2016; Visagie and Posel, 2013).

A closer review of existing academic writings reveals that there is no general agreement on who constitutes South Africa's middle class, given that scholars work with different understandings and definitions of social class, where class is generally meant to reflect some type of enduring hierarchical social structure. In operationalising class concepts, economists have tended to apply absolute monetary thresholds that (usually somewhat arbitrarily) locate the middle class within a particular income or expenditure range within which someone is considered to be neither poor nor rich. However, class definitions are consequential, since where one sets these thresholds results in qualitatively different implications for class and mobility patterns. This has seen a heated debate emerge, especially regarding the lower cut-off point that separates the poor from the middle class.

The dynamic nature of poverty, however, has largely been disregarded in these discussions – even though few may disagree that cross-sectional snapshots do not adequately capture someone's position in society. In this sense, being able to afford a certain basket of goods at a given point in time does not yet tell much about whether the same will be true in the next period, and even those who are currently non-poor may face a non-negligible risk of falling into poverty. Analogously, some of those whose living standard is below the basic needs poverty line at one point in time may face much better chances of exiting poverty than others. It is our understanding that these transitions and associated uncertainties are of particular relevance when describing social structures in the emerging and developing country context.

After a decade of strong but largely jobless economic growth – that in South Africa, just as in many other places, occurred in an environment characterised by entrenched structural unemployment – the bulk of sub-Saharan Africa's new non-poor still stand at the crossroads between upward and downward mobility. The social conditions they face tend to be very different from the ones in the industrialised North, in relation to which most class theories were developed. Their work, life, occupation, and income are less stable or secure than typically assumed in classical class theory. At the same time, while some of the economically vulnerable may only be pushed temporarily below the poverty line, for example in the event of a negative economic shock, for others, especially for the most deprived, poverty tends to be characterised by much higher persistence with little chances of escape.

This paper aims to contribute to the existing literature by explaining patterns of social stratification in South Africa from a dynamic perspective, going beyond the overly simplistic definition of absolute income or expenditure thresholds. We link the demarcation of social strata to an in-depth analysis of social mobility in terms of poverty dynamics, using recently available nationally representative panel

data. In doing so, we aim to address questions such as: How much socioeconomic mobility is there in South Africa? Who is the most likely to remain poor and who is most at risk of becoming poor? Which factors offer protection against distress and poverty, which push household into poverty, and which lift them to the middle class? And what is the scope for policy to buffer risks and enhance opportunities of upward mobility?

We examine the determinants of transitions into and out of poverty using a first order Markov model that accounts for endogenous initial conditions and non-random panel attrition, following an approach suggested by Cappellari and Jenkins (2002, 2004, 2008). Our econometric model is a form of endogenous switching model, and is fitted to panel data from the South African National Income Dynamics Study (NIDS). Our estimates indicate that, notwithstanding the presence of genuine state dependence, there appears to be substantial heterogeneity in poverty propensities faced by individuals or households both below and above the poverty line. We use the predicted poverty entry and exit propensities to group the South African society into five social strata that differ both in their currently observed living standard as well as in their chances for upward or downward mobility.²

The remainder of this paper is structured as follows: In Section 2 we briefly summarize the major paradigms that emerge from Karl Marx and Max Weber's class theories, paying particular attention to the role played by mobility patterns and the Weberian concept of 'life chances'. We then review a wide array of existing empirical approaches to defining the middle class in their strengths and limitations. In Section 3, which constitutes the main contribution of this paper, we develop our schema of social stratification based on a model of poverty transitions. Section 4 profiles the five identified social groups in South Africa in terms of their relative size, growth, racial composition and other demographic characteristics, geographic location, labour market resources, and mobility patterns. Section 5 concludes.

2. Class concepts and social inequality structures

While many scholars may agree that social class and inequality represent fundamental features of life in any society (Arthur, 2014), few have converged on a common understanding of class. In fact, it is a contentious concept with multiple meanings depending on who uses it and in which context. To unravel the complex nature of class, we have to locate the term within the theoretical traditions which form the basis of any attempt to conceptualise class or render it empirically operational.

2.1 The grand traditions of class analysis: Class as a sociological concept

Theories of class and social stratification seek to account for patterns of systematised and enduring social inequality (Southall, 2016). In this connection, "social class may be described as a group of social actors who share a common place or status in the vertical structure of differential or unequal power, including social rewards that are defined in terms of access or lack of access to desired commodities (economic or non-economic)" (Arthur, 2016: 25).

² Particularly, we identify (i) the chronically poor, characterised by high poverty persistence, (ii) the transient poor, who are presently poor but have above average chances of escaping poverty, (iii) the non-poor but vulnerable, who see their basic needs being met but face above average risks of slipping into poverty, (iv) the middle class, who are in a yet better position to secure their status even against negative events, and (v) the elite, with living standards way above the average.

While most class concepts may conform to this general definition, there are many loose ends. An immediate issue that arises is how many classes society is divided between and what determines common status or class membership. Two major theoretical paradigms, one drawing on the work of Karl Marx and the other on Max Weber, attempt to propose resolutions to these issues.

Marxian class theory

Marx was concerned with exploring the origins of capitalism, looking at nineteenth-century Britain, the most advanced industrial country of his time, as his model. Following his conception, there are always two major classes in any society. First, there are those who own and control the means of production (including ownership of land, factories, financial institutions and the like). This is the Capitalist class (or "bourgeoisie"). Second, there are those who own nothing but their labour power, which they sell in return for wages. This is the Working class (or "proletariat"). These two perpetually hostile classes are locked in a struggle over the economic means of production and their remuneration (while the proletariat seeks to maximize wages, it is in the bourgeoisie's best interest to maximize profits at the expense of such), leading to a clash of interests inherent to any capitalist system.

Despite this simplified bipolar structure, we need to be clear that Marx was not claiming that there are only ever two classes in any society. Hence, while it is often asserted that Marx insisted that the middle class was merely a transitional class, he was well aware that there could be individual movement ("social mobility") between the two great classes he theorized. In other words, capitalists could be driven out of business and into poverty or wage labour by competition, just as members of the working class could raise capital, create their own successful business and grow rich. However, for Marx these individual events receded into insignificance, given that these types of movements were considered to be limited and with negligible consequences for the underlying class scheme, as the fundamental relationship between the classes (as opposed to particular individuals within each class) were considered to remain the same.

Weber's theory of social class

Unlike Marx, Weber bridged the gap between the two major classes in society by interposing a range of status groups whose positions were determined by an array of both material and social advantages and not merely property. Thus, for Weber "class consists of a plurality of persons who share a common component in their life chances, including the opportunities such persons have for the possession of goods and income as determined by the conditions of the commodity and labour markets" (Arthur, 2014:26). In this sense, Weberian class theory suggests that life chances are determined by the resources and assets that individuals bring to the market, rather than merely the mode of production (Weber, 1968). Like in Marxian class theory, these resources include (but are not limited to) the ownership of the means of production. Other relevant factors in determining life chances comprise, *inter alia*, "income, security of employment, promotion opportunities, [and] long-term income prospects" (Southall 2016: 6).

Contrary to Marx's expectations, most people today will agree that the middle class has gained in size and proportion in virtually all contemporary societies and that social structures have been becoming more complex and differentiated, along the lines elaborated by Weber (Southall 2016). Even though this growing differentiation or stratification beyond patterns of possession has widely been acknowledged, including by later Marxist thinkers, the question that remains is what resources, assets, or other characteristics to include and how to weight them. In this regard, occupational structure is generally considered essential, given that it can be considered a source of both material and social advantage (such as prestige). Nonetheless, a person's life chances including chances for

social upward mobility may be determined by an array of other factors, some of which we aim to investigate in this paper.

2.2 Standard economic operationalisations of the class concept

Who then is the middle class in South Africa? The answer to this apparently simple question is surprisingly complex and remains a matter of definition and debate. Countless criteria, subject to which social classes in general and the middle class in particular may be defined, have been proposed in the international and South African literature. While mainstream approaches in economics generally define the middle class according to measurable absolute or relative income or expenditure thresholds, alternative approaches have lately been suggested that build more closely on the sociological class literature. In what follows we review the most prominent existing absolute and relative definitions and discuss their ability to capture a meaningful definition of social class.

Relative income thresholds

The lowest common denominator in the debate on who the middle class is, is that its members should be somewhere in the ‘middle’, which typically means they should be neither rich or poor. Proceeding from this assumption, relative definitions locate the middle class in the literal middle of the income distribution.

Two different strands of relative middle class definitions can be distinguished. First, a range of studies specify the middle class according to particular segments of the cumulative income or consumption distribution. In this regard, for example, Alesina and Perotti (1996) use the third and fourth quintile (the 40th to 80th per centiles), Partridge (1997) uses only the third quintile (the 40th to 60th per centiles), Easterly (2001) and Foster and Wolfson (2009) refer to the three middle quintiles (the 20th to 80th per centiles), and Solimano (2008) uses the third to tenth decile (the 30th to 90th per centiles). For the specific case of South Africa, Levy et al. (2014) and Finn et al. (2013) use income decile groups four to seven to define the middle class (the 40th to 70th per centiles), groups eight and nine to define the upper class and decile ten to identify the top income group. The main drawback of these purely relative approaches is that the population share of the middle class is held constant over time, which means that the middle class will neither grow nor shrink in response to economic and social conditions, increased polarisation, or other distributional change.

Second, ‘central tendency’ measures define the middle class in a specific symmetric range around the median of the income distribution. In this regard, for example, Birdsall et al., (2000) consider those individuals to be middle class who have between 75 and 125 per cent of the per capita median income at their disposal, a definition that was first proposed by Thurow (1987). By comparison, other authors choose a wider range between 50 and 150 per cent (Davis and Huston, 1992) or even between 60 and 225 per cent (Blackburn and Bloom, 1985) of the per capita median income.

However, in developing economies typically characterised by a high concentration of the population at the lower end of the income distribution, this middle will likely still be poor in absolute terms and “is unlikely to be the middle class as either historically defined or understood” (Bhalla 2007, p. 94). This is especially true in a high inequality country such as South Africa, where “thinking about what it means to be middle class is complicated by the low average and median levels of incomes in the country and the very wide distribution of income. Households who have achieved a modest standard of living are actually near the top of the national income ladder” (Visagie, 2013: 1).

Absolute income thresholds

Alternatively, the middle class has commonly been identified according to an absolute income or expenditure range seen as adequate to be considered middle class. The main question that has been fuelling a heated debate on the definition of these thresholds is what it actually means to be middle class. In other words, where does poverty end and the middle class start, and when can somebody be considered rich? The important decision researchers are confronted with in this regard is whether those who move above the poverty line automatically enter the middle class, 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.

Several scholars, such as Banerjee and Duflo (2008) and Ravallion (2010), in fact define the middle class in the developing world simply as those who are no longer poor by international standards. What this implies is that someone living on the equivalent of \$1.99 a day (in 2005 purchasing power parities (PPPs)) would still be considered poor, while just one additional cent would push the same person into the middle class. The main argument for using this definition is that despite being admittedly still very poor, those within this range are still much better off than the poorest in society, who live below the poverty line. However, as noted by Ravallion (2010), those falling into this middle-class classification remain at a high risk of poverty.

Most prominently in the African context, there has been a lively debate surrounding the African Development Bank's (AfDB, 2011) report which, using an income bracket from \$2 to \$20 (in 2005 PPPs), estimated that almost every third African belongs to the middle class. Since in the South African context the \$2 threshold falls below the lower bound of the latest national poverty lines, the African Development Bank's definition seems to have little relevance for defining the South African middle class.

While appealing in its simplicity, defining the middle class as just above the poverty line has a number of drawbacks. Scholars increasingly agree that, unless the term middle class is defined in a more precise way than an income above subsistence level, it can hardly serve any serious analytical purpose. In order to derive a more robust and less arbitrary definition, López-Calva and Ortiz-Juarez (2014) pioneer an approach to defining the middle class anchored in the notion of economic security. Using panel data from Chile, Mexico, and Peru, households are ranked by their estimated probability of remaining in or falling into poverty over a five year horizon. In contrast to Banerjee and Duflo (2008), who cap the middle class at a maximum daily per capita income of \$10, López-Calva and Ortiz-Juarez argue that only those people who are at a reasonably low risk of poverty should be counted as middle class. 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. The upper cut-off is (arbitrarily) fixed at \$50 a day (in 2005 PPPs).

The \$10 a day (in 2005 PPPs) lower threshold is consistent with a number of global definitions of the middle class (Kharas, 2010; UNDP, 2013).³ For example, Birdsall (2010) defines the middle class as those with an income of \$10 a day (in 2005 PPPs) and who fall below the 95th per centile of the national income distribution. While the absolute lower bound is meant to identify those individuals

³ Trying to develop a global classification, Kharas (2010) defines the global middle class such that it excludes those who are poor in the poorest advanced European economies (average poverty line of Italy and Portugal) and those who are rich in the richest advanced European country (twice the median income of Luxembourg).

who are too poor to be middle class in any society, the upper threshold excludes the top five per cent of the national population who are considered rich at least by their own country standards.

Applying the approach suggested by Lopez-Calva and Oritz-Juarez (2014) for Latin America to the South African context, Zizzamia et al. (2016) locate the country's middle class in an expenditure range of R3,104 to R10,387 (Jan. 2015 prices), equivalent to about \$13 to \$43.3 a day (in 2005 PPPs).

Following a similar vein as López-Calva and Ortiz-Juarez's (2014) ambition for a more theoretically sound class analysis that aligns with the sociological understanding of social class, there are an increasing number of studies that use the ownership of tangible and intangible assets, employment status, occupation, education, or possibilities for upward mobility as criteria for class identification. Most studies following this vein in South Africa use occupational categories (sometimes combined with a skill measure) to identify the middle class (Crankshaw, 1997; Seekings and Nattrass, 2005; Southall, 2016). Among these, Visagie and Posel (2013) suggest an affluence measure of the South African middle class of R1,400 to R10,000 per person per month (in 2008 money terms), equivalent to about \$8 to \$58 a day (in 2005 PPPs). This income interval is calculated to correspond to the expected income interval for households in which the highest income earner is in an occupation that has typically been associated with the middle class (see Weber, 1905).⁴ This 'productionist' approach has an important advantage over some of the 'consumptionist' approaches outlined above that "are blind to the fact that the source, and not the sum, of revenue, determines life chances" (Torche and López-Calva, 2013: 413).⁵

Method comparison: Size of the South African middle class

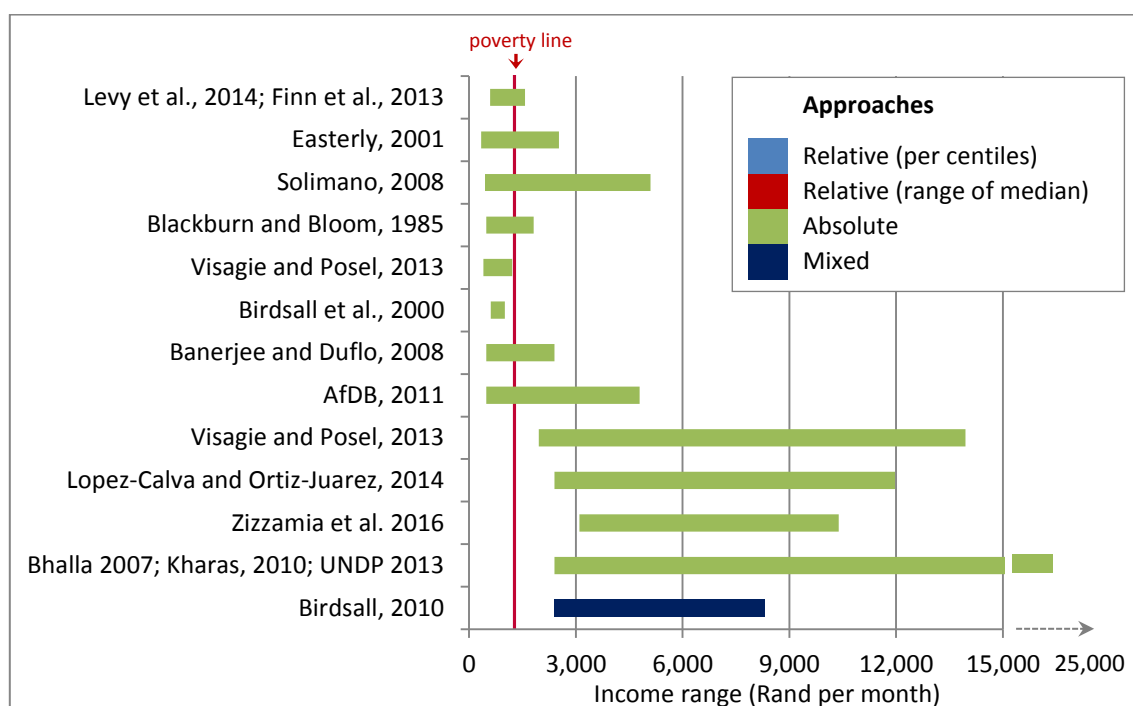
Before returning to the idea of life chances and economic empowerment as middle-class defining criteria, in what follows we aim to take stock of the definitions introduced up to this point (summarised in Figure 4) and assess their implications for the size and growth of the South African middle class between 2008 and 2014/15 (see Table 1).

Figure 4 illustrates the high variation in income strata captured by different rival approaches to defining the middle class when applied to the South African context. Most evident, all definitions that identify the middle class either in relation to the actual middle (or median) of the national income distribution, or just above the international two-dollar-a-day poverty line, classify many South Africans as middle class who would be considered poor by national standards and thus still lack the financial means to afford even the most basic goods. For example, Easterly's (2001) definition of the three middle quintiles, frequently quoted in the development literature, includes in the middle class even some of those who do not even have enough money for food. As pointed out by Visagie and Posel (2013), there is very little overlap between those in the actual middle of the national income distribution, and a South African middle class defined by an absolute level of affluence and lifestyle. By contrast, the vulnerability- and economic empowerment-based definitions suggested by López-Calva and Ortiz-Juarez (2014) and Visagie and Posel (2013) respectively closely overlap (the exact boundaries are reported in Table 1).

⁴ 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).

⁵ The vulnerability approach applied in this paper can be seen as 'productionist', as the risk to poverty is estimated based on observable household characteristics, including education and occupation of the head.

Figure 1: Income range comparison of rival middle class definitions



Source: Own representation based on middle-class thresholds from referenced articles.

Note: Conversion between Int. \$ and South African Rand uses the PPP conversion factor for private consumption (LCU per international \$) provided by the World Bank. In 2005, Int. \$1 (PPP) was equivalent to R4.57. All thresholds have been converted to constant prices of January 2015 using the Statistics South Africa Consumer Price Index.

Given these discrepancies, the choice of definition will make an important difference in estimating the size and evolution over time of the South African middle class. It is clear that different thresholds result in different estimates regarding the size of the middle class. If we consider only those thresholds designed to apply to South Africa, the size of the middle class in 2014/15 varies between 23 per cent (Visagie and Posel, 2013) and 56 per cent (AfDB, 2011) (reported in Table 1). However, it is also interesting to note that different thresholds identify opposing trends in the evolution of the middle class over time. For example, two of the definitions based on a range around the median of the distribution (Visagie and Posel, 2013; Blackburn and Bloom, 1985) show that the middle class in South Africa grew during the economic downturn of 2008 to 2010/11, while most other definitions show that the middle class contracted during this period. López-Calva and Ortiz-Juarez (2014) also find that when using low thresholds the middle class in Peru and Mexico is estimated to have grown during periods of economic crisis. This counterintuitive finding is due to the fact that when income intervals are set too low they are prone to misrepresent downward mobility amongst those above the upper threshold as growth of the middle class.

Using (in)vulnerability to poverty as the key criterion defining middle class status, Zizzamia et al. (2016) find that the middle class in South Africa is smaller than previous research has suggested and has only grown sluggishly– from about 11.7 in 1993 to 13.2 per cent in 2008. During the economic downturn of 2008 to 2012, the middle class shrank back in relative size, even falling below its 1993 level, although the release of data for 2014 suggests that it has regained its population share of 13.5 per cent. Despite the unimpressive growth story of the middle class since 1993, there has been a considerable racial transformation within the middle class, manifested by the rapid growth of a black middle class in South Africa. While the population share of the black middle class has tripled since 1993, its share in the middle class still falls well short of demographic representivity.

Table 1: Size of the South African middle class according to rival absolute and relative definitions

Definition	Authors	$x \in \text{middle class}^a$	Middle class boundaries (monthly) in NIDS wave 4 (01/2015 prices) ^b	South African middle class population share (%)			
				2008	2010/11	2012	2014/15
Based on per centiles of the cumulative distribution $D_t(y)$	Levy et al., 2014; Finn et al., 2013	$D_t^{-1}(p_{40}) \leq y(x) \leq D_t^{-1}(p_{70})$	$R590 \leq y(x) \leq R1,571$	30	30	30	30
	Easterly, 2001	$D_t^{-1}(p_{20}) \leq y(x) \leq D_t^{-1}(p_{80})$	$R335 \leq y(x) \leq R2,521$	60	60	60	60
	Solimano, 2008	$D_t^{-1}(p_{30}) \leq y(x) \leq D_t^{-1}(p_{90})$	$R443 \leq y(x) \leq R5,094$	60	60	60	60
Based on the median (p_{50}) of the distribution	Blackburn and Bloom, 1985	$0.6 * D_t^{-1}(p_{50}) \leq y(x) \leq 2.25 * D_t^{-1}(p_{50})$	$R484 \leq y(x) \leq R1,913$	38.6	41.2	39.3	40.2
	Visagie and Posel, 2013	$0.5 * D_t^{-1}(p_{50}) \leq y(x) \leq 1.5 * D_t^{-1}(p_{50})$	$R403 \leq y(x) \leq R1,209$	37.7	39.0	37.1	37.0
	Birdsall et al., 2000	$0.75 * D_t^{-1}(p_{50}) \leq y(x) \leq 1.25 * D_t^{-1}(p_{50})$	$R605 \leq y(x) \leq R1,008$	17.2	16.9	17.8	16.4
Based on absolute thresholds	Banerjee and Duflo, 2008 ^c	$\$2 \leq y(x) \leq \$10 \text{ a day (2005 PPP)}$	$R479 \leq y(x) \leq R2,397$	40.7	37.2	42.4	46.0
	AfDB, 2011 ^d	$\$2 \leq y(x) \leq \$20 \text{ a day (2005 PPP)}$	$R479 \leq y(x) \leq R4,794$	50.4	45.1	51.1	56.4
	– Excl. floating class	$\$4 \leq y(x) \leq \$20 \text{ a day (2005 PPP)}$	$R959 \leq y(x) \leq R4,794$	28.2	24.0	28.0	33.5
	– Lower middle class	$\$4 \leq y(x) \leq \$10 \text{ a day (2005 PPP)}$	$R959 \leq y(x) \leq R2,397$	18.5	16.1	19.2	23.0
	– Upper middle class	$\$10 \leq y(x) \leq \$20 \text{ a day (2005 PPP)}$	$R2,397 \leq y(x) \leq R4,794$	9.7	7.9	8.7	10.5
	Visagie and Posel, 2013	$\$8 \leq y(x) \leq \$58 \text{ a day (2005 PPP)}$	$R1,955 \leq y(x) \leq R13,968$	22.3	19.4	20.2	23.4
	López-Calva and Ortiz-Juarez, 2014	$\$10 \leq y(x) \leq \$50 \text{ a day (2005 PPP)}$	$R2,397 \leq y(x) \leq R11,984$	17.8	16.0	15.6	18.4
	Zizzamia et al. 2016	$\$13 \leq y(x) \leq \$43 \text{ a day (2005 PPP)}$	$R3,104 \leq y(x) \leq R10,387$	13.2	11.8	10.9	13.5
Mixed thresholds	Kharas, 2010; UNDP 2013	$\$10 \leq y(x) \leq \$100 \text{ a day (2005 PPP)}$	$R2,397 \leq y(x) \leq R23,969$	19.9	18.3	17.5	20.7
	Birdsall, 2010	$\$10 \text{ a day (2005 PPP)} \leq y(x) \leq D_t^{-1}(p_{95})$	$R2,397 \leq y(x) \leq R8,324$	15.8	13.9	12.9	16.3

Source: Authors' calculation based on NIDS waves 1 to 4 (using post-stratified weights).

Note: Conversion between Int. \$ and South African Rand uses the PPP conversion factor for private consumption (LCU per international \$) provided by the World Bank.

In 2005, Int. \$1 (PPP) was equivalent to R4.57. All thresholds have been converted to constant prices of January 2015 using the Statistics South Africa Consumer Price Index.

a. Definition in terms of the cumulative distribution $D(c)$, n^{th} per centile P_n , and x 's household income per capita $c(x)$.

b. Monthly household consumption per capita in constant prices of January 2015. Displayed absolute boundaries are calculated using the NIDS wave 4 consumption distribution.

c. Banerjee and Duflo (2008) subdivide the middle class into a lower (\$2 to \$4 a day) and an upper (\$6 to \$10 a day) segment.

d. The AfDB (2011) subdivides the middle class into a floating class (\$2 to \$4 a day) and a lower (\$4 to \$10 a day) and an upper (\$10 to \$20 a day) middle class segment.

2.3 Moving beyond income thresholds toward a dynamic perspective on social class

A fundamental shortcoming of cross-sectional class analyses that define the middle class in relation to some absolute poverty line is that these studies are blind to the fact that poverty is not a static, timeless state – it is a dynamic and evolving phenomenon, with a past and a future, lived in a world of risk and uncertainty (Calvo and Dercon, 2009). Those observed to be poor in a given point in time may have always been poor or may “have suffered a negative shock that temporarily pushed them below the poverty line” (Glewwe and Gibson, 2006: 324). Analogously, those observed to be non-poor may have been able to sustain a living standard above subsistence over the longer term, or may merely have been lucky at a given point in time.

As already discussed, some of the approaches outlined above present important attempts to incorporate the determinants of social power – such as work, occupation, wealth, and education – into the definition of class. However, most studies assume that identified criteria can be adequately summarised in an absolute income threshold, thereby losing important information. For example, López-Calva and Ortiz-Juarez’s (2014) definition of an absolute lower middle class cut-off at \$10 a day (in 2005 PPPs), replicated by Zizzamia et al. (2016) for the South African context, ignores that households with the same observed income level in a given period can diverge substantially in their characteristics and associated poverty risk. While the \$10-threshold is derived as the predicted (i.e. conditional average) per capita income of a stylized household whose characteristics resemble the average characteristics of those households with a maximum predicted probability of being poor of 10 per cent, households are ultimately classified according to their observed income levels. These, however, are unlikely to reflect the long-term income generating capacity of the household. A similar argument can be made with respect to the income thresholds that identify Visagie and Posel’s (2013) affluence class. There is no guarantee that the household falling within these bands actually derive their income from occupations that have typically been associated with the middle class. This raises doubts regarding the ability of these approaches to adequately capture and explain the determinants and dynamics of class (Southall, 2016).

Other approaches that have been suggested to capture the long-term or core determinants of social power underlying class structures have, for example, used asset indices to proxy for household wealth (see Udjo (2008) for an application using categories from the South African Advertising Research Foundation’s Living Standard Measure). Exceptionally comprehensive in this regard is the study conducted by McEwan et al. (2015), who employ a multidimensional indicator of social class that differentiates consumers into 10 groups according to 29 indicators of living standards in South Africa (including asset ownership, race, and degree of urbanisation, amongst others). Despite providing a better understanding of the actual standard of living of the middle class, these approaches have the shortcoming that they remain silent on the sources of wealth. Especially when basic goods and services are governmentally provided, the derived measure is likely to overstate the social power and life chances of the thus-defined middle class.

Burger et al. (2015) partly overcome this shortcoming by shifting the focus explicitly to the potential of households to make a living for their members, closely building on Sen’s capability approach.⁶ As opposed to using simple income bands, Burger et al. (2015) propose a multi-dimensional approach combining four defined capabilities that they envisage to better capture the meaning of the middle class as “empowered, capacitated and economically secure” class (Burger et al., 2015: 2). However, while Burger et al.’s approach represents an important advance in the understanding of the middle

⁶ Sen defines capabilities as “substantive freedoms [one] enjoys to lead the kind of life he or she has reason to value”, where income is only instrumentally valuable insofar as it expands capabilities (1999: 87).

class in the South African context, their chosen measures seem to be capturing very basic needs rather than a situation of economic empowerment.⁷ Consequently, again much of the substantial growth they observe in the middle class is likely due to the considerable expansion of government service provision over the past two decades. Another disadvantage of the approach is that it does not lend itself to identify an elite, which would seem particularly relevant in the South African context marked by high income concentration at the top of the distribution.

Given these shortcomings, the need for an empirically and theoretically rigorous definition of the South African middle class remains evident. Building on the idea that members of the same class should share common life chances, Schotte (2016) has recently suggested another multidimensional approach that combines a living standard measure to approximate objective wealth with a measure of subjective well-being and a measure of perceived chances for social upward mobility.

In the present paper, we build on this work and other preceding studies by taking on a dynamic perspective that not only accounts for households' current capacity to satisfy basic needs, but also their potential of doing so in the future. Following a recent strand of literature, in this paper, special attention will be paid to the study of social mobility and particularly vulnerability (Klasen and Waibel, 2012; Dercon, 2006; Cafiero and Vakis, 2006; Hoddinott and Quisumbing, 2003, *inter alia*), understood as "the existence and the extent of a *threat* of poverty and destitution" (Dercon, 2006). We consider a close investigation into vulnerability to be of prime importance when assessing class formations and inequality structures for three main reasons:

First, vulnerability reduces the well-being of households, even if a deterioration in material well-being does not materialise. Evidence from the psychological and health literature has exposed economic insecurity as a source of considerable discomfort (see Cafiero and Vakis, 2006). This implies that it is not only current income or consumption levels 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 and Waibel, 2012: 17). In this sense, vulnerability to poverty can represent a serious threat to well-being even for households whose incomes have surpassed the poverty line. This has also been shown to have important repercussions on the perceived class status. Being in an economically stable situation has been found to be fundamental for the self-identification of social class. Phadi and Ceruti (2011), for example, find that when interviewing residents of Soweto who self-identified as middle class, class was understood in terms of the ability to afford basic goods and membership of the 'middle class' implied self-sufficiency and economic security. While interpretations of what constituted 'basic goods' differed considerably, the notion of economic security was pervasive amongst the heterogeneous group which self-identified as middle class.

Second, vulnerability can limit the scope for upward mobility in a society leading to a more rigid class structure. A number of key characteristics and behavioural patterns that have generally been associated with the middle class require a certain degree of economic stability that allows for a longer planning horizon, which will determine decisions such as whether to invest in education or engage in entrepreneurial activity.⁸ By contrast, households facing a high ex-ante risk to experiencing a deterioration in well-being are more likely to opt for stable, low-return sources of income than to invest in activities with more lucrative but also more uncertain outcomes (see Dercon, 2006; Cafiero

⁷ The four core capabilities 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. These are measures using the following four functionings: (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.

⁸ For a fuller discussion of the impact of perceived insecurity on economic behaviour, see Dercon (2006).

and Vakis, 2006). Moreover, if the poor are more exposed to risk than the non-poor and/or are less able to deal with negative economic shocks when they do occur, then this vulnerability will contribute significantly to poverty persistence. In addition, some ex-post strategies to cope with shocks also tend to have medium to long-term consequences, importantly constraining a person's chances of moving out of poverty. This applies, for example, if households are forced to liquidate their productive asset base, decrease caloric intake, or if children are taken out of school to add to the labour pool (Dercon, 2006).

Third, vulnerability measures aim to identify the (types of) households with highest risks of future poverty, whether this means *remaining* poor or *becoming* poor in the future. This forward-looking perspective is critical for the design appropriate policy instruments that address the specific needs of different population groups. It also has repercussions on the political demands raised by different social groups. As Inglehart (1990) argues, sharply lower levels of economic scarcity and physiological insecurity are necessary to allow for a shift in priorities away from basic needs towards 'higher order' goods such as self-expression, democracy, gender rights, or environmental concerns.

These considerations motivate the class schema for South Africa that we develop in the next section, taking expected transitions into and out of poverty specifically into account.

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

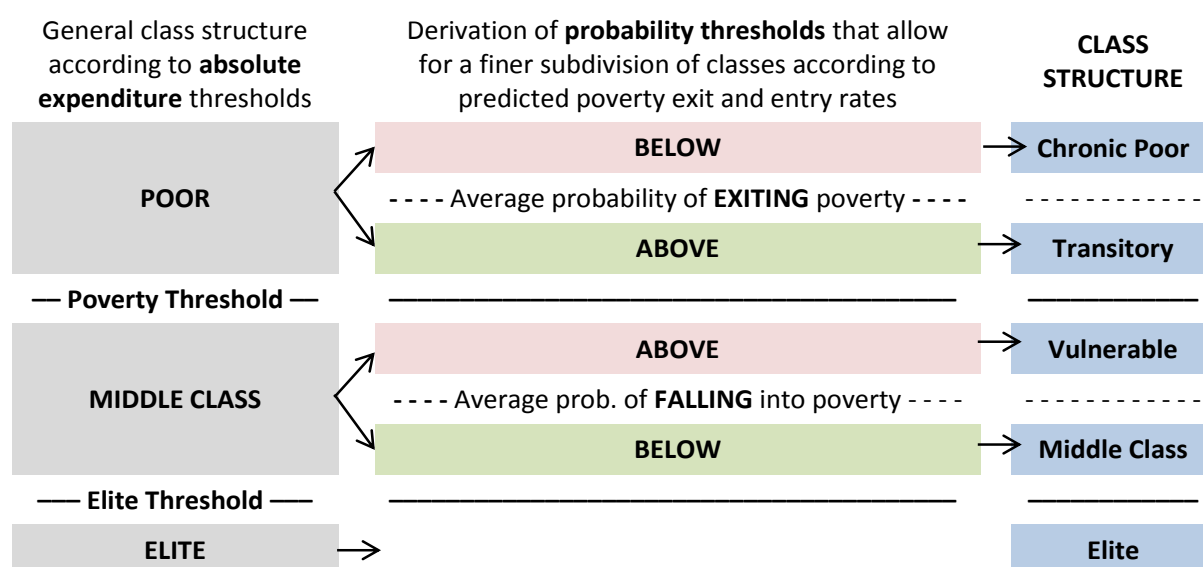
In what follows, we propose an approach that will help us to understand and explain patterns of social stratification in South Africa from a dynamic perspective, moving beyond absolute income or expenditure thresholds towards a greater focus on the household resources and characteristics underlying the income generation process. Our approach, which takes expected upward and downward mobility and particularly vulnerability to poverty explicitly into account, presents an attempt to empirically capture social class in a way which resonates with the core conceptual foundations to defining class in the sociological literature – especially with regard to the Weberian presumption that members of the same class should share common 'life chances'. We understand these as a combination of both, a person's current standard of living as well as her propensity to maintain, fall below, or move beyond the present status in the near future.

Given this notion, we stratify the South African society into five social classes following the schema below (see Figure 2). The defined groups diverge both in their absolute average standard of living and their risk of remaining in or falling into poverty.

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. The definition of the upper- or elite-threshold – which we arbitrarily set at two standard deviations above the average per capita household expenditure in our data – 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).

We expand this standard three-tier division of society, by taking into consideration that poverty can not only be understood as a static state, but also as a dynamic phenomenon. Accordingly, within the poor and the middle class, we respectively define two further sublayers (see Figure 2), based on our model of poverty transitions presented below. Among the ones currently falling below the poverty line, we distinguish those with below average chances of exiting poverty 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*. 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 below average risk to entering poverty and thus better chances to sustain a living above the poverty line.

Figure 2: 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.

3.1 Modelling poverty entry and exit probabilities

We examine the determinants of transitions into and out of poverty using a first order Markov model that jointly controls for initial condition effects, unobserved heterogeneity, and non-random panel attrition, closely following an approach developed by Cappellari and Jenkins (2002, 2004, and 2008) in reference to Stewart and Staffield (1999).

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, given that the start of the observation period does not coincide with the start of the stochastic process that has generated the poverty or non-poverty experiences. In consequence, those who are observed to be poor in the first wave of data may be a non-random sample of the population, given 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.

Given the above considerations, we use a multivariate probit model to jointly estimate a system of three simultaneous equations that include (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.

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 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 characterized by the latent poverty propensities p_{it}^* and p_{it-1}^* , and a latent propensity of retention r_{it}^* that take the form:

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

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

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

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 $i = 1, \dots, N$ indexes individuals, $t = 1, \dots, T$ is the period under study, \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 values, $\gamma'_1, \gamma'_2, \beta'$ 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) is 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.

We follow the approach pioneered by Heckman (1981b) that became a standard tool commonly used by researchers modelling poverty and low pay transitions conditional on initial conditions. By specifying the latent outcome in equation (4) as a function of the realised discrete outcome in the last period (see equation (1)), we allow the impact of the explanatory variables on current poverty to differ according to the poverty status in the last period. This way, the specification provides estimates for both poverty persistence and entry rate determinants such that the impact of explanatory variables is allowed to vary conditional on whether the individual was initially poor or not. Following Woolridge (2005), alternatively we could assume that the latent poverty propensity in the current year depends on the latent outcome of the last period (see CITE for an application). We will provide alternative estimates using this approach to check the sensitivity of our results.

To identify the above model of poverty transitions, exclusion restrictions are required. Specifically, we need to find a set of instrumental variables that affect initial poverty or retention (entering equation (2) or (3)), but have no direct effect on poverty transitions (are excludable from equation (1)), i.e. 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 ε_{it}) is trivariate standard normal with zero means and an unrestricted (and estimable) correlation structure. There are three correlations of interest to be estimated:

$$\begin{aligned}
\rho_{12} &\equiv \text{corr}(u_{it}, v_{it-1}) = \text{cov}(\mu_i, o_i) && \text{the correlation between the unobservable factors} \\
&&& \text{affecting } P_{it} \text{ and } P_{it-1} \\
\rho_{23} &\equiv \text{corr}(v_{it-1}, \varepsilon_{it}) = \text{cov}(o_i, \eta_i) && \text{the correlation between the unobservable factors} \\
&&& \text{affecting } P_{it-1} \text{ and } R_{it} \\
\rho_{13} &\equiv \text{corr}(u_{it}, \varepsilon_{it}) = \text{cov}(\mu_i, \eta_i) && \text{the correlation between the unobservable factors} \\
&&& \text{affecting } P_{it} \text{ and } R_{it}
\end{aligned} \tag{7}$$

The estimate of the correlation ρ_{12} that summarises the association between the unobservable individual-specific factors determining current poverty and base year poverty status provides a test for initial conditions exogeneity. A positive (resp. negative) sign indicates that individuals who were more likely to be initially poor (due to unobservables factors holding observable characteristics fixed) were more (resp. less) likely to be poor in the next period. Similarly, a positive (resp. negative) coefficient for ρ_{23} provides information on whether individuals who were more likely to be initially poor had a higher (resp. lower) likelihood of remaining in the sample. Finally, the estimate of ρ_{13} tests for exogeneity of sample retention to poverty transtions, such that a positive (resp. negative) sign indicates that individuals who were more likely to be observed in two successive waves were more (resp. less) likely to either remain poor or fall into poverty.

Conditional on whether individual i has been observed consecutively in $t - 1$ and t and on the initial poverty status in $t - 1$, the likelihood function of our poverty transitions model thus consists of three parts: $(P_{it-1} = 1 \wedge R_{it} = 1)$, $(P_{it-1} = 0 \wedge R_{it} = 1)$, and $R_{it} = 0$ that can be written as (see Azomahou and Yitbarek 2014):

$$\begin{aligned}
\mathcal{L} = & \prod_{i=1}^N \prod_{t=2}^T \left[\int_{-\gamma_1' \mathbf{x}_{it-1}}^{\infty} \int_{-\beta' \mathbf{z}_{it-1}}^{\infty} \int_{-\psi' \mathbf{w}_{it-1}}^{\infty} \varphi_3(u_{it}, v_{it-1}, \varepsilon_{it}) du_{it} dv_{it-1} d\varepsilon_{it} \right]^{(P_{it-1})R_{it}} \\
& \left[\int_{-\infty}^{-\gamma_2' \mathbf{x}_{it-1}} \int_{-\beta' \mathbf{z}_{it-1}}^{\infty} \int_{-\psi' \mathbf{w}_{it-1}}^{\infty} \varphi_3(u_{it}, v_{it-1}, \varepsilon_{it}) du_{it} dv_{it-1} d\varepsilon_{it} \right]^{(1-P_{it-1})R_{it}} \\
& \left[\int_{-\beta' \mathbf{z}_{it-1}}^{\infty} \int_{-\infty}^{-\psi' \mathbf{w}_{it-1}} \varphi_2(v_{it-1}, \varepsilon_{it}) dv_{it-1} d\varepsilon_{it} \right]^{(1-R_{it})}
\end{aligned} \tag{8}$$

where $\varphi_3(\cdot)$ and $\varphi_2(\cdot)$ denote respectively the density functions of the trivariate and the bivariate normal distribution. Given our assumptions on the joint distribution of the error terms and the related correlation coefficients ρ_{12} , ρ_{23} , and ρ_{13} , and using the symmetry property of the normal distribution, we can maximise the likelihood function using the multivariate approach suggested by

Capellari and Jenkins (2004) that uses the Geweke-Hajivassiliou-Keane (GHK) simulator to evaluate the multivariate normal integrals included in the likelihood equation.⁹

The likelihood-ratio test of no correlation between the cross-equation error terms performed when estimating the above trivariate specification may allow for a simplification of the suggested model. Other things being equal, if $\rho_{12} = 0$, then there is no initial conditions problem, i.e. the initial poverty status may be treated as exogenous. Likewise, if $\rho_{23} = \rho_{13} = 0$, then the process governing panel attrition can be ignored. In both cases, the model would then reduce to a bivariate probit regression. Lastly, if $\rho_{12} = \rho_{23} = \rho_{13} = 0$ 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*, $s_{it} \equiv \text{Pr}(P_{it} = 1 | P_{it-1} = 1)$, and the *poverty entry rate*, $e_{it} \equiv \text{Pr}(P_{it} = 1 | P_{it-1} = 0)$, irrespective of the observed initial poverty status. The conditional probabilities are given by:

$$s_{it} \equiv \text{Pr}(P_{it} = 1 | P_{it-1} = 1) = \frac{\Phi_2(\gamma'_1 \mathbf{x}_{it-1}; \beta' \mathbf{z}_{it-1}; \rho_{12})}{\Phi(\beta' \mathbf{z}_{it-1})} \quad (9)$$

and

$$e_{it} \equiv \text{Pr}(P_{it} = 1 | P_{it-1} = 0) = \frac{\Phi_2(\gamma'_2 \mathbf{x}_{it-1}; -\beta' \mathbf{z}_{it-1}; -\rho_{12})}{\Phi(-\beta' \mathbf{z}_{it-1})} \quad (10)$$

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

Our 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, 2010 to 2012 and 2012 to 2014 controlling for period specific fixed effects.

Households were classified as being poor versus non-poor using Statistics South Africa's (StatsSA) upper bound poverty line set at R963 (in January 2015 prices) per person per month, equivalent to about \$4 a day (in 2005 PPPs). The line is one in three national poverty lines published by StatsSA 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. 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.

⁹ The simulated probabilities are fed into the likelihood function which is then maximized using traditional techniques. In STATA, this is done using the mvprobit command by Cappellari and Jenkins (2003). For a brief description of the GHK smooth recursive simulator and literature review, see Greene (2000: 183-185).

Before proceeding to the model, the relevance of issues such as state dependence, initial conditions, and selective attrition is illustrated by an examination of the raw poverty transition matrix from the first four waves of NIDS presented in Table 2. Panel (a) shows the transition matrix constructed using the restricted sample of individuals for whom two consecutive survey waves with non-missing expenditure data are available (74,217 observations). As can be seen, the chances of being poor in a given year differ substantially depending on the previous 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. Our Markovian model specification will address this issue by controlling for the observed and unobserved determinants of initial poverty status and allowing them to be correlated with the determinants of current poverty status (Jenkins, 2011).

In Table 2, panel (b) 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).

Table 2: 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	73.76	26.24	
Poor	17.47	82.53	
All	36.64	63.36	
(b) All individuals			
Non-poor	55.47	19.73	24.80
Poor	14.98	70.75	14.27
All	29.98	51.85	18.17

Source: Authors' calculations based on pooled transitions from NIDS waves 1 to 4.

Note: Respondents are classified as poor if their household's per capita expenditure falls below the StatsSA UBPL of R963 (in January 2015 prices). Missing expenditure data at t arise either from sample attrition or incomplete response within a respondent's household. See text for further details.

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), years 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 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 a both 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.¹⁰ 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.

Panel (c) of Table 3 shows the validity of the instruments in the two selection equations. We follow Cappellari and Jenkins (2002, 2004, and 2008) and Jenkins (2011) in undertaking a Wald test for the relevance of our instruments. Our test results support the validity of the proposed instruments. The parental background indicators and the sample membership variables can be excluded from the transition equation, and are statistically significant in the respective selection equations.

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 3, 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_{12}) 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 initial poverty and sample retention (ρ_{23}), as well as conditional current poverty and sample retention (ρ_{13}) are not significantly different from zero.

The exogeneity tests are reported in panel (b) of Table 3. Exogeneity of initial condition would imply that that ρ_{12} and ρ_{23} are jointly zero – a hypothesis that is strongly rejected (Wald test $p < 0.000$). Exogeneity of sample retention in return would imply that ρ_{13} and ρ_{23} are jointly zero. Unsurprising given that the estimates of ρ_{23} and ρ_{13} were not significantly different from zero, we cannot reject the null hypothesis (Wald test $p < 0.947$). The results indicate that retention can be considered exogenous to the model. This implies that a bivariate probit model of poverty transitions that controls for endogenous initial conditions would be sufficient for the problem at hand. Finally, the three correlation coefficients are found to be jointly significant.

¹⁰ 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 3: Estimates of model correlations, and model test statistics

(a) Correlation coefficients between unobservables	Estimate	s.d.
Base year poverty status and conditional current poverty status (ρ_{12})	-0.272	0.055
Base year poverty status and retention (ρ_{23})	0.008	0.024
Retention and conditional current poverty status (ρ_{13})	0.001	0.026
Null hypotheses for tests	Test statistic	p-value
(b) Wald test for exogeneity of selection equations		
Exogeneity of initial conditions, $\rho_{12} = \rho_{23} = 0$	24.23	0.0000
Exogeneity of sample retention, $\rho_{13} = \rho_{23} = 0$	0.11	0.9465
Joint exogeneity, $\rho_{12} = \rho_{23} = \rho_{13} = 0$	24.30	0.0000
(c) Instrument validity		
Exclusion of parental background from transition equation (d.f. = 20)	27.50	0.1217
Exclusion of sample membership status from transition equation (d.f. = 2)	1.73	0.4214
Exclusion of parental background and sample membership status from transition equation (d.f. = 22)	30.14	0.1150
Inclusion of parental background in initial conditions equation (d.f. = 10)	243.68	0.0000
Inclusion of sample membership status in retention equation (d.f. = 2)	604.15	0.0000
(d) Test of state dependence		
No state dependence, $\gamma'_1 = \gamma'_2$	269.56	0.0000

Source: Authors' calculations based on pooled transitions from NIDS waves 1 to 4.

Note: See text for discussion of model estimation method and tests.

The impacts of the explanatory variables on poverty transition (equation (1)) are summarised in Table 4. (The estimates for initial poverty status and sample retention are provided in the Appendix). There are two sets of estimates, depending on the 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. The probability of the conditioning event, which being poor in the former case and non-poor in the latter, is held constant.

As the results reported in Table 4 below indicate, there are many statistically significant associations between initial household characteristics and the current poverty status that apply similarly to both initially poor and non-poor. Specifically, race remains a strong predictor of poverty in South Africa, with Africans being at the highest risk of being in poverty whereas whites are about significantly less likely to be poor, even after controlling for differences in education and employment. Members of female headed and rural agricultural households also face a higher risk to poverty, just as those living in household with presence of dependent children or where the head is unemployed. By contrast, a higher level of education of the household head and having a working head, ideally in a management position or other white-collar occupation, are strong predictors for a lower vulnerability to poverty. Having an older head generally tends to go in line with a more stable socio-economic position, in the sense that the chances for poverty entry and exit are lower (poverty persistence is higher). Similarly, mobility seems to be comparatively high in the Western Cape, compared to other provinces marked by generally lower poverty entry and exit rates. Poverty persistence seems to be highest in KwaZulu-Natal, followed by the Eastern Cape, Mpumalanga, and Free State. Generally, risks of remaining in or falling into poverty were higher between waves 1 to 2 (2008 to 2010/11) than between waves 2 to 3 (2010/11 to 2012) or waves 3 to 4 (2012 to 2014/15). Everything else equal, initially poor (non-poor) had a lower (higher) poverty propensity, which is in line with our earlier interpretation of regression towards the mean. Put simply, following an extreme random event, the next random event may likely be expected to be less extreme.

Table 4: Multivariate Probit model: Poverty transitions

<i>Covariate</i>	Stats SA upper bound poverty line			
	Poverty persistence		Poverty entry	
	estimate	s.e.	estimate	s.e.
<i>Characteristics of the head of household (HoH)</i>				
HoH age	0.012***	0.004	-0.025***	0.008
HoH age squared (x0.01)	-0.017***	0.005	0.008	0.009
HoH is female	0.084***	0.025	0.320***	0.041
HoH years of education	-0.039***	0.004	-0.093***	0.008
HoH race group (base: African)				
Coloured	-0.009	0.047	-0.461***	0.07
Asian/Indian	-1.514***	0.167	-1.133***	0.105
White	-1.223***	0.336	-1.231***	0.094
HoH employment (base: inactive)				
Unemployed (discouraged)	0.066	0.06	0.089	0.111
Unemployed (strict)	0.019	0.041	0.168**	0.082
Managers, professionals and technicians	-0.218***	0.081	-0.236***	0.082
Clerical, service and sales occupations	-0.114**	0.057	-0.047	0.072
Craft and trade workers, supervisors	0.149**	0.074	-0.189*	0.111
Plant and machine operators	-0.101	0.07	-0.049	0.095
Elementary occupations	-0.042	0.043	0.083	0.075
Other	0.071*	0.039	0.180***	0.066
<i>Characteristics of the household (HH)</i>				
No. of workers in HH	-0.074***	0.013	-0.061***	0.022
Age composition				
No. of children aged 0-2 in HH	0.146***	0.018	0.323***	0.045
No. of children aged 3-4 in HH	0.184***	0.021	0.285***	0.052
No. of children aged 5-11 in HH	0.144***	0.011	0.172***	0.026
No. of children aged 12-15 in HH	0.133***	0.015	0.192***	0.032
No. of children aged 16-18 in HH	0.095***	0.017	0.087**	0.038
No. of elderly aged 60-75 in HH	-0.003	0.021	0.179***	0.039
No. of elderly aged 75 plus in HH	0.065	0.047	0.241***	0.084
Geographic location (base: traditional)				
Urban	-0.088***	0.028	-0.163***	0.05
Farms	0.110**	0.054	0.218***	0.079
Province fixed effects (base: Western Cape)				
Eastern Cape	0.206***	0.05	-0.240***	0.074
Northern Cape	0.02	0.047	-0.175**	0.085
Free State	0.155***	0.055	-0.540***	0.08
KwaZulu-Natal	0.310***	0.05	0.009	0.073
North West	0.091	0.056	-0.185*	0.105
Gauteng	0.094*	0.053	-0.369***	0.07
Mpumalanga	0.185***	0.055	-0.319***	0.077
Limpopo	0.084	0.056	-0.249***	0.084
<i>Time fixed effects</i>				
Wave 3	-0.115***	0.031	-0.164***	0.049
Wave 4	-0.415***	0.029	-0.425***	0.044
Constant	0.798***	0.127	1.344***	0.217
Log-likelihood	-104,800,000			
Model chi2 (d.f. = 162)	20,439			
Number of observations	67,624			

Robust standard errors clustered at the individual level.

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

Source: Authors' calculations based on pooled transitions from NIDS waves 1 to 4.

3.3 Predicted poverty transition probabilities and social stratification in South Africa

We use the endogenous switching model to predict poverty exit and entry rates of initially poor versus non-poor individuals. We define two probability thresholds, displayed in Table 5 panel (a), using our estimation results. First, we calculate that the average probability of exiting poverty ($1 - s_{it}$) for the initially poor was 12.4 per cent in our pooled sample. This will be the cut-off point separating the chronically poor from the transient poor. Analogously, we calculate that the average probability of falling into poverty (e_{it}) for those who were initially non-poor was 23.0 per cent in our pooled sample. This probability cut-off will be used to separate the vulnerable from the middle class.

Table 5: Predicted 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	12.44	0.03	12.38	12.49	447	10	428	466
Average probability of FALLING into poverty for those who were non-poor in the last period	23.00	0.11	22.77	23.22	2,745	197	2,358	3,132

Source: Authors' calculations based on pooled transitions from NIDS waves 1 to 4.

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.

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 R447 per person per month, which is close to StatsSA's food poverty line (R430 in January 2015 prices) demarcating extreme poverty. The average probability of entering poverty is associated with a monetary threshold of R2,745 per person per month. Respondents living in households with expenditure levels above this threshold may be considered reasonably secure against falling into poverty.

These monetary thresholds however mask a substantial degree of variation in the predicted poverty transition probabilities among individuals living in households with similar current expenditure levels, as Table 6 illustrates.

Table 6: Monthly household expenditure per person by social class

	Min	Max	Median	Mean	[95% Conf. Interval]	
Chronic Poor	29	963	300	343	341	345
Transient Poor	24	963	530	536	534	538
Vulnerable	963	10,418	1,585	2,057	2,040	2,074
Middle class	963	10,470	3,235	3,956	3,919	3,993
Elite	10,488	131,514	15,347	19,218	18,738	19,698

Source: Authors' calculations based on pooled transitions from NIDS waves 1 to 4.

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

Although the transient poor tend to be on average 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.

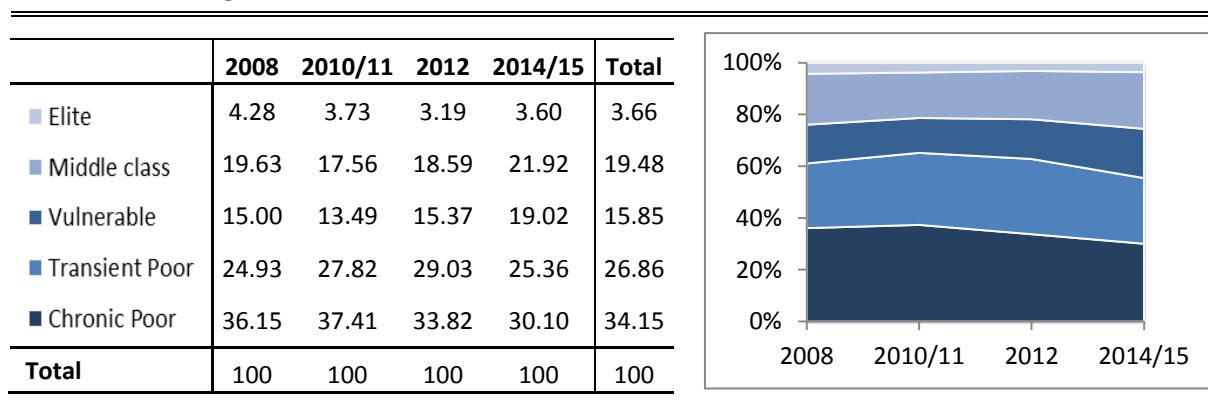
4. Class formations, social inequality and mobility in South Africa

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

Analysing the evolution of South Africa's social structure between 2008 and 2014/15, we observe an overall stable pattern with yet a slight move towards the middle, both from above and below. Following our definition, the share of chronically poor has reduced by about 6 percentage points (ppts) (from 36.2 to 30.1 per cent). Also the elite became smaller, reaching a low point in 2012 with a population share of 3.2 per cent. This contraction went in line with a yet higher concentration of wealth in the hands of a few at the top (Zizzamia et al., 2016), which seems to have been somewhat mitigated in the two years up to 2014/15. The three intermediate groups grew modestly in size and proportion, with the vulnerable experiencing the largest change in their population share, with a 4 ppts growth (from 15.0 to 19.0 per cent), followed by the middle class with a growth of 2.3 ppts (from 19.6 to 21.9 per cent), and the transient poor with a growth of 0.5 ppts (from 24.9 to 25.4 per cent).

Figure 4 and Table 7: South Africa's social structure, 2008 to 2014/15



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

Table 8 reports some a number of characteristics associated with the five classes in our schema. Most striking with regard to the average class characteristics reported in Table 8 is the close similarity between the transient poor and the vulnerable, who are remarkably alike despite the significant differences in average current expenditure levels, which respectively place the groups below or above the poverty line. Apart from these two fairly similar groups, the observed differences in characteristics between classes can be considered a direct reflection of the determinants of poverty transitions reported in Table 4 above. In line with our finding that having an older household head tends to be associated with a more stable socio-economic position, heads are on average oldest among the chronically poor and the elite – the two groups that we show to be the least mobile.

It may be of little surprise that higher levels of education tend to be accompanied by a lower risk to poverty. Accordingly, heads of chronically poor households have on average no more than five years of primary education, while the transient poor and the vulnerable 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.

Female household headship in return is strongly correlated with belonging to disadvantaged social classes. We observe that about seven in ten chronically poor households are female headed, whereas the same is true for no more than three in ten households among the middle class or elite. It is also worth noting that more disadvantaged social classes tend to have more children and more elderly household members than the middle or elite classes. This finding is in keeping with previous research which has found that demographic factors, in particular an elevated presence of dependants in a household, is a strong predictor of risk to poverty entrance and poverty persistence (Finn and Leibbrandt, 2016; Woolard and Klasen, 2005).

Table 8: Average class characteristics, 2008 to 2014/15

	Chronic Poor	Transient Poor	Vulnerable	Middle Class	Elite	Total
<i>Characteristics of the head of household (HoH)</i>						
HoH age	51	46	43	45	48	47
HoH is female	74%	57%	59%	30%	28%	57%
HoH years of education	5	8	9	12	14	8
HoH race group						
African	97%	86%	89%	46%	18%	80%
Coloured	3%	12%	10%	13%	7%	9%
Asian/Indian	0%	1%	1%	8%	10%	2%
White	0%	1%	0%	33%	65%	9%
HoH employment						
Inactive	59%	39%	31%	19%	20%	40%
Unemployed (discouraged)	4%	2%	3%	1%	0%	3%
Unemployed (strict)	12%	13%	12%	4%	1%	10%
Managers, professionals and technicians	0%	3%	5%	29%	43%	9%
Clerical, service and sales occupations	1%	8%	9%	16%	7%	7%
Craft and trade workers, supervisors	2%	3%	3%	9%	5%	4%
Plant and machine operators	1%	5%	6%	7%	2%	4%
Elementary occupations	8%	13%	14%	4%	1%	9%
Other	13%	15%	18%	13%	20%	15%
<i>Characteristics of the household (HH)</i>						
No. of workers in HH	0.84	1.17	1.16	1.43	1.25	1.11
Age composition						
No. of children aged 0-2 in HH	0.72	0.30	0.28	0.12	0.09	0.40
No. of children aged 3-4 in HH	0.54	0.19	0.19	0.11	0.04	0.29
No. of children aged 5-11 in HH	1.66	0.60	0.61	0.38	0.17	0.90
No. of children aged 12-15 in HH	0.87	0.32	0.34	0.23	0.13	0.49
No. of children aged 16-18 in HH	0.64	0.29	0.24	0.20	0.12	0.38
No. of elderly aged 60-75 in HH	0.37	0.25	0.22	0.22	0.26	0.28
No. of elderly aged 75 plus in HH	0.10	0.07	0.05	0.05	0.06	0.07
Geographic location						
Traditional	65%	27%	26%	4%	3%	34%
Urban	30%	69%	68%	92%	95%	61%
Farms	5%	4%	5%	4%	2%	5%
Province:						
Western Cape	3%	14%	14%	17%	15%	11%
Eastern Cape	20%	11%	10%	7%	6%	13%

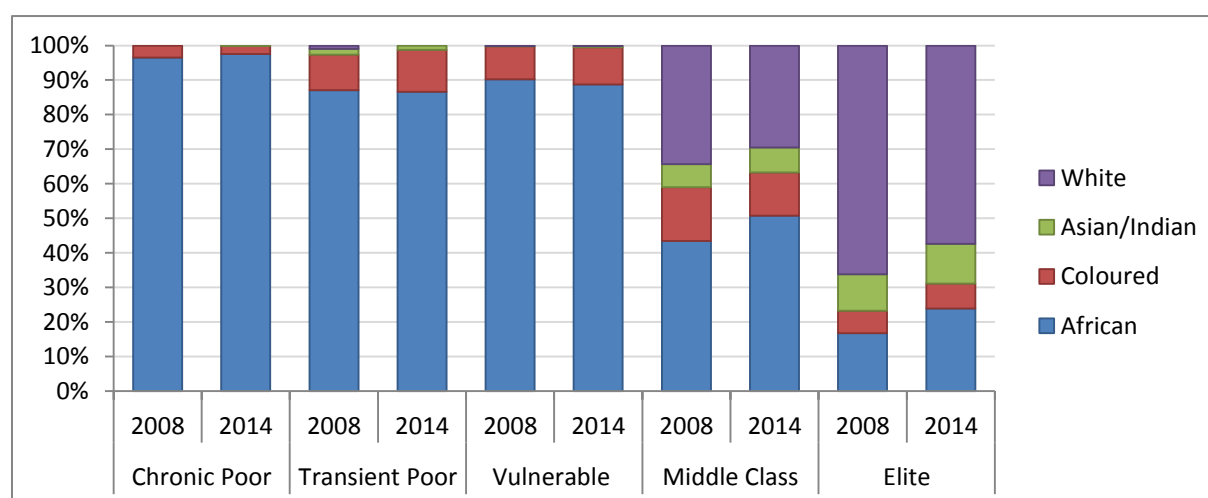
Northern Cape	1%	4%	3%	3%	2%	2%
Free State	4%	7%	5%	6%	4%	5%
KwaZulu-Natal	36%	10%	15%	10%	18%	20%
North West	5%	6%	6%	5%	3%	5%
Gauteng	9%	28%	29%	42%	39%	25%
Mpumalanga	10%	9%	9%	6%	9%	9%
Limpopo	12%	11%	8%	5%	3%	10%
Per capita expenditure (mean)	343	536	2,057	3,956	19,218	2,013
Per capita expenditure (median)	300	530	1,585	3,235	15,347	664

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

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

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 and the vulnerable than amongst the chronically poor. Although Africans also constitute the largest proportion of the middle class – with a growing trend in recent years illustrated in Figure 5 – 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 they made up only about 50 per cent of the middle class. On the other hand, while whites constitute a mere 10 per cent of the South African population, one in three members of the middle class and two in three members of the elite are white.

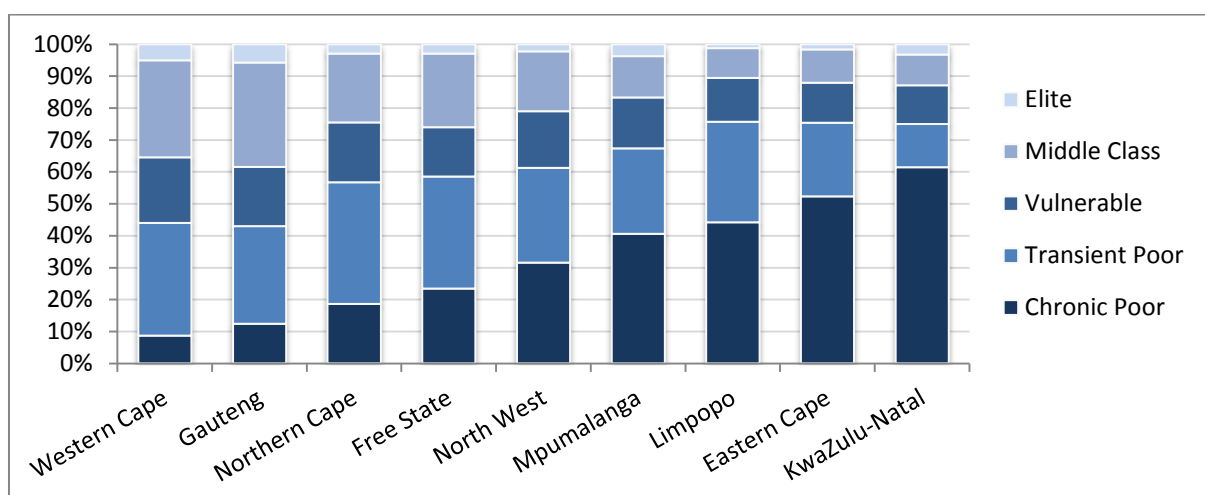
Figure 5: Racial composition of South Africa's five social classes, 2008 and 2014/15



Source: Authors' calculations using NIDS waves 1 and 4 (with post-stratified weights).

The geographic split of the classes is also striking, with the chronically poor most likely to be situated in traditional rural areas, whereas the majority of transient poor and vulnerable are located in urban areas. The middle class and elite are almost exclusively urban (Table 8). Among South Africa's nine provinces, KwaZulu-Natal has the highest rate of chronic poverty and the second smallest middle class (after Limpopo). 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 classes. Transient poverty and vulnerability are substantial in all provinces, including those provinces with low levels of chronic poverty, such as the Western Cape and Gauteng.

Figure 5: Geographic split of South Africa's five social classes, 2008 to 2014/15

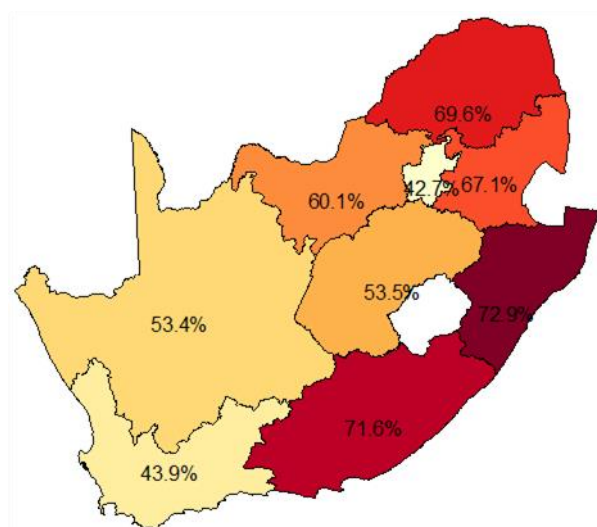


Source: Authors' calculations using NIDS waves 1 to 4 (with post-stratified weights).

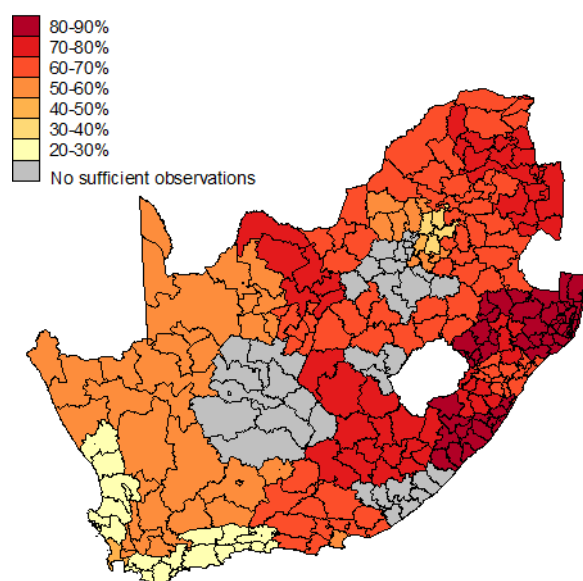
The maps in Figure 6 illustrate this geographic pattern clearly. The two maps report, for each province and district council respectively, the average propensity to poverty for the population of that province / district. The provinces with the highest average propensity to poverty (panel (a)) are KwaZulu Natal, Eastern Cape, and Limpopo respectively. Unsurprisingly, these are the provinces with in which most of the former Bantustans were located. This is yet more clearly evident in panel (b), where the darkest areas of the map correspond closely to the geographic location of former homelands. It is apparent that the apartheid legacy is still most strongly felt in these severely underdeveloped rural areas, which remain poorly integrated into the South African economy. On the other hand, Figure 6 illustrates that the Western Cape and Gauteng have populations with the lowest average propensity to poverty in the country.

Figure 6: Pockets of high propensity to poverty in South Africa, 2014/15

(a) Probability of remaining poor or falling into poverty, at the **province** level



(b) Probability of remaining poor or falling into poverty, at the **district** level

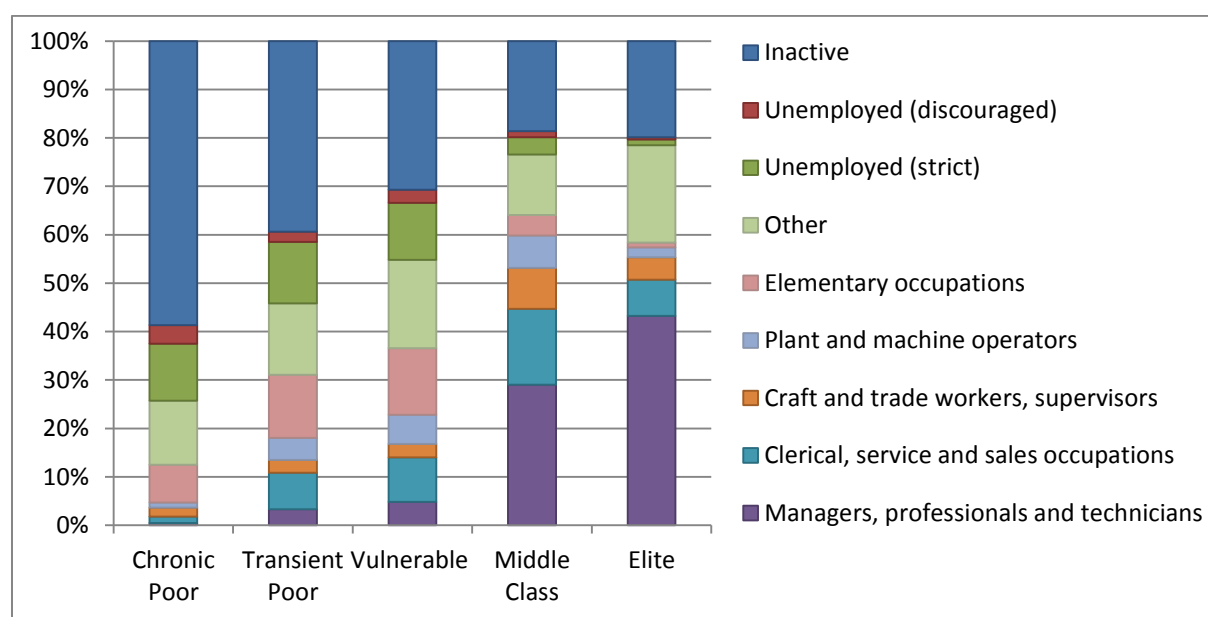


Source: Authors' calculations using NIDS wave 4 (with post-stratified weights).

Note: In Panel (b), only districts with at least 400 respondents in NIDS wave 4 were kept.

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 likelier it is that the household head is unemployed or economically inactive. Over 70 per cent of household heads amongst the chronically poor are not employed, either being economically inactive or unemployed. Amongst the transient poor and the vulnerable, around 50 per cent are not employed. This figure drops substantially when the middle class and elite are considered, for whom the unemployment rate is very low (between 1 and 5 per cent). Amongst those who are employed in the respective classes, household heads of chronically poor households are most likely to be employed in elementary occupations. Similarly, for household heads belonging to transient poor and the vulnerable households, elementary occupations also dominate, followed in significance by service and sales occupations. Unsurprisingly, a very high proportion of household heads in the middle and elite classes are employed as managers, professionals, or technicians.

Figure 7: South Africa's five social classes in the labour market, 2008 to 2014/15



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

Note: Figures represent employment status and occupational category limited to heads of households.

4.2 Class dynamics

Using cross-sectional data to measure net changes in South Africa's class structure may mask a substantial degree of inter-class mobility. To illustrate these mobility patterns, Tables 9 and 10 report the transitions that NIDS respondents experienced between consecutive survey waves.

In line with our applied measure of poverty persistence, 75.5 per cent of those who were chronically poor in the base year remained in the same position, 15.3 per cent improved their chances of exiting poverty and were considered transient poor, and only one in ten individuals actually exited poverty. By contrast, almost every third among the transient poor jumped the poverty line from one survey wave to the next. Almost every second respondent in the vulnerable group slipped into poverty over time, though generally maintaining relatively high chances of poverty exit. The middle class were largely stable, with three in four individuals 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, about four entered the middle class, and only one was actually at risk to poverty. Table 10 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 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 9: Movements across classes, 2008 to 2014/15

Pooled Sample (two consecutive waves)		wave <i>t</i>					
		Chronic	Transient	Vulnerable	Middle Class	Elite	Total
wave <i>t</i> – 1	Chronic poor	75.47	15.34	8.21	0.92	0.07	100
	Transitory poor	13.81	56.99	20.69	8.15	0.36	100
	Vulnerable	14.15	33.84	34.67	16.08	1.26	100
	Middle class	1.11	8.34	12.42	70.34	7.79	100
	Elite	0.33	2.3	3.28	44.55	49.55	100
	Total	35.04	28.24	16.07	17.64	3.02	100

Source: Author's calculations using NIDS balanced panel Waves 1 to 4 and applying panel weights.

Table 10: Poverty entry and exit, 2008 to 2014/15

Share (%) by class that...		Pooled	2008-2010	2010-2012	2012-2014
1) ...exited poverty:	Chronic Poor	9.20	6.88	6.91	13.70
	Transient	29.20	21.89	26.80	36.32
2) ...fell into poverty:	Vulnerable	47.99	58.21	51.71	36.38
	Middle class	9.45	11.32	8.46	8.60
	Elite	2.63	3.57	1.98	2.05

Source: Author's calculations using NIDS panel data pooling consecutive waves and applying panel weights.

4.3 Vulnerability to poverty and inter-class transitions

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 summarized in Table 11, and were derived using the point estimates of the poverty transition equation reported in Table 4. Fehler! Verweisquelle konnte nicht gefunden werden. 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 8 above, this reference person lives in a household with a head who is a male, African, 45 years old, has completed matric (12 years of schooling), and works in a white collar job (i.e., is a manager, professional, or technician), with one child aged 5-11 and no adults aged 60+ present in the household, and is living 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 8.6 per cent, and, in case of being initially poor, would have a probability of exiting poverty of 34.5 per cent.

For illustrative purposes, we predict the average per capita expenditure conditional on household characteristics for this middle-class reference person using a log-linear autoregressive model (AR(1)) for consumption. The current (logarithmised) expenditure level is explained by its first lagged value observed in the previous wave – which is assumed to be endogenous and thus instrumented using

the same parental background variables presented before in the initial poverty status equation – and a set of exogenous covariates observed in the present wave, identical to the explanatory variables used in the poverty transition equation (see Table A.3 Appendix for estimation results). With the additional assumption that all relevant processes are in a stationary equilibrium, the predicted steady-state expenditure level for our middle-class reference person is R2,550 per month, which is more than twice the basic-needs requirement captured by the poverty line (R963).

In the following, we aim to investigate how the predicted poverty entry and exit probabilities and expenditure level change, as we stepwise modify the reference person's household characteristics to represent a 'typical' member of the vulnerable class in South Africa, case (4). In doing so we are able to illustrate the role that time-invariant characteristics (such as race) have on determining poverty risks and class position, as well as the potential effects that time-variant household characteristics (such as having a child) can play in determining poverty transition probabilities and class situations.

As discussed in section 4.1, compared to the middle class, someone in the vulnerable group is most likely to live in a household with a head who is also African, but who is somewhat younger, female, and has only about nine years of education (compare Table 8). Adjusting the age and the gender of the household head leads to a moderate decline in the predicted expenditure level (from R2,550 to R2,341), accompanied by a rise in the predicted likelihood of falling into poverty from 8.6 to 15.6 per cent. Reducing in the level of education attained by the head to nine years of schooling leads to a further contraction of the predicted expenditure level to R1,994 and increase in the propensity to enter poverty above 23 per cent threshold, which pushes the person from being middle class into the group of the vulnerable. If we further, in line with our earlier descriptive analysis, change the occupational status of the head to being not economically active (though still assuming that there is one employed household member), the predicted expenditure level that our reference person may afford is halved to R833, which falls just below the basic-needs poverty line. The probability of slipping into poverty accordingly surges to above 30 per cent and, once in poverty, the chances of making it out again are just above 20 per cent.

This exercise illustrates nicely how closely the states of vulnerability and transient poverty lie together. Given their characteristics, those in the vulnerable group would be expected to be poor, which raises doubts about their ability to sustain a living standard above subsistence in the longer run. The latter is especially true when we assess the ability of our stylised person (4) to cope with some 'economic shock' or other event affecting the household's financial situation, and compare this to the ability of our middle class reference person (1) to buffer such events.

First, we investigate the effect that having a child (aged 0-2) would have on different classes. For the middle class household this shock reduces the predicted financial means available per person by about R378, and for the transient poor household per capita income is reduced by R187, pushing the latter alarmingly close to the food poverty line. For the middle class person, the risk of falling into poverty rises from 8.6 to 14.9 per cent, whereas for the transient poor person the chance of exiting poverty decreases from 20.5 to 16.6 per cent.

Second, we investigate the effect that a loss of employment of the household head has on different classes. This economic shock tends to be highly disruptive, especially for those in the middle class. For the our reference person (1), the predicted expenditure per person would fall dramatically in reaction to this shock, from R2,550 to R1,386. The effects are also felt in a surge in the predicted poverty propensity from below 10 to more than 20 per cent. Note that this is the short-run effect setting the past periods expenditure level at R2,550. If the head remains (strictly) unemployed, the long-run or steady-state expenditure level would be even lower, at R996 – which is remarkably close to the poverty line. This illustrates nicely the fact that the middle class generally derives its status

from income generated on labour market, and depends on this source of income to sustain its lifestyle. From this, we may also draw conclusions regarding the need for social protection systems, for example in the form of unemployment insurance, since this could potentially mitigate the descent into poverty that may befall even the comparatively secure middle class in event of a job loss of the main bread winner.

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 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 11: Predicted poverty probabilities for persons with different combinations of characteristics

	Predicted p.c. HH exp.	Predicted prob. of FALLING into poverty	Predicted prob. of EXITING poverty	Class
(1) A typical member of the middle class may live in a household with a head who is a male, African, 45 years old, has achieved matric (12 years of schooling), works in a white collar job, e.g. as manager, professional, or technician, has one child of age 5-11 and no adults aged 60+ present in the household, and lives in urban area in Gauteng.	2,550	8.60%	(34.45%)	Middle Class
→ Reaction of (1) to birth of a child	2,172	14.85%	(29.24%)	Middle Class
→ Reaction of (1) to job loss (of household head who becomes strictly unemployed)	1,386	18.37%	(23.84%)	Middle Class
Gradually adjust the characteristics in (1) to represent a typical member of the vulnerable group				
(2) As (1), except household head is female and 43 years old	2,341	15.60%	(31.23%)	Middle Class
(3) As (2), except household head has 9 years of schooling	1,994	23.20%	(27.25%)	Vulnerable
(4) As (3), except household head is not economically active (but one other household member is employed)	833	(30.99%)	20.52%	Transient Poor
→ Reaction of (4) to birth of a child	646	(43.12%)	16.62%	Transient Poor
→ Reaction of (4) to job loss (of the only employed household member)	785	(33.16%)	18.48%	Transient Poor
Gradually adjust the characteristics in (1) to represent a typical member of the elite				
(5) As (1), except household head is 48 years old	2,569	7.83%	(34.83%)	Middle Class
(6) As (5), except household head has 14 years of schooling	2,858	5.45%	(37.74%)	Middle Class
(7) As (6), except no children living in the household	3,378	3.79%	(43.33%)	Middle Class
(8) As (7), except household head is white	11,378	0.13%	(85.42%)	Elite
→ Reaction of (8) to birth of a child	8,828	0.36%	(81.82%)	Middle Class
→ Reaction of (8) to job loss (of household head who becomes strictly unemployed)	4,185	0.55%	(77.14%)	Middle Class

Source: Own calculations using NIDS data.

5. Conclusion

This paper aims to contribute to the existing literature on social class in developing countries by investigating social stratification through the lens of dynamic perspective. We link the definition of social class to an in-depth analysis of social mobility with a focus on poverty persistence and vulnerability to poverty. Our assessment provides a more differentiated picture of the rigidity or fluidity of social structures than that which could be obtained by relying exclusively on class boundaries defined in terms of absolute income or expenditure thresholds. Thereby, we aim to provide a bridge between existing economic approaches and sociological understandings of social class – particularly the Weberian notion that defines a class situation as one where individuals share common ‘life chances’. In this sense, the contribution we make is both conceptual, by proposing a class schema with special relevance for the emerging and developing country context, and empirical, presenting an application to South Africa using recent nationally representative panel data.

Conceptually, the proposed class schema takes as its starting point a standard division of society into three broad classes: the poor, the middle class, and the elite – where the poverty line is set as the frontier between the poor and the middle class. That is, as a minimum necessary condition, middle class households should be able to afford a basket of goods considered adequate to satisfy a person’s basic needs. However, in a world of risk and uncertainty, being able to afford a certain standard of living today does not yet give a good indication whether the same will be true in the near future. Given that in the sociological class literature the middle class is generally regarded as being an ‘empowered’ class which is characterised by relative economic security, we propose a more stringent definition of the middle class than the approach which merely assumes that the middle class is ‘not poor’. In particular, we attempt to define the middle class as a class which is not vulnerable to becoming poor. Similarly, the experience of poverty is not homogenous, and may be quite different for those who are chronically poor compared to those who stand a good chance of escaping poverty.

Given these considerations, in this paper, we propose a multi-layered class model that differentiates five social classes: (i) the chronically poor, characterised by high poverty persistence, (ii) the transient poor, who are presently poor but have above average chances of escaping poverty, (iii) the non-poor but vulnerable, whose basic needs are met in the present 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. As indicated above, we believe this five-tiered stratification to be particularly relevant in the emerging and developing country context, where large parts of the population are either poor or vulnerable to poverty and where few formal insurance mechanisms exist to buffer adverse shocks.

Moving on to the empirical application, to gain a better understanding of who is the most likely to remain poor and who is most at risk of becoming poor in South Africa, we examine the determinants of transitions into and out of poverty using a first order Markov model that accounts for endogenous initial conditions and non-random panel attrition, following an approach suggested by Cappellari and Jenkins (2002, 2004, 2008). We fit the model to panel data from the South African National Income Dynamics Study (NIDS), for which at present four waves of data are available, collected between 2008 and 2014/15. Data from pairs of consecutive waves were pooled, such that the determinants of poverty persistence and entry rates are derived by analysing transitions from 2008 to 2010/11, 2010 to 2012 and 2012 to 2014/15 controlling for period specific fixed effects. Poverty is defined using the StatsSA’s cost-of-basic-needs upper bound poverty line (set at R963 in January 2015 prices).

Our estimation results suggest that there is substantial state dependence in poverty transitions, in the sense that households who have experienced poverty in the past face a higher risk of experiencing poverty in the future. Moreover, race remains a strong predictor of poverty in South Africa, with Africans being at the highest risk of being in poverty whereas whites are significantly less likely to be poor, even after controlling for differences in education and employment. Members of female headed and rural households face a higher than average risk to poverty, just as those living in households with the presence of dependent children or those living in households where the head is unemployed. In contrast, living in a household with a better educated household head who is employed, ideally in a management position or other white-collar occupation, is a strong predictor of a lower vulnerability to poverty. Having an older head generally tends to go in line with a more stable socio-economic position, in the sense that the chances for poverty entry and exit are lower (poverty persistence is higher). Similarly, mobility seems to be comparatively high in the Western Cape compared to other provinces, which are characterised by generally lower poverty entry and exit rates. Poverty persistence seems to be highest in KwaZulu-Natal, followed by the Eastern Cape, Mpumalanga, and the Free State. Generally, risks of remaining in or falling into poverty were higher between waves 1 to 2 (2008 to 2010/11) than between waves 2 to 3 (2010/11 to 2012) or waves 3 to 4 (2012 to 2014/15).

We use the derived parameter estimates to predict the poverty exit rates of initially poor respondents and the poverty entry rates of initially non-poor respondents. In our specific application for South Africa, we calculate that the average probability of exiting poverty from one wave to the next was 12.4 per cent, conditional in being poor in the base period. This we define as the cut-off point separating the chronically poor from the transient poor. Analogously, we calculate that the average probability of falling into poverty was 23.0 per cent, conditional on being non-poor in the base year. We use this probability cut-off to separate the vulnerable from the middle class. For comparative purposes, we also give an indication of the monetary thresholds associated with these probability cut-off points. We find that, amongst the initially poor, the average probability of exiting poverty is associated with a monetary threshold of R447 per person per month, which is close to StatsSA's food poverty line (R430 in January 2015 prices) demarcating extreme poverty. Amongst the initially non-poor, the average probability of entering poverty is associated with a monetary threshold of R2,745 per person per month (in January 2015 prices). However, we show that using these monetary thresholds alone to define South Africa's social classes would mask a substantial degree of variation in the predicted poverty transition probabilities among individuals living in households with similar current expenditure levels. For example, this would involve classifying all households with per capita expenditure between R963 and R2,745 as "vulnerable", even when a non-negligible number of these households are predicted by our model to have a below average risk to poverty based on their household characteristics, and are thus better candidates for the "middle class". The approach used in the present paper thus represents a notable refinement of earlier vulnerability-based class definitions, such as the one suggested by López-Calva and Ortiz-Juarez (2014) with an application to Latin America and, that used by Zizzamia et al. (2016) for South Africa.

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. This share is considerably smaller than the range of 30 to 55 per cent that earlier approaches in the literature have suggested (see, inter alia, Visagie and Posel, 2013; Burger et al., 2014; Burger et al., 2015). In addition, growth seems to have been sluggish in recent years. However, consistent with the existing literature, we find that the share of Africans in the middle class has been expanding. Despite this change in racial composition, Africans

are still underrepresented in the middle class compared to their share in the overall population, and race remains a strong predictor of chronic as well as transient poverty and vulnerability to poverty in South Africa. Having access to stable labour market income, by contrast, is a key determinant for achieving economic stability in South Africa. We also find that a higher level of education of the household head and having a working household head (ideally in a white collar occupation) are both strong predictors for lower vulnerability to poverty. Accordingly, we show that the middle class generally derives its status from income generated in the labour market, and depends on this source of income to sustain its lifestyle. However, given the small size of the middle class, we find that at least three in four South Africans have not attained situation of economic stability and remain either poor or vulnerable to becoming poor.

Our investigation into poverty dynamics has revealed that there is substantial genuine state dependence of poverty, with any given individual facing a much higher propensity to poverty when being initially poor compared to if that same individual was initially non-poor. Our findings indicate an unequal distribution of both poverty risks and chances for upward mobility in South Africa. That is, the experience of poverty itself, independent of other household characteristics and resources, increases the chance that initially poor household will remain poor. While this finding suggests the existence of a significant poverty trap in South Africa, this paper also indicates a number of potential avenues out of poverty for disadvantaged South Africans. Better access to high quality education, proximity to urban centres which provide economic opportunity, and the presence of an employed member in the household are all factors which show potential to reduce inequality of opportunity and limit the impact of parental socio-economic background in determining poverty persistence. In order to off-set the effects of poverty traps due to genuine state dependence, policy will need to focus on improving access to potential avenues out of poverty – improving access to marketable skills and quality education, easing access to functioning markets in urban centres, and tackling unemployment.

A focus on the determinants of poverty transitions also revealed that there is considerable scope for policy to be targeted at preventing households from falling (deeper) into poverty. We have shown that demographic events, such as the birth of a child, and labour market shocks, in the form of a loss of employment of the household head, have a significant impact on increasing vulnerability to poverty. This indicates that there is scope for an improvement in social protection systems, for example, in the form of unemployment insurance and increases in the value of child support grants. These social safety nets would, for instance, help prevent a descent into poverty that may befall even the comparatively secure middle class in event of a job loss of the main bread winner. Economic shocks of this sort tend to be even more devastating for those in an already precarious situation.

However, in order to appropriately target policy to reducing vulnerability, a closer investigation into a number of relevant determinants of vulnerability will be needed. These include, first, work will need to be done to investigate the importance of various events in determining poverty transitions. This will involve an investigation into the frequency and intensity of different shocks. Second, this will require an analysis of the distribution of shocks and coping mechanisms across the population. Future research will need to provide information on which population groups are most likely to experience particular types of shocks, and which population groups are best equipped to deal with shocks when they do occur. This will help policy makers in designing a strategy in which interventions to reduce the incidence of shocks are complemented by efforts to improve the coping mechanisms available to households.

References

- African Development Bank (AfDB). 2011. *The middle of the pyramid: Dynamics of the middle class in Africa*. (AfDB Market Brief, 20 April 2011). Tunis, Tunisia: African Development Bank
- Alesina, A., & Perotti, R. 1996. Income distribution, political instability, and investment. *European economic review*, 40(6), pp. 1203-1228.
- Arthur, J. A. (2014). *Class Formations and Inequality Structures in Contemporary African Migration: Evidence from Ghana*. Lexington Books.
- Banerjee, A., & Duflo, E., 2008. What is Middle Class about the Middle Classes around the World? *Journal of Economic Perspectives*, 22(2): 3-28.
- Bhalla, S. S. 2007. Second among equals: The middle class kingdoms of India and China. Book draft Chapter 5, available at www.oxusinvestments.com. [20 May 2016]
- Birdsall, N., Graham, C., & Pettinato, S. 2000. *Stuck in tunnel: Is globalization muddling the middle?* (Brookings Institution Working Paper 14). Washington, D.C.: Brookings Institution.
- Birdsall, N., 2010. *The (Indispensable) Middle Class in Developing Countries; or, The Rich and the Rest, Not the Poor and the Rest*. (Center for Global Development Working Paper 2011/207). Washington D.C.: Center for Global Development.
- Blackburn, M. L., & Bloom, D. E. 1985. What is happening to the middle class? *American Demographics*, 7(1), 18-25.
- Budlender, J., Leibbrandt, M., & Woolard, I., 2015. *South African poverty lines: A review and two new money-metric thresholds*. (Southern Africa Labour and Development Research Unit Working Paper Number 2015/151). Cape Town: SALDRU, University of Cape Town.
- Burger R., McAravey C. & Van der Berg S. 2015. *The Capability Threshold: Re-examining the definition of the middle class in an unequal developing country*. (Stellenbosch Economic Working Papers 16/15). Department of Economics, Stellenbosch University.
- Burger, R., Steenekamp C., Van der Berg S. & Zoch A. 2014. *The middle class in post-apartheid South Africa: Examining and comparing rival approaches*. Stellenbosch Economic Working Papers 11/14). Department of Economics, Stellenbosch University.
- Cafiero, C & Vakis, R., 2006. *Risk and Vulnerability Considerations in Poverty Analysis: Recent Advances and Future Directions*, (Social Protection Discussion Paper 0610). Washington D.C.: The World Bank.
- Cappellari, L., & Jenkins, S. 2002. Who Stays Poor? Who Becomes Poor? Evidence from the British Household Panel Survey. *The Economic Journal*. 112(478), pp. C60—C67.
- Cappellari, L. & Jenkins, S. 2004. Modelling Low Income Transitions. *Journal of Applied Econometrics*. 19(5), pp. 593-610.
- Cappellari, L., & Jenkins, S. P. 2008. Estimating low pay transition probabilities accounting for endogenous selection mechanisms. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 57(2), pp. 165-186.
- Corral, P., Molini, V., & Oseni, G. 2015. *No Condition is Permanent: Middle Class in Nigeria in the Last Decade* (The World Bank Policy Research Working Paper 7214). Washington D.C.: The World Bank.
- Crankshaw, O. 1997. *Race, Class and the Changing Division of Labour under Apartheid*. London and New York: Routledge.
- Deloitte, 2012, The Rise and Rise of the African Middle Class, Deloitte on Africa Collection: Issue 1.
- Dercon, S. 2006. *Vulnerability: A micro perspective*. (QEH Working Paper Series, Working Paper No. 149). Oxford: Department of International Development, University of Oxford.

- Easterly, W. 2001. The middle class consensus and economic development. *Journal of Economic Growth*, 6(4), 317-335.
- Finn, A., Leibbrandt, M., & Woolard, I., 2013. *The Middle Class and Inequality in South Africa* (Southern Africa Labour and Development Research Unit, unpublished paper for the Programme to Support Pro-Poor Policy Development). Cape Town: SALDRU, University of Cape Town.
- Finn, A., 2014. *A National Minimum Wage in the Context of the South African Labour Market*. (National Minimum Wage Research Initiative at the University of the Witwatersrand, Working Paper 2015/1). Johannesburg: NMWRI, University of the Witwatersrand
- Foster, J., & Wolfson, M. C. 2009. Polarization and the decline of the middle class: Canada and the US. OPHI Working Paper No. 31, University of Oxford, Oxford.
- Giesbert, L., & Schotte, S. 2016. Africa's new middle class: Fact and fiction of its transformative power. *GIGA Focus Africa*, 1.
- Glewwe, P., & Gibson, J. 2006. Analysis of poverty dynamics. *Handbook of Poverty Statistics*, pp. 324-69.
- Heckman, J.J. 1981a. The incidental parameters problem and the problem of initial conditions in estimating a discrete time-discrete data stochastic process. In Manski CF, McFadden D (eds). *Structural Analysis of Discrete Data with Econometric Applications*, (eds). MIT Press: Cambridge, MA.
- Heckman, J.J. 1981b. Statistical models for discrete panel data. In *Structural Analysis of Discrete Data with Econometric Applications*, Manski CF, McFadden D (eds). MIT Press: Cambridge, MA.
- Hoddinott, J. & Quisumbing, A., 2003. *Methods for Microeconomic Risk and Vulnerability Assessments* (Social Protection Discussion Paper Series, No. 0324) Washington D.C.: The World Bank.
- Inglehart, R. (1990). *Culture Shift in Advanced Industrial Society*. Princeton University Press: Princeton, NJ.
- Jenkins, S. 2011. *Changing Fortunes: Income Mobility and Poverty Dynamics in Britain*. Oxford: Oxford University Press.
- Klasen, S., & Waibel, H. (Eds.). 2013. *Vulnerability to Poverty: Theory, measurement and determinants, with case studies from Thailand and Vietnam*. Palgrave Macmillan.
- Kharas, H. 2010. *The emerging middle class in developing countries*. (OECD Development Centre Working Paper No. 285). Paris, France: OECD Development Centre
- Levy, B., Hirsch, A., & Woolard, I., 2014. *South Africa's evolving political settlement in comparative perspective*, (Southern Africa Labour and Development Research Unit Working Paper Number 138). Cape Town: SALDRU, University of Cape Town.
- López-Calva, L. F. & Ortiz-Juarez, E., 2014. A vulnerability approach to the definition of the middle class, *The Journal of Economic Inequality*, 12(1): 23-47.
- McEwan, C., Hughes, A., & Bek, D., 2015. Theorising middle class consumption from the global South: A study of everyday ethics in South Africa's Western Cape. *Geoforum*, 67: 233–243.
- McKinsey, 2012, *The rise of the African consumer: A report from McKinsey's Africa Consumer Insights Center*, McKinsey Global Institute.
- Partridge, M. D. 1997. Is inequality harmful for growth?. Comment. *The American Economic Review*, 87(5), pp. 1019-1032.
- Phadi, M. & Ceruti, C., 2011. The multiple meanings of the middle class in Soweto, South Africa. *African Sociological Review*, 15(1): 87-107
- Ravallion, M., 2010. The Developing World's Bulging (but Vulnerable) Middle Class, *World Development*, 38(4): 445-454.

- SALDRU, 2016a. National Income Dynamics Study 2008, Wave 1 [dataset]. Version 5.3. Cape Town: Southern Africa Labour and Development Research Unit [producer], Cape Town: DataFirst [distributor].
- SALDRU, 2016b. National Income Dynamics Study 2010-2011, Wave 2 [dataset]. Version 2.3. Cape Town: Southern Africa Labour and Development Research Unit [producer], Cape Town: DataFirst [distributor].
- SALDRU, 2016c. National Income Dynamics Study 2012, Wave 3 [dataset]. Version 1.3. Cape Town: Southern Africa Labour and Development Research Unit [producer], Cape Town: DataFirst [distributor].
- SALDRU, 2016d. National Income Dynamics Study 2014-2015, Wave 4 [dataset]. Version 1.0. Cape Town: Southern Africa Labour and Development Research Unit [producer], Cape Town: DataFirst [distributor], Pretoria: Department of Planning Monitoring and Evaluation [commissioner].
- Schotte, S., 2016. Not Middle Class, But Middle Classes: An Assessment for South Africa, Paper prepared for presentation at the International Workshop on Inequality and Middle Class Development in Africa, Cape Town (04–06 May)
- Schotte, S., Zizzamia, R. & Leibbrandt, M., Forthcoming. *Assessing the Extent and Nature of Chronic Poverty, Poverty Dynamics, and Vulnerability to Poverty in South Africa* (Southern Africa Labour and Development Research Unit Working Paper). Cape Town: SALDRU, University of Cape Town.
- Seekings, J. & Nattrass, N., 2005. *Class, Race and Inequality in South Africa*. New Haven and London: Yale University Press.
- Solimano, A. 2008. The middle class and the development process: International evidence. Santiago, Chile: Economic Commission for Latin America and the Caribbean, ECLAC. Mimeographed document
- Southall, R. 2016. *The New Black Middle Class in South Africa*. South Africa: Jacana Media.
- Statistics South Africa (StatsSA), 2015. *Methodological report on rebasing of national poverty lines and development of pilot provincial poverty lines*. (Technical Report 03-10-11). Statistics South Africa.
- Stewart MB, Swaffield, J.K. 1999. Low pay dynamics and transition probabilities. *Economica*, 66, pp. 23-42.
- Torche, F. & López-Calva, L.F., 2013. Stability and Vulnerability of the Latin American Middle Class, *Oxford Development Studies*, 41(4): 409-435.
- Udjo, E. O. 2008. *The demographics of the emerging black middle class in South Africa*. (University of South Africa Bureau of Market Research Reports Paper 375). Pretoria, South Africa: Bureau of Market Research
- UNDP, 2013. Human Development Report 2013. The rise of the South: Human progress in a diverse world. United Nations Development Programme, New York.
- Visagie J. 2013. Is the middle class becoming better off? Two perspectives. *Econ3x3*. Available: <http://www.econ3x3.org/article/middle-class-becoming-better-two-perspectives> [15 February 2016]
- Visagie, J. & Posel, D., 2013. A reconsideration of what and who is middle class in South Africa, *Development Southern Africa*, 30 (2): 149-167.
- Weber, M. 1968. *Economy and society : An outline of Interpretative Sociology*. Bedminster Press, New York.
- Zizzamia, R., Schotte, S., Leibbrandt, M., & Ranchhod, V. 2016. Vulnerability and the middle class in South Africa. Cape Town: SALDRU, University of Cape Town. SALDRU Working Paper Number 188/ NIDS Discussion Paper 2016/15.

Appendix

Table A1: Multivariate Probit model: Initial Poverty Status

<i>Covariate</i>	estimate	s.e.
<i>Characteristics of the individual</i>		
Mother education (base: no schooling)		
0-7 years	0.156***	0.053
8-11 years	0.177**	0.076
matric +	0.304***	0.087
Don't know	0.059	0.052
Missing	-0.096	0.091
Father education (base: no schooling)		
0-7 years	0.121**	0.056
8-11 years	-0.08	0.081
matric +	0.344***	0.075
Don't know	-0.022	0.043
Missing	-0.06	0.066
Kind of work usually done by mother (base: never worked)		
Elementary	-0.014	0.043
Non-Elementary	0.215***	0.068
Don't know	-0.007	0.071
Missing	0.009	0.085
Kind of work usually done by father (base: never worked)		
Elementary	0.224***	0.053
Non-Elementary	0.283***	0.048
Don't know	0.118***	0.045
Missing	0.294***	0.06
<i>Characteristics of the head of household (HoH)</i>		
HoH age	-0.008*	0.004
HoH age squared (x0.01)	0.021***	0.004
HoH is female	-0.192***	0.024
HoH years of education	0.097***	0.004
HoH race group (base: African)		
Coloured	0.382***	0.049
Asian/Indian	1.781***	0.125
White	1.368***	0.165
HoH employment (base: inactive)		
Unemployed (discouraged)	0.096	0.068
Unemployed (strict)	-0.076*	0.04
Managers, professionals and technicians	1.119***	0.051
Clerical, service and sales occupations	0.512***	0.046
Craft and trade workers, supervisors	0.471***	0.057
Plant and machine operators	0.193**	0.08
Elementary occupations	0.132***	0.043
Other	0.099***	0.036
<i>Characteristics of the household (HH)</i>		
No. of workers in HH	0.077***	0.013
Age composition		
No. of children aged 0-2 in HH	-0.323***	0.018
No. of children aged 3-4 in HH	-0.385***	0.021
No. of children aged 5-11 in HH	-0.280***	0.013
No. of children aged 12-15 in HH	-0.185***	0.016
No. of children aged 16-18 in HH	-0.252***	0.021
No. of elderly aged 60-75 in HH	-0.017	0.023
No. of elderly aged 75 plus in HH	-0.260***	0.046

Geographic location (base: traditional)		
Urban	0.273***	0.029
Farms	-0.095*	0.055
Province fixed effects (base: Western Cape)		
Eastern Cape	-0.106**	0.049
Northern Cape	-0.025	0.046
Free State	0.136**	0.056
KwaZulu-Natal	0.001	0.049
North West	0.129**	0.055
Gauteng	0.233***	0.054
Mpumalanga	0.112**	0.054
Limpopo	0.042	0.056
<i>Year fixed effects</i>		
2012 (wave 3)	-0.047*	0.027
2014 (wave 4)	-0.079***	0.024
Constant	0.008	0.007
Model chi2 (d.f. = 162)		20,439
Number of observations		67,624

Robust standard errors clustered at the individual level.

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

Source: Authors' calculations based on pooled transitions from NIDS waves 1 to 4.

Table A2: Multivariate Probit model: Panel retention

<i>Covariate</i>	estimate	s.e.
<i>Characteristics of the individual</i>		
Cooperative during interview	0.488***	0.04
Original sample member	0.991***	0.048
<i>Characteristics of the head of household (HoH)</i>		
HoH age	-0.016**	0.008
HoH age squared (x0.01)	0.008	0.007
HoH is female	-0.047	0.035
HoH years of education	-0.007	0.006
HoH race group (base: African)		
Coloured	-0.170**	0.084
Asian/Indian	-0.286*	0.15
White	0.191*	0.111
HoH employment (base: inactive)		
Unemployed (discouraged)	0.283***	0.094
Unemployed (strict)	-0.068	0.068
Managers, professionals and technicians	-0.150*	0.089
Clerical, service and sales occupations	-0.049	0.086
Craft and trade workers, supervisors	0.220**	0.106
Plant and machine operators	-0.007	0.174
Elementary occupations	-0.066	0.075
Other	-0.125**	0.052
<i>Characteristics of the household (HH)</i>		
No. of workers in HH	0.046**	0.019
Age composition		
No. of children aged 0-2 in HH	0.111***	0.026
No. of children aged 3-4 in HH	0.090***	0.029
No. of children aged 5-11 in HH	0.065***	0.017
No. of children aged 12-15 in HH	-0.013	0.024
No. of children aged 16-18 in HH	-0.071***	0.025
No. of elderly aged 60-75 in HH	-0.087**	0.036
No. of elderly aged 75 plus in HH	-0.109	0.067
Geographic location (base: traditional)		
Urban	-0.191***	0.05
Farms	0.082	0.094
Province fixed effects (base: Western Cape)		
Eastern Cape	0.319***	0.086
Northern Cape	0.190**	0.08
Free State	0.317***	0.093
KwaZulu-Natal	0.317***	0.087
North West	0.365***	0.094
Gauteng	0.146*	0.088
Mpumalanga	0.284***	0.094
Limpopo	0.504***	0.092
<i>Time fixed effects</i>		
Wave 3	0.520***	0.039
Wave 4	0.653***	0.05
Constant	0.961***	0.224
Model chi2 (d.f. = 162)	20,439	
Number of observations	67,624	

Robust standard errors clustered at the individual level.

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

Source: Authors' calculations based on pooled transitions from NIDS waves 1 to 4.

Table A3: Dynamic model of (logarithmised) per capita household expenditure with random effects

<i>Covariate</i>	estimate	s.e.
Ln (per capita household expenditure in previous period)*	0.398***	0.02
<i>Characteristics of the head of household (HoH)</i>		
HoH age	-0.008***	0.001
HoH age squared (x0.01)	0.010***	0.001
HoH is female	-0.050***	0.006
HoH years of education	0.032***	0.001
HoH race group (base: African)		
Coloured	0.037***	0.012
Asian/Indian	0.486***	0.036
White	0.731***	0.036
HoH employment (base: inactive)		
Unemployed (discouraged)	-0.023	0.017
Unemployed (strict)	-0.040***	0.01
Managers, professionals and technicians	0.526***	0.017
Clerical, service and sales occupations	0.254***	0.013
Craft and trade workers, supervisors	0.217***	0.018
Plant and machine operators	0.300***	0.017
Elementary occupations	0.066***	0.01
Other	0.117***	0.009
<i>Characteristics of the household (HH)</i>		
No. of workers in HH	0.036***	0.003
Age composition		
No. of children aged 0-2 in HH	-0.153***	0.004
No. of children aged 3-4 in HH	-0.116***	0.005
No. of children aged 5-11 in HH	-0.101***	0.003
No. of children aged 12-15 in HH	-0.083***	0.004
No. of children aged 16-18 in HH	-0.098***	0.005
No. of elderly aged 60-75 in HH	0.010*	0.005
No. of elderly aged 75 plus in HH	-0.024**	0.01
Geographic location (base: traditional)		
Urban	0.111***	0.008
Farms	-0.035***	0.012
Province fixed effects (base: Western Cape)		
Eastern Cape	-0.041***	0.013
Northern Cape	-0.025*	0.013
Free State	0.029*	0.016
KwaZulu-Natal	-0.045***	0.013
North West	-0.017	0.015
Gauteng	0.091***	0.014
Mpumalanga	-0.049***	0.015
Limpopo	-0.025*	0.015
<i>Time fixed effects</i>		
Wave 3	0.074***	0.007
Wave 4	0.200***	0.007
Constant	3.833***	0.109
Sigma_u	0.1015	
Sigma_e	0.5635	
Rho (fraction of variance due to u_i)	0.0315	
Number of observations	71,042	

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

Source: Authors' calculations based on pooled transitions from NIDS waves 1 to 4.

* Note: Ln (per capita household expenditure in previous period) is instrumented using parental background indicators.