# Southern Africa Labour and Development Research Unit

## Vulnerability and the middle class in South Africa

*by*
*Rocco Zizzamia, Simone Schotte,*
*Murray Leibbrandt and Vimal Ranchhod*

About the Author(s) and Acknowledgments

Rocco Zizzamia is a graduate student at the Oxford Department of International Development, University of Oxford, and a Researcher at the Southern Africa Labour and Development Research Unit at the University of Cape Town.
Simone Schotte is a doctoral student and research fellow at the German Institute of Global and Area Studies and the Georg-August-University Göttingen.
Murray Leibbrandt is a Professor in the School of Economics at the University of Cape Town and the Director of the Southern Africa Labour and Development Research Unit. He holds the DSD/NRF National Research Chair of Poverty and Inequality Research and is a Principal Investigator on the National Income Dynamics Study.
Vimal Ranchhod is the Chief Research Officer at the Southern Africa Labour and Development Research Unit at the University of Cape Town.

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## Abstract

Apartheid imposed a rigid racialised system of unequal resource distribution on South African society, resulting in one of the highest rates of inequality in the world. Since apartheid ended in 1994, this aggregate income inequality has not improved. The persistence of extraordinarily high levels of poverty and inequality makes the definition and measurement of the 'middle class' particularly challenging. A review of previous work on the middle class, both in South Africa and in other developing countries, illustrates the difficulty of addressing this challenge. Recent research showing growth in the South African middle class often classifies as 'middle class' households which either fall below the basic-needs poverty line or are vulnerable to poverty. This notion of economic insecurity conflicts with the sociological understanding of the middle class as an 'empowered' class.

In this paper, we attempt to develop a conceptually and empirically rigorous approach to defining and measuring the middle class in South Africa. Arguing that the notion of 'empowerment' is central to the social and political meanings of 'middle class', we propose an empirical strategy that uses (in)vulnerability to poverty as the key criterion defining middle class status. Using the panel dimension of the nationally representative National Income Dynamics Study (NIDS), we present a probability model that predicts the risk of staying in or falling into poverty over a six-year time frame, depending on a broad array of initial household conditions and resources. We select the expenditure level associated with a maximum risk to poverty of 10 percent as the lower bound of the middle class and the expenditure level associated with effective invulnerability to poverty as the upper bound. This gives us a monthly per capita expenditure range of R3,104 to R10,387 (January 2015 prices). Using these thresholds, we find that the middle class in South Africa is smaller than previous research has suggested (with a population share of about 13.5 percent in 2014), and has grown sluggishly since 1993. Despite this, there has been considerable demographic transformation within the middle class, with Africans now outnumbering whites by a significant margin.

# 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 developing countries. While this optimism has been fuelled by a number of reports which have claimed that the African 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;), recent research across the continent is increasingly providing reason to doubt these claims (see inter alia Corral et al., 2015; Giesbert and Schotte, 2016; Visagie and Posel, 2013).

A closer review of existing academic research on the middle class reveals that the literature provides little clarity on who constitutes South Africa's middle class. Given that researchers work with different understandings and definitions of class, this research has resulted in often contradictory findings regarding the size and the growth of the country's middle class.

Adding to the debate that is currently unfolding around the question of how to define and measure the middle class in South Africa, we argue that the thresholds used by many researchers to define the middle class either lack a clear theoretical foundation or fall short in their empirical implementation. In part, this is because the vastly unequal nature of South African society will cause definitions that locate the middle class in the literal middle of the distribution to include a significant number of people who fall below the poverty line (Visagie and Posel, 2013).

While much of the discussion on the middle class in South Africa is built around an understanding that sees this class as an *agent* of economic growth, democratic consolidation and consumption, too little attention has been devoted to understanding the middle class as an *outcome* of particular patterns of growth. By shifting attention to understanding the middle class in this way, an investigation into the polarised pattern of growth in South Africa reveals that, for most of the post-apartheid period, growth rates have been lowest in the (upper) middle of the income distribution. The simultaneous increased concentration of national income at the very top of the distribution does not resonate well with the narrative of the growth of a powerful South African middle class.

To investigate this further, and to provide much needed clarity regarding the size and the growth of the middle class in post-apartheid South Africa, this paper uses a vulnerability-to-poverty approach to define the middle class. The underlying vulnerability criterion is based on the notion that members of the middle class should be at reasonably low risk of falling into a situation in which they are incapable of meeting basic needs.

Our methodology follows that suggested by López-Calva and Ortiz-Juarez (2014), who pioneered a vulnerability approach to defining the middle class in Latin America. By exploiting the panel dimension of the National Income Dynamics Study (NIDS), covering the period 2008-2014/15, our analysis draws on the coexistence of movements into and out of poverty that is masked in cross-sectional investigations. Using data from the 2008 and 2014/15 waves of NIDS, we present a probability model that predicts the risk of staying in or falling into poverty over a six-year time frame depending on a broad array of initial household conditions and shock variables. Using a 10 percent probability of falling into poverty as the maximum acceptable level of vulnerability for being considered middle class, we identify a monthly per capita household expenditure of R3,104 (in January 2015 prices) as the minimum requirement for a reasonably economically stable and secure middle class. The upper bound that separates the middle class from the elite is set at R10,387 (in January 2015 prices). This corresponds to the average predicted per capita expenditure of those in the bottom one percentile of the predicted probability distribution of falling into poverty.

We find that between 1993 and 2008 the middle class in South Africa was relatively small and had grown sluggishly – from about 11.7 per cent of the total population to about 13.2 percent 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 the middle class 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.

The remainder of this paper is structured as follows: In Section 2 we briefly discuss the relevance of understanding the middle class in a high-inequality country like South Africa, and review a wide array of existing approaches to defining the middle class in their strengths and limitations. In Section 3, which constitutes the main contribution of this paper, we exploit panel data to predict the risk of staying in or falling into poverty over a six-year time frame, based on initial household conditions and shock variables, which we use to identify the upper and lower bounds of our definition of the middle class in South Africa. We present a battery of robustness checks to our approach in Section 4, and assess its performance in comparison to other prominent approaches that have been suggested in the South African context in Section 5. Section 6 profiles the four identified social classes in South Africa – the poor, the vulnerable, the middle class, and the elite – in terms of their relative size, growth, racial composition, and labour market resources. Section 7 concludes.

## 2.    Defining the middle class in a high inequality society

In a polarised and highly unequal country such as South Africa, defining the middle class in any meaningful way is not an easy task. This section reviews some of the most prominent approaches to defining the middle class in developing countries.

### 2.1    Income polarisation and distributional change in South Africa

Apartheid imposed a rigid racialised system of unequal resource distribution on South Africa, resulting in an extremely polarised society. After two decades of democracy, economic inequality in the country remains one of the highest in the world. While survey comparability issues make the analysis of historic trends a challenging task, most researchers will agree that the positive growth in average real incomes has not been accompanied by any decline in South Africa's historically high inequality. In fact, with the post-tax, post-transfer income Gini-coefficient being above 0.65 for every nationally representative survey since 1993 (see inter alia Leibbrandt et al. (2010) and Özler (2007)), aggregate inequality measures have generally shown an increase in inequality over the post-apartheid period. At the same time, the country has seen a considerable decline in poverty rates over the same time horizon.

This apparent paradox of an episode marked by relative pro-poor growth[1] – where incomes of the poorest in society were growing faster than the mean income growth of the population – and rising

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[1] Pro-poor growth can be understood in the *strong, relative* sense or the *weak, absolute* sense. 'Weak absolute pro-poor growth' is understood as any growth episode which results in an improvement in the incomes of the poor, regardless of how this growth compares to the rest of the population. In other words, it is distribution-neutral. 'Strong, relative pro-poor growth', on the other hand, is defined as pro-poor if the incomes of the poor have experienced higher growth relative to the income growth of the population as a whole. In other words, poverty would have fallen  more had the rate of income growth been equal across the population). For

income inequality, is the result of the highly polarised nature of growth for most of the post-apartheid period.  As Figure 1a illustrates, not only did those in the bottom 40 percent of the income distribution experience above average income growth from 1993 to 2008, but the same holds true for the richest 5 per cent of South African society.

**Figure 1: Growth in household income at different income levels (percent per year)**
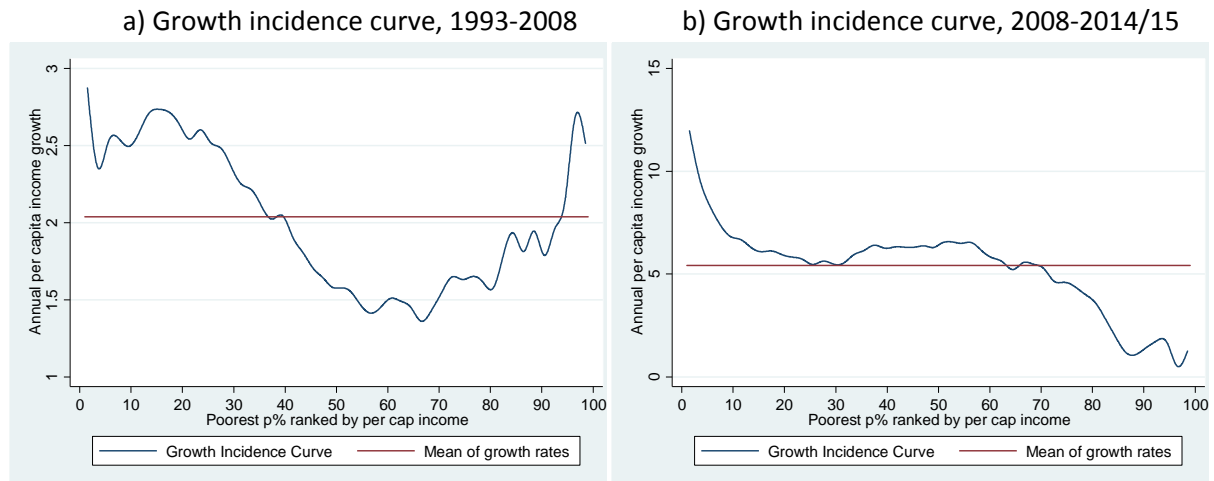
a) Growth incidence curve, 1993-2008      b) Growth incidence curve, 2008-2014/15



Source: Own calculations using PSLSD 1993 and NIDS Waves 1 to 4.
Note: Census raised weights (PSLSD) and post-stratified weights (NIDS) have been used to calculate growth incidences.

The relatively low growth in the middle of the income distribution – especially between the 40th and 95th percentiles, where annual income growth from 1993 to 2008 was below the mean annual growth rate of 2 percent – is evidently partly responsible for the persistently high levels of inequality. Since most relative definitions will locate the 'middle class' somewhere in this relatively slower-growing stratum of the income distribution, understanding the causes and limitations to the growth of the middle class is an important part of the unfolding South African story of inequality.

The polarised nature of this growth pattern becomes apparent once we account for the fact that growth for those at the bottom occurred from an extremely low base. The apparently impressive growth rates, especially at the very bottom of the distribution, which can mainly be attributed to redistributive income support through the provision of social grants (Finn et al., 2013a), imply a decline in the depth of poverty, but were largely insufficient to lift those households into an economically stable situation. As Table 1 below indicates, in 2008 about one third of the South African population still did not have sufficient money for food, and only about one third of the South African population could afford to meet both basic food and basic non-food needs.

more on pro-poor growth see Baulch and McCullock, 2000; McKay, 2007; Fourie, 2014; Ranieri and Ramos, 2013.

**Table 1: Poverty incidence in 2008 according to different poverty lines**

| Poverty Lines | | Hoogeveen and Özler (2006) | Statistics South Africa (2008) | Statistics South Africa (2015) | Budlender et al. (2015) | International (2011 PPP) |
|---|---|---|---|---|---|---|
| Food (extreme) | Rands | 616 | 412 | 430 | 432 | 346 (= $1.9) |
| | *Headcount* | *47.24%* | *33.03%* | *34.76%* | *34.98%* | *25.88%* |
| Lower Bound | Rands | 856 | 558 | 629 | 669 | 564 (= $3.1) |
| | *Headcount* | *57.88%* | *43.9%* | *48.2%* | *50.56%* | *44.12%* |
| Upper Bound | Rands | 1,437 | 771 | 963 | 1,279 | |
| | *Headcount* | *69.76%* | *54.85%* | *60.95%* | *67.31%* | |

Source: Own calculations using NIDS Waves 1. Poverty lines are taken from Budlender et al. (2015).
Note: Poverty lines have been converted to January 2015 prices using Statistics South Africa's consumer price index.

In contrast, incomes at the top of the income distribution grew from an already high base in 1993, leading to a steady increase in economic power for this income group. With this in mind, the growth incidence curve above (Figure 1a) already gives an indication of the gain in economic power experienced by those at the top 5 percent of the income distribution, which is illustrated in Figure 2. While the share in national income going to the bottom 40 percent stayed virtually constant between 1993 and 2008, the top 5 percent saw their share increasing by about 3.6 percentage points to just above 40 percent in 2008. As income growth was lowest for those between the 40th and 95th percentiles, those in the (upper) middle of the income distribution actually lost in economic power to the same extent as the top 5 percent were gaining.[2]

**Figure 2: Shares of total income by ventile, 1993 and 2008**
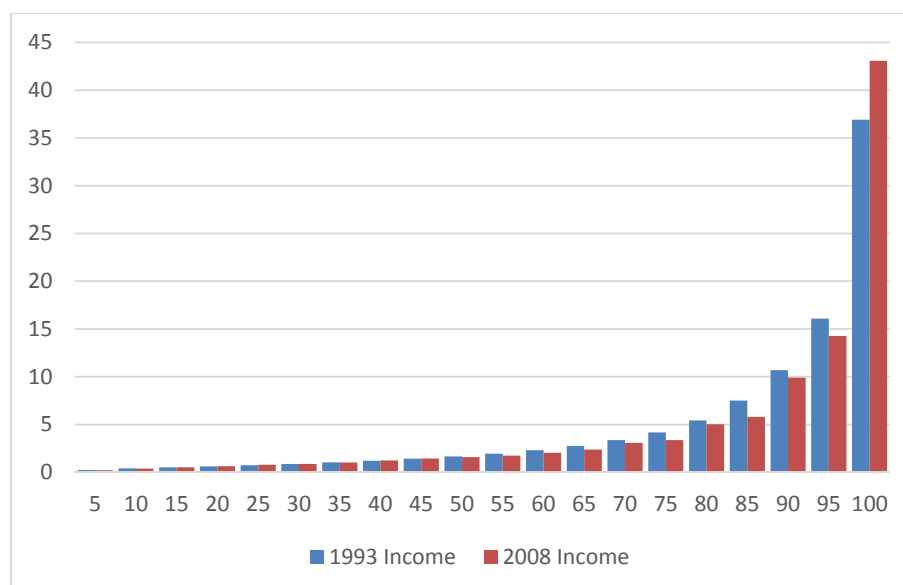


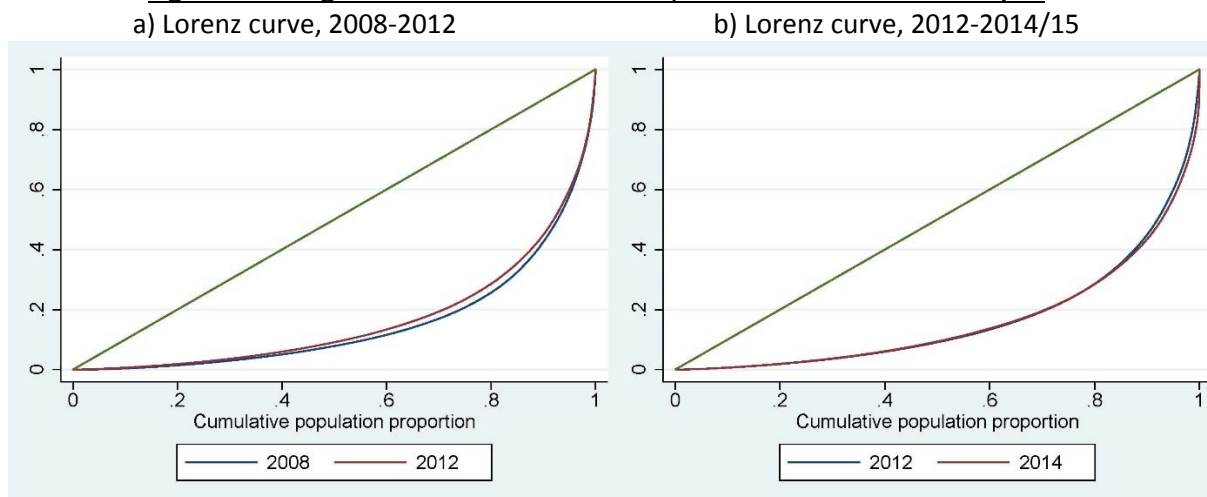Source: Own calculations using PSLSD 1993 and NIDS Wave 1.
Note: Census raised weights (PSLSD) and post-stratified weights (NIDS) have been used to calculate growth incidences.

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[2] For a fuller discussion of how South Africa's polarised growth model since 1994 has resulted in rising inequality and few benefits for those in the middle of the income distribution (despite falling poverty), see Bhorat et al. (2014).

The above findings do not resonate well with the narrative of a rising South African middle class over the post-apartheid period, which has been excitedly embraced by the media and business community. First, a look at the poverty figures reveals that in 2008 the majority of South Africans still lived in an economically precarious situation. Second, those who escaped extreme or moderate poverty likely got stuck in a position of economic vulnerability or 'middle income trap' with few chances to climb the social ladder. Third, up to 2008, those in the upper middle of the income distribution experienced the slowest income growth and have lost in economic power, relative to an ever richer elite.

However, judging from Figure 1 b), there are reasons to believe that some trend reversal occurred in the years after 2008. Not only did the richest 30 percent experience below average income growth, but growth rates were lowest toward the top end of the distribution. Nevertheless, one should treat this with caution. While between 2008 and 2012 income growth seems to have been pro-poor and, for the first time since 1994, inequality seems to have decreased (see Figure 3a), there is some evidence that income polarisation in the top deciles began increasing again between 2012 and 2014/15 (see Figure 3b).

**Figure 3: Change in the income distribution, 2008-2012 and 2012-2014/15**
a) Lorenz curve, 2008-2012                    b) Lorenz curve, 2012-2014/15



Source: Own calculations using PSLSD 1993 and NIDS Waves 1 to 4.
Note: Census raised weights (PSLSD) and post-stratified weights (NIDS) have been used to calculate growth incidences.

From the above observations, it is clear that understanding the causes of and limitations to the growth of the middle class is an important part of the unfolding South African story of inequality. At the same time, any conclusion drawn with respect to the size, growth, and economic potential of the middle class will depend on where exactly we locate this class in the national income distribution. Despite the importance of understanding the middle class and its role, little progress has been made in the direction of converging on a commonly accepted definition of this group.

## 2.2    Absolute versus relative definitions of social class

Who then comprises 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. Fundamentally, existing concepts can be grouped into approaches that define the middle class according to objectively defined criteria versus self-

identified subjective categorisations based on self-reported class status. In this study, we focus on the first group of objective middle class definitions.[3]

While mainstream objective approaches in economics 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.

### 2.2.1 Relative income thresholds

The lowest common denominator in the debate on who are the middle class is that its members should be somewhere in the middle. 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 percentiles), Partridge (1997) uses only the third quintile (the 40th to 60th percentiles), Easterly (2001) and Foster and Wolfson (2009) refer to the three middle quintiles (the 20th to 80th percentiles), and Solimano (2008) uses the third to tenth decile (the 30th to 90th percentiles). For the specific case of South Africa, Levy et al. (2014) and Finn et al. (2013b) use income decile groups four to seven to define the middle class (the 40th to 70th percentiles), 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.

There are several reasons why one may be interested in the median earner of society and those households who fall within a specific range of the median: As Visagie and Posel (2013) argue in the South African context:

> "First, evidence suggests that the relative growth of the share of total income of those in the actual middle of the income distribution leads to greater political stability, to a citizenry with higher levels of human development (including better education and health) and even to higher levels of economic growth (Perotti, 1996; Easterly, 2001, 2007). Secondly, changes in the middle income interval would help to assess whether growth has benefited the 'average South African' in post-1994 South Africa" (Visagie, 2013b: 2).

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).

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[3] Several studies have found a weak correlation between subjectively and objectively identified class measures, with a greater share of South Africans self-identifying themselves as standing on the middle rung of society's ladder, when they are in fact at the top or the bottom (Seekings, 2007; Burger et al., 2014). This apparent mismatch could be explained by the reference-group hypothesis, according to which respondents allocate themselves in reference their own peer group instead of the entire population (Phadi and Ceruti, 2011).

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, 2013b: 1).

### 2.2.2 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 Oritz-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 associated with a 10 percent probability of being in poverty over time, which they consider an acceptable degree of vulnerability for the 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).[4] 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 percentile of the national income distribution. While the absolute lower bound is meant to identify those individuals who are

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[4] 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).

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

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. 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).[5] 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).[6]

### 2.2.3 The size of the South African middle class according to rival approaches

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 2).

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 2).

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

[6] 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 4: Income range comparison of rival middle class definitions**
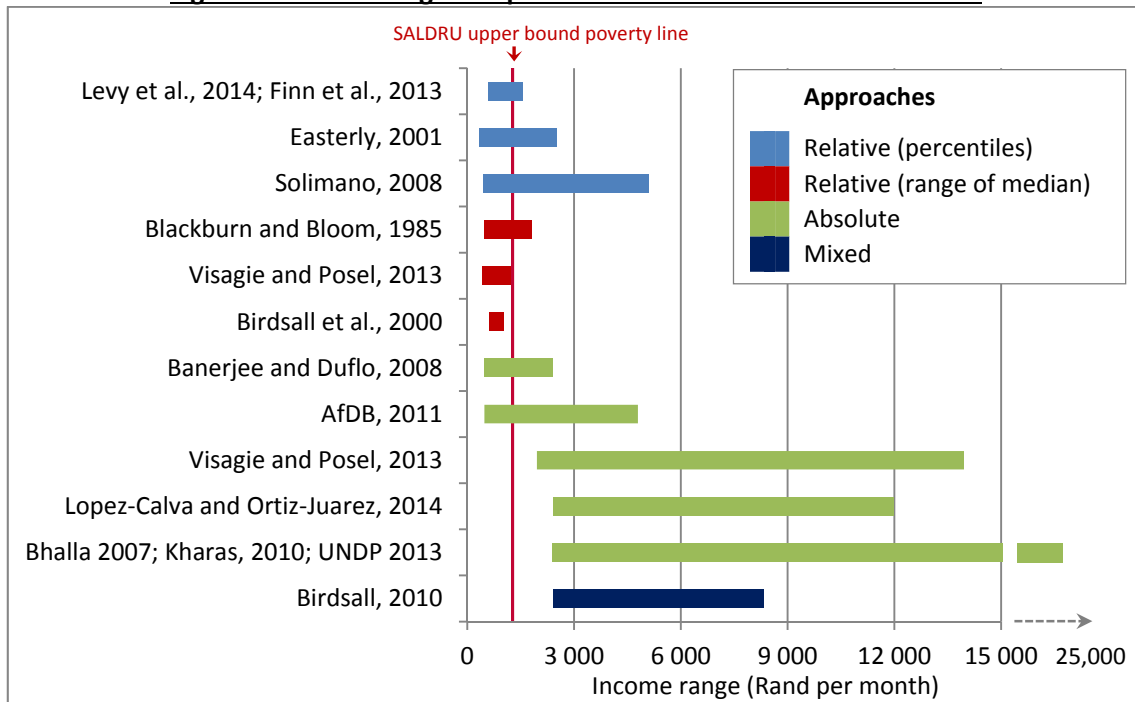


Source: Own representation based on middle-class thresholds from referenced articles.
Note: Conversion between Int. $ and South African Rand uses the PPP conversion factor for private consumption
(LCU per international $) provided by the World Bank. In 2005, Int. $1 (PPP) was equivalent to R4.57.
All 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 percent (Visagie and Posel, 2013) and 56 percent (AfDB, 2011) (reported in Table 2). 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 Oritz-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.

**Table 2: Size of the South African middle class according to rival absolute and relative definitions**

| Definition | Authors | $x \in$ 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 percentiles of the cumulative distribution $D_t(y)$** | Levy et al., 2014; Finn et al., 2013b | $D_t^{-1}(p_{40}) \leq y(x) \leq D_t^{-1}(p_{70})$ | 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] | $\$2 \leq y(x) \leq \$10$ a day (2005 PPP) | R479 $\leq$ y(x) $\leq$ R2,397 | 40.7 | 37.2 | 42.4 | 46.0 |
| | AfDB, 2011[d] | $\$2 \leq y(x) \leq \$20$ a day (2005 PPP) | R479 $\leq$ y(x) $\leq$ R4,794 | 50.4 | 45.1 | 51.1 | 56.4 |
| | – Excl. floating class | $\$4 \leq y(x) \leq \$20$ a day (2005 PPP) | R959 $\leq$ y(x) $\leq$ R4,794 | 28.2 | 24.0 | 28.0 | 33.5 |
| | – Lower middle class | $\$4 \leq y(x) \leq \$10$ a day (2005 PPP) | R959 $\leq$ y(x) $\leq$ R2,397 | 18.5 | 16.1 | 19.2 | 23.0 |
| | – Upper middle class | $\$10 \leq y(x) \leq \$20$ a day (2005 PPP) | R2,397 $\leq$ y(x) $\leq$ R4,794 | 9.7 | 7.9 | 8.7 | 10.5 |
| | Visagie and Posel, 2013 | $\$8 \leq y(x) \leq \$58$ 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 | $\$10 \leq y(x) \leq \$50$ a day (2005 PPP) | R2,397 $\leq$ y(x) $\leq$ R11,984 | 17.8 | 16.0 | 15.6 | 18.4 |
| | Kharas, 2010; UNDP 2013 | $\$10 \leq y(x) \leq \$100$ a day (2005 PPP) | R2,397 $\leq$ y(x) $\leq$ R23,969 | 19.9 | 18.3 | 17.5 | 20.7 |
| **Mixed thresholds** | Birdsall, 2010 | $\$10$ 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), $n^{th}$ percentile $P_n$, 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 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 day) middle class segment.

## 2.3 'Empowerment', 'vulnerability' and the 'middle class' in South Africa

From the above discussion, the need for an empirically and theoretically sound definition of the South African middle class is evident. To better resonate with the sociological understanding of class, in recent economics literature, the debate around alternatives to purely 'consumptionist' approaches has evolved around ways of constructing upper and lower bound thresholds to the middle class which have a meaningful interpretation and can be empirically justified (Birdsall, 2010, López-Calva and Oritz-Juarez, 2014).

As already indicated above, a number of South African scholars have argued in favour of using 'productionist' approaches that define the middle class on the basis of the determinants of social power, such as work, occupation, wealth, and education, which makes them a better tool to adequately capture and explain the determinants and dynamics of class (Southall, 2016). Most studies following this vein use occupational categories (sometimes combined with a skill measure) to identify the middle class (Crankshaw, 1997; Seekings and Nattrass, 2005; Southall, 2016).

Other studies, although not being strictly 'productionist' in nature, have used asset indices to proxy for household wealth as a determinant of social power (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 again 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. 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.

Closely building on Sen's capability approach, Burger et al. (2015) present one of the most promising attempts to conceptualise social class in South Africa, by deriving an empirically justifiable 'capability threshold' as the lower bound of being middle class. 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). 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 individuals who are free to pursue their personal goals and aspirations" (Burger et al., 2015: 2). These 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. Using these capabilities to identify the middle class, Burger et al. identify very strong growth in the middle class since 1993 – from 26 percent of the population to 47 percent in 2012 (or 55 percent in 2014/15).

While Burger et al.'s approach represents an important advance in the understanding of the middle class in the South African context, the four measurable 'functionings' they choose as proxies of the four identified core capabilities (representing the outcomes of exercising capabilities) seem to be capturing very basic needs rather than a situation of economic empowerment (see section 5 for further discussion).[7] Consequently, much of the growth they observe in the middle class is due to the considerable expansion of government service provision since 1994. Another disadvantage of the

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[7] The four measures used include: (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.

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. In what follows, we adopt a 'vulnerability approach' to defining the middle class. Taking up on the understanding of the middle class is an 'empowered class', we argue that a basic and necessary condition for empowerment is that individuals or households are sufficiently secure against falling into poverty. This notion closely builds on a recent strand of research that argues for the necessity of distinguishing a 'vulnerable' class (also termed 'struggling' or 'floating' class by other authors) that is still on the verge of poverty from a more economically secure middle class in the developing country context (for instance see AfDB, 2011; Corral et al., 2015; López-Calva and Oritz-Juarez, 2014). A particular strength of the vulnerability approach is that, while we will ultimately define the middle class based on an income range, it is not 'consumptionist' in the way that sociologists use the term. As will become clear in the following sections, this is because the income range is fundamentally a product of an analysis of the characteristics which "reflect (or result from) the wielding of power in society" – in other words, the *source* of revenue or 'productionist' power of households (Southall, 2016: 52). In this way, the suggested approach to bridge economic and sociological ways of understanding the middle class.

In contrast to the capability approach outlined above, one should note that non-vulnerability is a negative condition to identifying a middle class, i.e. it is not an indication of what empowerment *is*, but rather an indication of what empowerment *is not*. In other words, it is a necessary condition of empowerment, but will not always be sufficient. While it is possible that a household could be non-vulnerable but also not empowered, it is not possible that a household can be empowered while still being in a position of economic vulnerability.

Despite being a minimum condition for empowerment, there are good reasons for using vulnerability as a negative condition to identify the middle class. First, 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, Cafiero and Vakis (2006) have argued that vulnerability is welfare reducing even if poverty does not materialise. According to them, vulnerability ought to be considered a form of poverty for two reasons: First, as evidence from the psychological and health literature has shown, economic insecurity is a source of considerable discomfort and therefore is directly implicated in reducing well-being.[8] Second, the vulnerable, in order to minimise risk, are forced to engage in economic activities which are low-risk and which guarantee constant, but low returns (Dercon, 2006; Cafiero and Vakis, 2006).

This second argument resonates closely with a number of key characteristics that have generally been associated with the middle class and that, we think, a vulnerability-based approach can adequately capture. In terms of economic behaviour, most of these 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.[9] Also in terms of political attitudes, Inglehart (1990) argues that sharply lower levels of economic scarcity and physiological insecurity are necessary to

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[8] There is also a consensus in health literature that the stress associated with real or perceived economic vulnerability has a real impact on health and mortality. For example, using panel data Yeung and Xu found that in rural China the elderly with higher perceived or real levels of economic vulnerability have significantly higher levels of mortality than those who do not experience economic stress (Yeung and Xu, 2012).

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

allow for a shift in priorities away from basic needs towards 'higher order' goods such as self-expression, democracy, gender rights, or environmental concerns.

# 3. A vulnerability approach to identifying the South African middle class

In what follows, we develop a class schema for South Africa that takes as its starting point the notion that the middle class is an 'empowered class', which implies that its members should be reasonably secure against falling into poverty. Our methodology closely follows López-Calva and Ortiz-Juarez's (2014) vulnerability-based approach to defining the middle class.[10]

By applying this vulnerability approach, we understand poverty not only as a static state, but also as a dynamic phenomenon, taking into account that households can move both into and out of poverty. Being able to afford a certain basket of goods at a given point in time does not yet give any indication of whether the same will be true in the next period. In this sense, even those who are currently non-poor may face a non-negligible risk of falling into poverty. In order to be considered middle class, this risk should not exceed some maximum threshold, which we fix at 10 percent.

Our approach proceeds in three stages: First, we identify a number of characteristics associated with the probability of being poor in South Africa. Second, for each individual, we quantify the predicted risk of poverty, given these characteristics. Third, we use these predicted probabilities to find the income bands associated with a maximum risk of falling into poverty of 10 percent, which will identify the lower bound of our definition of the middle class.

## 3.1 Data

In this study, to estimate the risk of falling into poverty over time, we use panel data from the National Income Dynamics Study (NIDS) implemented by SALDRU at the University of Cape Town. At present, there are four waves of data available, which are each spaced approximately two years apart, with the first in 2008 and the latest in 2014/15. NIDS is South Africa's first national panel study, which started with a nationally representative sample of over 28,355 individuals in about 7,300 households. The sample we use for the regression analysis is restricted to individuals and households who register valid responses in the first and last survey waves. Of the 26,775 individuals who were successfully interviewed in 2008, 20,773 were re-interviewed in 2014/15.[11] Panel weights are applied to correct for attrition.

As poverty in South Africa is defined in terms of expenditure, which is assumed to give a better approximation of permanent household income, all class thresholds will be derived in terms of real per capita household expenditure.[12] However, in a robustness check, we replicate the same approach

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[10] Vulnerability can be understood in its broadest sense as "the condition of being at risk of any potentially harmful event" (Cafiero and Vakis, 2006: p. 4). In this paper we use vulnerability in the narrower sense of 'vulnerability to either remaining or becoming poor over time'. Poverty is thus the particular 'potentially harmful event' that our investigation is focussed on. In this sense, addressing vulnerability is fundamentally centred on addressing potential poverty.

[11] It is also important to note that, by taking 2008 as the base year, the sample for the probability estimation is, by definition, limited to so-called core sample members who were successfully interviewed in the first wave (CSMs). Temporary sample members, who joined the sample in subsequent waves by co-residing with CSMs, are excluded from the regression analysis. The applied panel weights correct for sample attrition among CSMs.

[12] The *consumption* expenditure we use excludes "lumpy" once-off expenditure items.

using income as the relevant measure of wellbeing, which gives us very similar thresholds.[13] All income and expenditure figures in this paper are deflated using the Statistics Southern Africa (Stats SA) consumer price indices and are calibrated to January 2015 (Stats SA, 2015).[14]

Using (in)vulnerability to poverty as the middle-class defining criterion, our approach will depend fundamentally on the way that poverty is defined. For this purpose, we use the 2015 SALDRU Cost of Basic Needs (CoBN) upper-bound poverty line (henceforth the SALDRU poverty line), which is the most recent cost-of-basic-needs poverty line available for South Africa (Budlender et al., 2015). This line of R1,283 per capita per month (in January 2015 prices) is equivalent to about $5.3 per day in 2005 PPPs, and was developed by Budlender et al. using Ravallion's (1994) CoBN methodology. Their work directly addresses a number of notable methodological shortcomings in previous poverty lines developed for South Africa. While it is beyond the scope of this paper to reopen this debate, which is well covered in Budlender et al. (2015), we advocate the use of this line as the most robust available measure of basic need requirements in South Africa. However, in order to investigate the sensitivity of our results to our choice of this poverty line, we re-calculate a number of relevant findings using the 2015 Stats SA upper-bound poverty line (R963 in January 2015 prices).[15]

## 3.2    Methodology

Closely following the methodology suggested by López-Calva and Ortiz-Juarez (2014), our identification of the vulnerability-based lower bound threshold of the middle class in South Africa proceeds in three steps:

In the first step, we model the probability of being poor in time $t + 1$ (NIDS Wave 4) given the household characteristics observed in the base year $t$ (NIDS Wave 1). We assume that individuals can be characterised by a latent poverty propensity $p^*_{it+1}$ and an observed poverty status $p_{it+1}$ of the following form:

$$p^*_{it+1} = \boldsymbol{\beta}' \boldsymbol{x}_{it} + u_{it+1} \quad \text{and} \quad p_{it+1} = I(p^*_{it+1} > 0) \tag{1}$$

where $i = 1, \dots, N$ indexes individuals, $\boldsymbol{x}_{it}$ is a vector of explanatory variables describing individual $i$ in her household in terms of base year values, $\boldsymbol{\beta}$ is a vector of parameters to be estimated, and the error term $u_{it}$ follows the standard normal distribution $(u_{it+1} \sim N(= 0,1))$. $I(p^*_{it+1} > 0)$ denotes an indicator function which takes on the value of 1 if the corresponding latent variable exceeds some observed threshold (which can be set equal to 0 without loss of generality) and 0 otherwise.

In the second step, for each individual $i$ we predict the probability of being poor in period $t + 1$ based on the coefficient estimates from equation (2) and base year characteristics.

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

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[13] The household income variable in the NIDS dataset is adjusted by removing imputed rental income from owner-occupied housing because of the high incidence of missing values. In doing so, we follow an established precedent in the South African literature (Leibbrandt et al., 2010; Finn and Leibbrandt, 2013).

[14] To adjust for inflation, for each line the food component (equal to the food poverty line) is inflated by using the food specific StatsSA CPI and the non-food component (equal to the difference between the food poverty line and the upper / lower bound line respectively) is inflated by using the non-food specific StatsSA CPI. (StatsSA, 2011, 2012, 2015).

[15] Just as the upper bound poverty line indicates an income or expenditure level at which individuals are typically able to satisfy their basic needs, the vulnerability threshold we calculate indicates the income value at which individuals are typically able to afford the cost of insuring against risk of falling into poverty. In the sense that the vulnerability threshold is a dynamic poverty line based on the static SALDRU poverty line, this paper adds to the work done by Budlender et al. (2015) on defining poverty in South Africa.

$$\ln Y_{it} = \boldsymbol{\gamma} \boldsymbol{X}_{it} + \varepsilon_{it} \qquad\qquad (2)$$

where $\ln Y_{it}$ is the household per capita income (or expenditure) in logarithmic scale in the initial point in time $t$. For each individual $i$ we then predict the per capita income (or expenditure) in $t$ associated to each probability, using the coefficient estimates from equation (2) and initial household characteristics. We believe it is important to use not the observed but the predicted income (or expenditure) level – understood as the household's mean income conditional on characteristics – as the latter is less volatile and can be assumed to better reflect the household's income generation capacity. To derive the vulnerability threshold, following López-Calva and Ortiz-Juarez (2014), we calculate the predicted average per capita income (or expenditure) level associated with a predicted poverty propensity in $t + 1$ of 10 percent. This is considered the minimum acceptable risk to poverty to be identified as 'middle class'. To reduce the sensitivity of the calculated threshold to the 10 percent cut-off point and to have enough observations to get a more robust estimate of the mean income (or consumption) level associated with this probability estimate, we calculate the vulnerability threshold as the mean predicted per capita income (or expenditure) in $t$ for all individuals with a predicted poverty propensity in $t + 1$ of 8 to 12 percent.[16]

Finally, we calculate the upper threshold that divides the middle class from the elite.[17] We believe this subdivision to be particularly important in the South African context, where we observe an outstanding concentration of wealth at the top of the distribution (compare section 2.1).[18] Given our commitment to defining the middle class in a meaningful way that accords with the concepts of (in)vulnerability to poverty and empowerment, we therefore depart importantly from other studies for South Africa, such Burger et al. (2015), who decide not to make this distinction, and from López-Calva and Oritz-Juarez (2014), who arbitrarily define the upper bound at $50 (2005 PPP).[19] We define the upper threshold as the average predicted per capita income (or expenditure) of those in the bottom one percentile of the predicted poverty probability distribution.[20] It thus identifies the elite as those who are the least likely to become poor over time.

The derived thresholds will result in a stratification of South African society into four social classes, following the schema below (Figure 5).

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[16] The derived vulnerability threshold is relatively robust to the choice of the ±2 percentage-points probability interval around the 10-percent cut-off point and similar thresholds are obtained when using narrower bands. We test the sensitivity of the derived threshold to the choice of the 10-percent cut-off point in section 4.2.

[17] Recent work on economic inequality has, moreover, conclusively demonstrated the existence of an elite which is structurally distinct from what is commonly understood as the 'middle class'. Unlike the rest of the income distribution, the elite's income is typically set at levels well above that which would be determined by competitive markets (see, for example, Gordon and Dew-Becker, 2007; Atkinson et al., 2011; Stiglitz, 2015).

[18] In comparison to other middle income countries such as Brazil, Turkey, Mexico, and Thailand, the top income ventile in South Africa identifies an elite which is particularly distinct (Levy et al., 2014). For South Africa in 2014, for example, we calculate that the share of total income accruing to the richest ventile is 42 percent, while the share accruing to the second richest ventile is a mere 13 percent (NIDS Wave 4, own calculations).

[19] Although Lopez-Calva and Oritz-Juarez acknowledge that this upper bound is arbitrary, they (and others) argue that the careful selection of a lower bound is of much greater importance than the selection of an upper bound (Birdsall et al, 2011; Lopez-Calva and Oritz-Juarez, 2014; Burger et al, 2015). Accordingly, the arbitrariness of an upper bound is much less relevant than that of a lower bound. For example, shifting the lower threshold up or down by 10 percent would entail a dramatic change in the size of the middle class because of the bulk of the population is concentrated nearer the middle. A 10 percent change at the upper threshold would affect considerably fewer people.

Furthermore, in many developing countries where survey data quality is particularly poor at the top of the income distribution, data constraints do not allow researchers to define an upper bound empirically in the same way that the lower bound is defined. For a case study of Nigeria, see Corral et al. (2015).

[20] We prefer this approach over specifying a probability cut-off to identify the elite due to the generally lower accuracy and high density of probit models towards the tails of the distribution.

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**Figure 5: Four-tiered class stratification following a vulnerability-based approach**
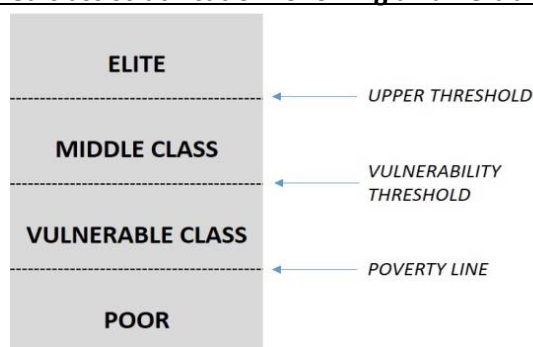


Source: Authors' representation

## 3.3    Estimating the Vulnerability Threshold

Before investigating the effect that relevant characteristics have on determining vulnerability to poverty, it is important to get a first glance of poverty dynamics in South Africa. We do this by constructing poverty transition matrices using panel data from NIDS Waves 1 and 4 using the 2015 SALDRU poverty line. If it were the case that the entire population was either stably poor or stably non-poor (that is, no one moved into or out of poverty between the two years), there would be no reason to analyse vulnerability. On the other hand, when movement into and out of poverty is substantial and frequent, policy interventions need to be targeted, not only at those who are statically poor, but also at those who are vulnerable to becoming poor.[21] As can be seen from Table 3, about one in four South Africans  who were above the SALDRU poverty line in 2008 had become poor in 2014/15 (ca. 3.7 million people). By contrast, about one in five (ca. 6.7 million people) of those who were poor in 2008 had moved above the poverty line in 2014/15. A simple cross-sectional comparison of the poverty rates between 2008 and 2014/15, showing about 3 million South Africans exiting poverty, would mask these dynamics, which reveal a non-negligible degree of downward mobility or vulnerability of the initially non-poor.

**Table 3*: Poverty transition matrix, 2008 to 2014/15***

|  |  | Non-poor in 2014/15 | Poor in 2014/15 | Total |
|---|---|---|---|---|
| **Non-poor in 2008** | % | 74.45 | 25.55 | 100 |
|  | *Million* | *10.8* | *3.7* | *14.5* |
| **Poor in 2008** | % | 19.11 | 80.90 | 100 |
|  | *Million* | *6.7* | *28.3* | *35.0* |

*Source:* Authors' calculations based on NIDS Waves 1 and 4 data applying panel weights. The total South African population in 2008 was 49.56 million (United Nations population statistics).

In the following, we aim to gain a better understanding of the characteristics that correlate with these dynamics; i.e. we want to answer the question who is the most likely to be poor in 2014/15 (either stably poor or have fallen into poverty), given initial conditions.

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[21] In determining anti-poverty policies it is important to know who the vulnerable are, what the sources of this vulnerability are, and to understand how households cope with vulnerability (Hoddinott and Quisumbing, 2003). For example, in deciding to implement poverty reducing policies, we would need to know whether to focus on preventing poverty or on combatting existing poverty. In areas where there are high levels of stable, structural poverty, conventional poverty alleviation measures would be most appropriate. On the other hand, if a certain area has a high rate of vulnerability, we would want to focus on reducing shocks and/or improving the coping mechanisms available to vulnerable people, so as to empower these people to remain non-poor.

Drawing on the model provided by López-Calva and Oritz-Juarez (2014), we use a probit specification to regress respondents' poverty status in 2014/15 on a set of initial characteristics. Our explanatory variables in the base specification include household size and geographic location (area and province) in 2008, as well as a set of characteristics of the household head in 2008, including demographics (age, age squared, gender, and race), years of education, and labour market status or occupation. This model correctly predicts the poverty status for 76.4 percent of all observations.

As the results reported in Table 4 column (1) below indicate, race remains a strong predictor of poverty in South Africa, with Africans being at the highest risk of being in poverty, whereas whites are the least likely to be poor, even after controlling for differences in education and employment. Members of larger, female headed, or rural agricultural households also face a higher risk of poverty, as do those living in a household where the head is unemployed. By contrast, having a higher educated household head who is working, ideally in a management position or other white-collar occupation, are strong predictors for lower vulnerability to poverty.

Using the estimated coefficients reported in column (1), we predict, for every individual, the probability of being poor in 2014/15. In addition, we predict for each household the per capita income or expenditure level in the base period (2008), using the same explanatory variables (the regression results of the income and expenditure model are reported in Table A in the appendix). To get an idea of the vulnerability threshold associated with a risk of poverty of 10 percent, we calculate the average actual and predicted per capita household income and expenditure level for those individuals, whose predicted probability of being poor lies within the 8 to 12 percent interval.

The results of this exercise are reported at the bottom of Table 4 column (1). While the predicted values are calculated at about R3500, the averages calculated from actual expenditure or income data are significantly higher. This distance will be reduced as we subsequently add additional controls that increase the explanatory power of our model.

Following Carter and May (2001) and Carter and Barret (2006), who advocate the use of asset poverty lines as a better indicator of structural poverty – given that assets are less sensitive to temporary fluctuations than the level of income or consumption observed in a single point in time – in a next step, we add a set of asset controls to our model specification (see Table 4 column (2)). In this sense, the asset controls can be understood as a proxy for initial household wealth, which likely determines the propensity to poverty in subsequent waves.

In the next step, given that NIDS is a panel of individuals that may move between households, we account for changes in the household composition over time. Specifically, we add the change in household size and in the number of employed household members between 2008 and 2014/15 to our set of explanatory variables, which raises the number of correct classifications by the model above 80 percent. Unsurprisingly, while an increase in the number of household members goes in line with a higher risk to poverty, an increase in the number of working household members is associated with a lower likelihood of being poor in the second period (see Table 4 column (3)). Including these controls in the probit model reduces the calculated minimum monetary threshold needed to face a maximum risk to poverty of 10 percent. Given that we are looking at a six-year time horizon which makes it unlikely to observe any fertility effect, this result is likely driven by household splits leading to lower household sizes with some household members potentially moving to areas with better employment opportunities. Both of these likely reduce the risk of falling into poverty even for less-well off households in the base year.

In a final step (Table 4 Column (4)), we add additional controls for idiosyncratic negative economic shocks that were self-reported between 2008 and 2014/15 (including the death of a household member; widespread death or disease of livestock; a major crop failure; theft, fire or destruction of

property; and any other negative event).[22] We find widespread death or disease of livestock to be a strong predictor of being poor at the end of the period, which underlines the vulnerability to poverty of those in rural areas. The other shock variables though perform rather weakly, and are largely insignificant. Given this weak performance and the potential endogeneity of shock variables (given that initially poor/non-poor households may be more likely to suffer certain shocks), we will use specification (3) as our preferred model for the subsequent analysis.

**Table 4: Probit estimates (average marginal effects) on probability of being poor in 2014/15**

| | Base | As (1) with asset controls | As (2) with controls for changes in household composition | As (3) with controls for other shocks experienced by household |
|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** |
| **Characteristics of the head of household (HoH) in wave 1** | | | | |
| Age of HoH | -0.0026 | 0.0015 | 0.0016 | 0.0014 |
| | (0.0022) | (0.0022) | (0.0020) | (0.0020) |
| Age squared of HoH | 0.0000 | -0.0000 | -0.0000 | -0.0000 |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| Female HoH | 0.0587*** | 0.0515*** | 0.0590*** | 0.0573*** |
| | (0.0171) | (0.0168) | (0.0154) | (0.0154) |
| Education of HoH | -0.0192*** | -0.0111*** | -0.0090*** | -0.0089*** |
| | (0.0022) | (0.0022) | (0.0020) | (0.0020) |
| Race of HoH (Base = African) | | | | |
| Coloured | -0.0985*** | -0.0247 | -0.0376 | -0.0406 |
| | (0.0253) | (0.0248) | (0.0250) | (0.0253) |
| Asian/Indian | -0.2870*** | -0.1285 | -0.1458* | -0.1515** |
| | (0.0678) | (0.0920) | (0.0778) | (0.0766) |
| White | -0.4590*** | -0.3164*** | -0.3105*** | -0.3081*** |
| | (0.0686) | (0.0675) | (0.0568) | (0.0585) |
| Occupation of HoH (Base = Inactive) | | | | |
| Unemployed (discouraged) | 0.1091*** | 0.1144*** | 0.1171*** | 0.1165*** |
| | (0.0345) | (0.0335) | (0.0286) | (0.0289) |
| Unemployed (strict) | -0.0296 | -0.0353 | -0.0497 | -0.0482 |
| | (0.0287) | (0.0295) | (0.0309) | (0.0305) |
| Managers, professionals and technicians | -0.2825*** | -0.1956*** | -0.1765*** | -0.1768*** |
| | (0.0322) | (0.0328) | (0.0293) | (0.0294) |
| Clerical, service and sales occupations | -0.0785*** | -0.0396 | -0.0508** | -0.0517** |
| | (0.0260) | (0.0250) | (0.0236) | (0.0235) |
| Craft and trade workers, supervisors | -0.0494* | -0.0290 | -0.0614** | -0.0622** |
| | (0.0260) | (0.0296) | (0.0286) | (0.0287) |
| Plant and machine operators | -0.0780** | -0.0653** | -0.0841** | -0.0846*** |
| | (0.0332) | (0.0331) | (0.0327) | (0.0322) |
| Elementary occupations | -0.0194 | -0.0129 | -0.0377* | -0.0378* |
| | (0.0246) | (0.0214) | (0.0207) | (0.0206) |
| Other | -0.0303* | -0.0060 | -0.0237 | -0.0258 |
| | (0.0184) | (0.0200) | (0.0214) | (0.0215) |
| **Characteristics of the household (HH) in wave 1** | | | | |
| Number of HH residents | 0.0198*** | 0.0208*** | 0.0437*** | 0.0435*** |
| | (0.0030) | (0.0032) | (0.0043) | (0.0043) |
| Area of HH residence (Base = Traditional) | | | | |

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[22] Lopez-Calva and Ortiz-Juarez (2014) additionally control for negative health shocks. While such a question was included in NIDS waves 1 to 3, it had been dropped in wave 4 such that it cannot be included in our model.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Urban | -0.0249 | 0.0369 | 0.0251 | 0.0280 |
| | (0.0187) | (0.0283) | (0.0309) | (0.0309) |
| Farms | 0.1163*** | 0.1337*** | 0.1337*** | 0.1320*** |
| | (0.0335) | (0.0398) | (0.0374) | (0.0374) |
| **Controls for standard of living** | | | | |
| HH lives in house, cluster, town house | | -0.0217 | -0.0272* | -0.0261 |
| | | (0.0165) | (0.0163) | (0.0161) |
| HH has tap water in house/on plot | | -0.0108 | -0.0087 | -0.0085 |
| | | (0.0175) | (0.0201) | (0.0201) |
| HH has flush toilet in/outside house | | -0.0558*** | -0.0481** | -0.0478** |
| | | (0.0214) | (0.0208) | (0.0211) |
| HH owns at least one electric stove | | -0.0008 | -0.0178 | -0.0182 |
| | | (0.0159) | (0.0151) | (0.0150) |
| HH owns at least one fridge/freezer | | -0.0197 | -0.0208 | -0.0204 |
| | | (0.0159) | (0.0158) | (0.0155) |
| HH owns at least one washing machine | | -0.0396** | -0.0415** | -0.0404** |
| | | (0.0194) | (0.0184) | (0.0185) |
| HH owns at least one microwave | | -0.0607*** | -0.0493*** | -0.0476*** |
| | | (0.0168) | (0.0153) | (0.0153) |
| HH owns at least one private motor vehicle | | -0.0593** | -0.0489** | -0.0496** |
| | | (0.0232) | (0.0217) | (0.0213) |
| HH owns at least one computer | | -0.1339*** | -0.1276*** | -0.1280*** |
| | | (0.0318) | (0.0302) | (0.0303) |
| **Shocks experienced by HH between waves 1 and 4** | | | | |
| Change in HH size | | | 0.0676*** | 0.0675*** |
| | | | (0.0032) | (0.0033) |
| Change in number of employed HH members | | | -0.0180*** | -0.0174*** |
| | | | (0.0063) | (0.0063) |
| Death of HH member | | | 0.0422*** | 0.0449*** |
| | | | (0.0160) | (0.0161) |
| Widespread death/disease of livestock | | | | 0.0413 |
| | | | | (0.0367) |
| A major crop failure | | | | 0.0700 |
| | | | | (0.0430) |
| Theft, fire or destruction of property | | | | -0.0314 |
| | | | | (0.0221) |
| Any other negative event | | | | -0.0589* |
| | | | | (0.0327) |
| Province fixed effects | YES | YES | YES | YES |
| Observations | 17,598 | 17,157 | 17,157 | 17,157 |
| R-squared | 0.277 | 0.304 | 0.405 | 0.407 |
| Correctly classified (%)* | 76.35 | 78.30 | 80.77 | 80.71 |
| **Threshold associated with a predicted 10% risk to poverty** | | | | |
| Expenditure cut-off (predicted) | 3523 | 3991 | 3104 | 2903 |
| Income cut-off (predicted) | 3513 | 4034 | 3069 | 2874 |
| Expenditure cut-off (actual) | 4973 | 5010 | 3287 | 3391 |
| Income cut-off (actual) | 7288 | 6205 | 3481 | 3802 |

Robust standard errors (adjusted for 400 survey clusters) in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Source: Own calculations using NIDS Wave 1 and Wave 4, taking survey design into account and applying panel weights.
*Note: Individuals are predicted to be poor if their predicted poverty propensity exceeds the average probability of being poor in the final year (i.e. the 2014/15 poverty headcount).

Figure 6 illustrates the relationship between predicted per capita household expenditure, and the predicted probability that individuals living in households with those levels of expenditure would fall into poverty at the end of the period.

**Figure 6: Predicted income by probability of being in poverty in 2014/15**
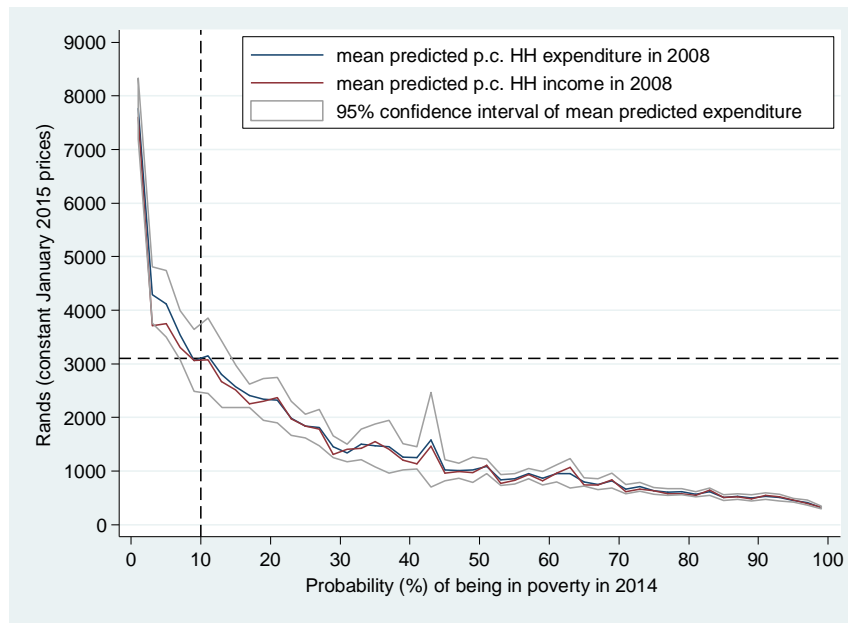


Source: Own calculations using NIDS balanced panel Waves 1 and 4 and applying panel weights.
Note: Each predicted probability is assigned the probability value in the middle of a four percentage point range in which it falls, e.g. $\widehat{p^*}_{it+1} = 10 \; if \; 8 < \hat{p}^*_{it+1} \leq 12$ The associated mean predicted per capita household income and expenditure values are calculated accordingly, using all observations whose predicted probability falls in that range.

As the middle class, ideally, should be formed of those individuals facing a low risk of falling into poverty over time, as indicated above, we follow López-Calva and Ortiz-Juarez (2014) in using a 10 percent probability of falling into poverty as the dividing line between economic security and vulnerability (dashed vertical line in Figure 6), and define the predicted expenditure associated with that probability as the lower-threshold that depicts the lower bound of the middle class. Using the model specification reported in Table 4 column (3), the vulnerability threshold is set at R3,104 per month (in January 2015 prices), equivalent to about $13 per day in 2005 PPPs (dashed horizontal line in Figure 6). A very similar threshold would have been obtained when using either reported instead of predicted expenditure or, as Figure 6 displays, when using income instead of expenditure.

In the final step, we identify the upper threshold that separates the middle class from the elite as the average predicted per capita household or expenditure of those in the bottom-one percentile of the predicted probability distribution of falling into poverty. The associated threshold is set at R10,387 per month (in January 2015 prices), equivalent to $43.3 in 2005 PPPs.[23]

Finally, we evaluate the performance of our derived thresholds by investigating the share of those who we identify at middle class who have actually fallen into poverty from 2008 to 2014/15. As reported in

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[23] In the South African literature on the middle class this income range accords most closely with Visagie and Posel's (2013) identification of an 'affluent' middle class. Visagie and Posel identify their 'affluent' middle class by calculating average incomes associated with 'middle class occupations'. In January 2015 prices their range is about R2,000 to R14,000 per capita income. Their middle class thus includes some whom on our schema are identified as unacceptably vulnerable, as well as some of those whom we place in the economic elite.

Table 5, around 40 percent of those who were above the poverty line but below the vulnerability threshold in 2008 had fallen into poverty by 2014/15, whereas the same was true for 9.4 percent of those in the middle class. Surprisingly, also 4.4 percent of those who were elite in 2008 reported an expenditure level below the poverty line in 2014/15. This finding may likely partly be driven by measurement error that is well known to be an issue, especially with regard to the rich in household survey data. A further discussion of this problem is provided in Section 4.5.

**Table 5: Movements in and out of poverty by initial class status, 2008 to 2014/15**

| Population share by class in 2008 that | Poor | Vulnerable | Middle Class | Elite |
|---|---|---|---|---|
| - was non-poor in 2014/15 | 18.9 | 60.4 | 90.6 | 95.6 |
| - was poor in 2014/15 | 81.1 | 39.6 | 9.4 | 4.4 |
| **Expenditure bounds in January 2015 prices** | <1,283 | 1,283 - 3,104 | 3,104 - 10,387 | 10,387+ |
| **Expenditure bounds in 2005 Int. $ PPP** | <5.4 | 5.4 - 13.0 | 13.0 - 43.3 | 43.3+ |

Source: Own calculations using NIDS balanced panel Waves 1 and 4 and applying panel weights.

# 4. Sensitivity analysis and caveats of the approach

In the following section, we assess the sensitivity of the calculated vulnerability threshold to some of the choices we made in deriving it, and discuss the main limitations of our approach

## 4.1 Sensitivity to chosen time-frame and macroeconomic conditions

While vulnerability is a fundamentally forward looking concept, the measurement of vulnerability is necessarily backward looking (Cafiero and Vakis, 2006). Therefore, to use *ex post* measures of vulnerability to estimate *current* levels of vulnerability – that is, predicted probabilities of falling into poverty in the future – we implicitly need to assume that the economic conditions which determined vulnerability in the past remain unchanged in the present and the future (Cafiero and Vakis, 2006). This is a weak assumption, given that changes in the macroeconomic environment will affect the risk people face of falling into poverty.

Thus, while the vulnerability threshold is absolute in the sense that the risk of being poor is fixed at 10 percent, the monetary value associated with that probability is likely to shift as macroeconomic conditions determining vulnerability change.[24] In order to avoid our estimates from being driven by the effects of the 2009/2010 economic crisis that went in line with a rise in poverty rates in South Africa, we estimate the vulnerability threshold taking 2008 as the base and 2014/15 as the final outcome year. However, as shown in Table 6, while less than 10 percent of those who were above that threshold in 2008 reported being poor in 2014/15, a somewhat larger share of the 2008 middle class had fallen into poverty in either 2010/11 or 2012. Accordingly, even those in the supposedly relatively secure middle class that we identify can face a risk of falling into poverty larger than 10 percent in the event of a major macroeconomic downturn, and a higher threshold would have been estimated when using either 2010/11 or 2012 as the final outcome year. Similarly, any expansion in social security or in the insurance system that could prevent the fall into poverty of those who experience any individual negative economic shock could have reduced the estimated vulnerability threshold.

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[24] This problem is not unique to the calculation of a vulnerability threshold – both Stats SA (2015) and Budlender et al. (2015) acknowledge that the applicability of poverty lines "will likely decrease over time as expenditure habits and relative prices change" (Budlender et al., 2015, p.13). Carter and Barrett (2006) face the same problem when attempting to calculate a dynamic asset poverty line.

It is therefore a necessary limitation of the vulnerability threshold that the income or expenditure level associated with a 10 percent probability of remaining in or falling into poverty will need to be recalculated over time. This also means that the monetary value associated with the 10 percent threshold is country-specific and (if at all) should be used with caution in cross-country analyses.[25]

**Table 6: Population share falling into poverty by initial class status in 2008**

| Class in 2008 | Poor | Vulnerable | Middle Class | Elite |
|---|---|---|---|---|
| Poor in 2010/11 (%) | 90.6 | 51.5 | 11.9 | 8.0 |
| Poor in 2012 (%) | 87.9 | 45.1 | 12.4 | 8.5 |
| Poor in 2014/15 (%) | 81.1 | 39.6 | 9.4 | 4.4 |
| Poor in 2010/11, 2012, OR 2014/15 (%) | 97.9 | 68.5 | 21.3 | 11.5 |
| Poor in 2010/11, 2012, AND 2014/15 (%) | 71.7 | 24.7 | 4.6 | 4.3 |

Source: Own calculations using NIDS balanced panel Waves 1, 2, 3 and 4 and applying panel weights.

## 4.2 Sensitivity to the choice of the probability cut-off

We recognise that the selection of both the 10 percent threshold and of the ±2 percent interval used to calculate the average monetary threshold associated with that probability are somewhat arbitrary.

The latter choice is less problematic, as it provides a more robust estimate that should be less specific to the sample at hand. By using a probability interval of 8 to 12 percent, 185 observations enter into the threshold calculation. The alternative choice of a narrower probability interval of 9.5 to 10.5 percent would have led to a similar vulnerability threshold of R3,266, where the calculation, however, is based on only 50 observations.

The choice of a 10 percent threshold, however, is critical to our analysis. In principle, it would be possible make an argument for the use of any other probability threshold in a potential range of 5 to 20 percent. Table 7 below compares the calculated vulnerability line and the associated size of the middle class using a range of alternative cut-off points. We find that any cut-off point between 10 and 15 percent (calculated over a probability interval from 8 to 12 and 13 to 17 respectively), would have led to a population share of the middle class between 13 to 16 percent. This rather small difference of three percentage points adds robustness to the suggested threshold. Fixing the maximum acceptable predicted risk of falling into poverty at 5 percent (or 20 percent) would naturally have gone in line with a higher (or lower) vulnerability cut-off and an accordingly smaller (or larger) size of the middle class.

**Table 7: Sensitivity of the vulnerability thresholds to the choice of the probability cut-off**

| Allowed maximum predicted risk of falling into poverty | Vulnerability Threshold (in January 2015 prices) | Middle class (%) in 2008 | Middle class (%) in 2014/15 | Middle class growth (ppts) |
|---|---|---|---|---|
| 5 percent | 3,906 | 10.0 | 9.9 | -0.06 |
| 10 percent | 3,104 | 13.2 | 13.5 | 0.38 |
| 15 percent | 2,665 | 15.6 | 15.7 | 0.09 |
| 20 percent | 2,331 | 17.6 | 18.3 | 0.66 |

Source: Own calculations using NIDS balanced panel Waves 1 and 4 and applying panel weights.

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[25] Similarly, to apply the vulnerability threshold to measuring the middle class in countries other than the country in which it was calculated is to assume that the macroeconomic conditions in both countries are the same, which is highly questionable. For a discussion of approaches to defining and measuring the global middle class see Jayadev et al. (2015).

In the following we proceed with the vulnerability line derived from a 10 percent probability cut-off for three main reasons. First, we feel that a 5 percent cut-off would be too demanding, given that we aim to capture a middle class that is distinctively different from the elite. Second, given that 25.55 percent of those who were non-poor in 2008 had fallen below the poverty line in 2014/15 (see Table 5 above), we believe that a 20 percent cut-off (which is close to the average risk of falling into poverty for all initially non-poor) would be insufficient to adequately distinguish the middle class from the vulnerable. Third, the calculated threshold has been shown to be relatively insensitive to any smaller variation with the 10 to 15 percent interval.

## 4.3    Sensitivity to the choice of the poverty line

Naturally, the estimated probability of being poor and the associated vulnerability cut-off will depend on where we set the poverty line. In order to investigate the sensitivity of our results to the choice of SALDRU's upper bound poverty line (Budlender et al., 2015), we replicate the same approach using Stats SA's (2015) upper bound poverty line that has been suggested for South Africa. We do not replicate the analysis using any lower bound poverty line, given that we consider the satisfaction of basic needs a minimum requirement for being middle class.

Unsurprisingly, the vulnerability threshold calculated using the lower Stats SA upper bound poverty line of R963 (equivalent to about $4 per day in 2005 PPPs) falls to R2,239 per month (in January 2015 prices), equivalent to about $9.3 per day in 2005 PPPs. While the population share held by the middle class is about 5 to 6 percentage points higher under this specification, the growth in the share of the middle class between 2008 and 2014/15 is very similar and not significantly different from zero under either of the two specifications.

**Table 8: Sensitivity of the vulnerability thresholds to the choice of the poverty line**

| Upper Bound Poverty Line in January 2015 prices | Poverty line | Vulnerability Threshold | Middle class (%) in 2008 | Middle class (%) in 2014/15 | Middle class growth (ppts) |
|---|---|---|---|---|---|
| Stats SA (2015) | 963 | 2,239 | 18.7 | 19.1 | 0.46 |
| Budlender et al. (2015) | 1,283 | 3,104 | 13.2 | 13.5 | 0.38 |

Source: Own calculations using NIDS balanced panel Waves 1 and 4 and applying panel weights.

## 4.4    Sample attrition and changes in the composition of households

As in any panel data study, sample attrition is a concern. Despite using panel weights throughout the analysis that partly mitigate the sample bias caused by non-random attrition, there are reasons to believe that the presented vulnerability threshold may be biased due to some individuals exiting the panel. First, attrition is generally highest amongst rich households. If one suspects that generally those individuals whose living conditions deteriorated and who potentially fell into poverty are more likely to exit the panel, whereas more stable households are potentially more likely to be re-interviewed, our probability estimate could be downward biased and the presented middle class share thus interpreted as an upper bound estimate. We explicitly address this problem in a forthcoming paper that simultaneously controls for non-random attrition and endogenous initial conditions when estimating poverty transitions in South Africa. We find that after controlling for observable characteristics, the unobservable factors governing panel attrition are not significantly correlated with the unobservables affecting poverty transitions (Zizzamia et al., *forthcoming*). Therefore, we are confident that our results are not importantly affected by attrition.

Moreover, NIDS is a panel study which follows individuals and not households. This means that individuals that belong to a particular household in Wave 1 will not necessarily belong to the same

household in subsequent waves. Our analysis nevertheless works on the assumption that household resources in Wave 1 are relevant in determining poverty status in Wave 4, adding a limited set of controls for changes in the household composition. Investigating to what extent dynamics of household formation as well as changes in the geographic location of households are driving mobility will be a worthwhile line of research for future investigation, which is beyond the scope of this paper.

## 4.5    Measurement error in income or expenditure data

The presented vulnerability analysis essentially builds on investigating the correlates of movement in and out of poverty observed in the available panel data. However, if the expenditure variable that determines the poverty status of the household was measured with error, which will generally be the case in survey data, this noise in the data may lead us to overstate the actual degree of mobility and thus the actual risk of falling into poverty.

The implications of this may become clearer when recalling Table 6 above, which suggest that a (surprisingly) large share of those classified as middle class in Wave 1 had fallen into poverty in either Wave 2, 3, or 4. While this may partly be attributed to the consequences of the global economic crisis that hit South Africa in 2009/10, we cannot exclude the possibility that part of this apparently high mobility is the result of household misreporting.

While a number of studies investigate the degree of income or expenditure mobility and poverty transitions using panel data, relatively few have suggested ways to correct for error bias in these analyses (see Lee, 2009; Lee et al. 2010). The most promising attempt using NIDS data has been presented by Burger, Klasen, and Zoch (2016). Their instrumental variables approach, however, is more concerned with understanding the extent of 'true' overall income mobility in NIDS, but does allow quantifying measurement error at the individual level. Their results suggest that up to 20 percent of the variation in reported household income in the first three waves of NIDS is attributable to measurement error.

Replicating the above analysis for a simulated 'measurement-error free' data set would be a highly valuable but not straight-forward exercise, which unfortunately is beyond the scope of the analysis presented in this paper.

## 5.    Comparing approaches to defining the South African middle class

As noted in Section 3, unlike Burger et al.'s (2015) capability approach, non-vulnerability is a negative condition to identifying a middle class as an empowered class, i.e. it is not an indication of what empowerment *is*, but rather an indication of what empowerment *is not*. In other words, it is a necessary condition of empowerment, but will not always be sufficient. What this implies is that, by specifying a monetary definition of class, we do not impose any condition that ensures that other capabilities or functionings associated with being middle class – going beyond our understanding of being free from concern about survival and meeting basic needs, as captured by an expenditure level above the vulnerability threshold – are being met. However, as shown in Table 9 below, which compares various approaches to defining the South African middle class on a number of relevant criteria, being (in)vulnerable to poverty is a very good proxy for the attainment of other capabilities.

The six criteria we use to compare various approaches to defining the South African middle class are represented in Table 8 below, where the column on the left indicates the criteria used for comparison and the column on the right specifies how these criteria are measured empirically. The first four criteria (and the method of identifying these 'capabilities' empirically) are taken from Burger et al. (2015).

**Table 8: Criteria for comparing approaches to defining the middle class in South Africa**

| | Condition for comparison | How the condition is identified empirically |
|---|---|---|
| | | Percentage share of the middle class that live in a household… |
| 1 | Freedom from concern about meeting basic needs | … with access to adequate sanitation, electricity and water |
| 2 | Financial discretion and buying power | … which owns a stove and fridge |
| 3 | Labour market power | … with at least one person in employment |
| 4 | Access to information and literacy | … that owns a TV and radio, and all adults have completed primary education |
| 5 | Not in poverty | … with per capita expenditure above the SALDRU poverty line (R1,283) |
| 6 | Not vulnerable to poverty | … with per capita expenditure above the vulnerability threshold (R3,104) |

Source: Authors' representation. Points 1 to 4 are taken from Burger et al. (2015).

For comparison we focus on three approaches to defining the middle class recently developed or used in the South African literature, plus our own. The four methods and the relevant studies are presented in Table 9 below.

**Table 9: Comparing different approaches to defining the middle class in South Africa in 2014/15**

| Study | | Levy et al., 2014; Finn et al., 2013b | Burger et al., 2015 | Visagie and Posel, 2013 | Zizzamia et al. (this paper) |
|---|---|---|---|---|---|
| Approach | | Statistical middle (40-70th percentile) | Capability approach | 'Affluent' middle (R1,955 – R13,968) | Vulnerability approach (R3,104 - R10,387) |
| Share of total population (%) | | 30 | 55 | 23,5 | 13,5 |
| share of middle class (%) that has | access to basic goods and services | 81.5 | 100 (by definition) | 94 | 95 |
| | financial discretion and buying power | 95 | 100 (by definition) | 99 | 99 |
| | labour market power | 75 | 100 (by definition) | 92 | 94 |
| | access to information and literacy | 91 | 100 (by definition) | 95 | 95 |
| | above the poverty line | 13.5 | 54 | 100 | 100 (by definition) |
| | above the vulnerability threshold | 0 | 30 | 68 | 100 (by definition) |

Source: Own calculations using NIDS balanced panel Waves 1 and 4 and applying panel weights.

As expected, the 'statistical middle' (Levy et al., 2014; Finn et al., 2013b) performs particularly poorly in meeting the criteria intended to indicate that a class is an 'empowered' class. On this approach only 13.5 percent of the middle class find themselves above the basic needs poverty line, and 100 percent are vulnerable to poverty.

The capability approach, which is a definition of the middle class built around the first four criteria (Table 8), performs poorly on the remaining two criteria – with almost half of those who satisfy all four basic capability conditions being poor, and 70 percent being vulnerable to poverty.

The middle class identified by our vulnerability approach and the 'affluent middle class' (Visagie and Posel, 2013) perform similarly on all the criteria except the last – where we find that over 30 percent

of those in the 'affluent middle class' are vulnerable to falling into poverty according to the vulnerability approach.

It is interesting to note the high levels of poverty and very high levels of economic instability when the middle class is defined according to basic capabilities (Burger et al., 2015). This suggests that the particular capabilities that are used in Burger et al.'s approach do not translate into economic empowerment. Even if we limit our analysis to vulnerability to capability deprivation (rather than vulnerability to money-metric poverty), we find that the capability approach's middle class is highly volatile. Using the panel dimension of NIDS we investigate this volatility and find that 39 percent of those who possess all four capabilities (1 to 4 in Table 8) had lost one of more of these capabilities in either Wave 3 or Wave 4. When decomposing the sources of this volatility we find that most of this volatility was due to volatility in the labour market (Figure 7). Importantly, volatility in access to the labour market is greater for Africans than for whites, with only 60 percent of African households expected to maintain access to the labour market through having an employed resident, compared to over 90 percent for whites.

**Figure 7: Transition probabilities over Wave 3 and Wave 4 for various capabilities, for those who possessed the particular capability in Wave 1**
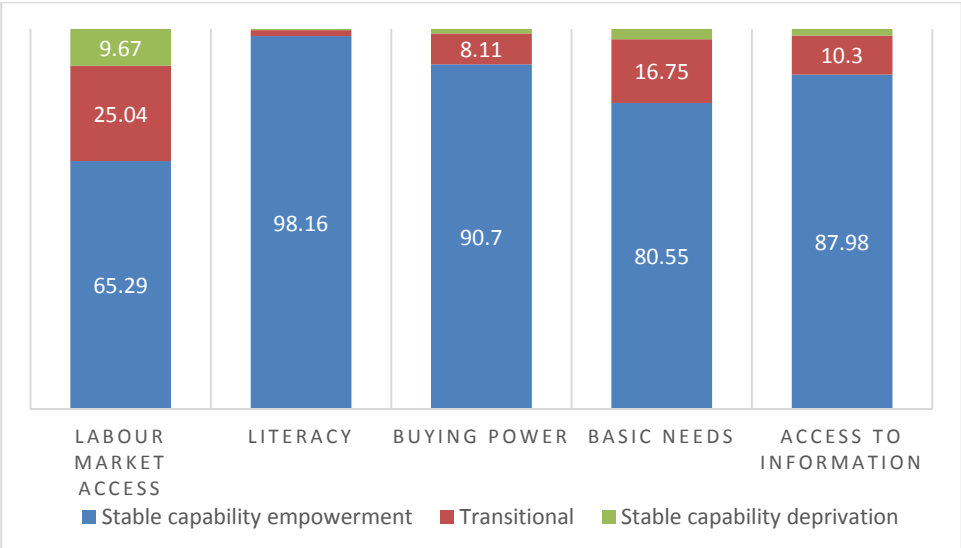


Source: Own calculating using NIDS Wave 1, Wave 3 and Wave 4 applying panel weights.

Both the capability approach and the vulnerability approach are explicit in attempting to identify an 'empowered' class. However, while the vulnerability approach defines empowerment *negatively* by isolating a characteristic (vulnerability) which is incompatible with empowerment, the capability approach defines empowerment *positively* by identifying capabilities which purportedly constitute empowerment. Interestingly, we find that the negative approach (vulnerability) performs better than the positive approach (capabilities) in identifying an empowered class – with almost all of the non-vulnerable also satisfying the capability approach's four basic capabilities.

It is important to note that this does not indicate that defining the middle class positively by identifying capabilities is misguided. Rather, the capabilities which are used need to be carefully selected as appropriate indicators of empowerment. Burger et al.'s capability threshold, by including very basic conditions such as access to sanitation, water and electricity, is evidently too weak to adequately capture the notion of 'empowerment'. Their capability approach is especially sensitive to the rapid expansion of government service provision since 1994, resulting in an overestimation of the size of the middle class – which they estimate to constitute 47 percent of the population in 2012. Although it is true that gross deprivation has been reduced substantially in many dimensions, lack of deprivation does not entail 'empowerment'. Crucially, the expansion of the provision of basic services has not led

to a structural change in the labour market – the arena in which 'empowerment' should be manifested – and thus is not significantly consequential for the change in the class structure which Burger et al. observe.[26]
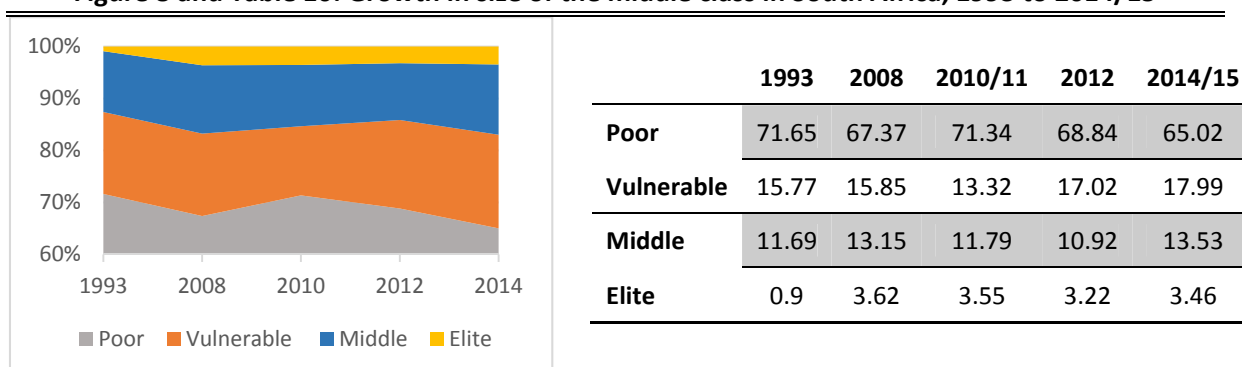
# 6.    A profile of South Africa's 'empowered' middle class

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

## 6.1    Change in the middle class, 1993-2014/15

Applying our vulnerability threshold to cross-sectional 1993 PSLSD data, and adjusting expenditure for inflation, we are able to analyse the evolution of the South African middle class since 1993, as displayed in Figure 8 and Table 10 below.

**Figure 8 and Table 10: Growth in size of the middle class in South Africa, 1993 to 2014/15**

|  | 1993 | 2008 | 2010/11 | 2012 | 2014/15 |
|---|---|---|---|---|---|
| **Poor** | 71.65 | 67.37 | 71.34 | 68.84 | 65.02 |
| **Vulnerable** | 15.77 | 15.85 | 13.32 | 17.02 | 17.99 |
| **Middle** | 11.69 | 13.15 | 11.79 | 10.92 | 13.53 |
| **Elite** | 0.9 | 3.62 | 3.55 | 3.22 | 3.46 |

Source: Own calculations using PSLSD 1993 (with census raised weights) and NIDS (with post-stratified weights).

Again, it is important to stress that we are only able to make this comparison by assuming that macroeconomic conditions determining vulnerability have not changed since 1993 in a way that would impact the vulnerability threshold. Our results need to be interpreted with this caveat in mind. We find that the growth of the middle class since 1993 has been very slow – growing from 11.69 percent of the total population in 1993 to 13.15 percent in 2008. This is consistent with our preliminary investigations in Section 2 – where we find that per-capita income growth since 1993 was lowest between the 40th and 95th percentiles of the income distribution and observed a decline in the income share going to the ventiles in this part of the distribution.

However, since 2010/11 there has been considerable upward mobility for Africans into the elite and the middle classes. Since 2010/11 the share of Africans in the middle class has increased from 39 to 48 per cent – to a total of about 4 million in 2014/15. In absolute numbers African membership of the elite more than doubled between 2010/11 and 2014/15, from 215,000 to 455,000.

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[26] Finn et al. (2013a) have shown that the rapid expansion in public service delivery since 1994 has led to a significant decline in measures of multidimensional poverty. Using a Multidimensional Poverty Index (MPI) which includes values for education, health, and living standards, Finn et al (2013a) and Leibbrandt et al (2009) show that between 1993 and 2010 the incidence of multidimensional poverty has decreased (from a headcount of 37 percent to 8 percent) as has the depth of multidimensional poverty (those who remained multidimensionally poor in 2010 were deprived in fewer dimensions). This shows that transfers through the social wage (rather than income though the labour market) has been most important in reducing poverty.

This indicates that, although the size and income share of the middle class in South Africa has not changed much since 1993, there has been a notable transformation in the racial composition of the middle class (see Figure 9). Since 1993 Africans have more than tripled their representation in the middle class at the same time as the white population's share of middle class membership has halved. While Africans now outnumber whites in the South African middle class, in terms of demographic representivity whites remain overrepresented and Africans underrepresented.

**Figure 9: Racial composition of the middle class, 1993 to 2014/15**
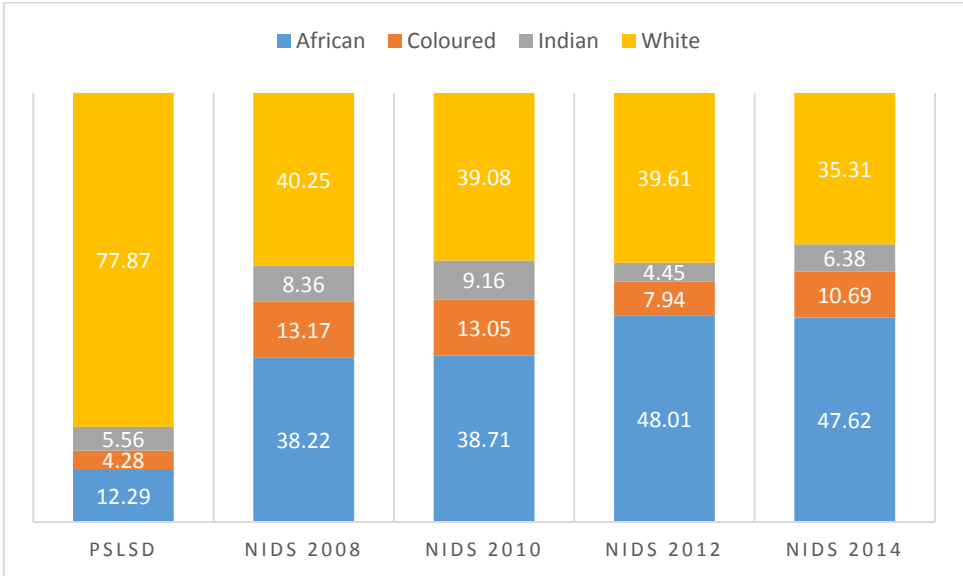


Source: Own calculations using PSLSD 1993 (with census raised weights) and NIDS (with post-stratified weights).

Using cross-sectional data to measure net changes in the size of the middle class does not allow us to come to an understanding of inter-class mobility. To provide an insight into movements between classes we use panel data to investigate the extent of upward and downward mobility for those who belonged to a particular class in 2008. These results are presented in the transition matrix below (Table 11). Table 11 shows that the poor are the most stable, with over 80 percent being chronically poor. The vulnerable appear to be much more mobile, with only one third remaining in the vulnerable class between 2008 and 2014/15. However, a large part of this mobility is downwards into poverty, with almost twice as many moving into poverty as those moving up into the middle class. The middle class is fairly stable, with only 10 percent falling into poverty – as predicted by our model.

**Table 11: Movements across classes, 2008 to 2014/15**

| | | Class in 2008 | | | |
|---|---|---|---|---|---|
| | | **Poor** | **Vulnerable** | **Middle Class** | **Elite** |
| **Class in 2014/15** | **Poor** | 81.16 | 39.22 | 9.72 | 4.59 |
| | **Vulnerable** | 14.56 | 35.83 | 20.62 | 5.56 |
| | **Middle Class** | 3.91 | 22.97 | 56.79 | 38.94 |
| | **Elite** | 0.37 | 1.99 | 12.87 | 50.92 |
| | **Total** | 81.16 | 39.22 | 9.72 | 4.59 |

Source: Own calculations using NIDS balanced panel Waves 1 and 4 and applying panel weights.

## 6.2 Who is the South African middle class?

It is illuminating to understand the characteristics of the South African middle class in relation to the classes which are situated above and below it on our schema. Table 12, which compares the four classes on a number of relevant characteristics, shows that the mass of South Africans are poor, African, poorly educated, and are not participating in the labour market. The polarised nature of South African society is evidenced by the distinctness of an elite class, which is largely white, very wealthy, mostly employed and highly educated, with most having tertiary qualifications. However, it is the distinctness of the vulnerable class from the middle class that is particularly interesting for our purposes. While the population share of the middle class is smaller than the vulnerable class, its share or total expenditure is more than double that of the vulnerable class, and its median per capita expenditure is almost three times as high.

**Table 12: Characteristics of the four classes on the vulnerability approach in 2014/15**

|  | Poor | Vulnerable | Middle Class | Elite |
|---|---|---|---|---|
| Population share (%) | 65.02 | 17.99 | 13.53 | 3.46 |
| Per capita income range | R0 - R1,283 | R1,283 – R3,104 | R3,104 - R10,387 | > R10,387 |
| Median per cap expenditure | R476 | R1,890 | R5,031 | R14,727 |
| Expenditure share (%) | 16.9 | 16.8 | 35.2 | 31.1 |
| African (%) | 90.46 | 79.99 | 47.62 | 23.94 |
| White (%) | 0.82 | 5.31 | 35.31 | 57.39 |
| Mean years of education | 8.3 | 10.3 | 12 | 13.3 |
| With tertiary qualifications (%) | 7.63 | 22.90 | 42.87 | 61.93 |
| Employed (%) | 48.47 | 73.42 | 82.54 | 83.68 |
| Unemployed (%) | 22.98 | 13.02 | 6.31 | 1.29 |
| Economically inactive (%) | 28.56 | 13.55 | 11.15 | 15.03 |

Source: Own calculations using NIDS Wave 4 applying post-stratified weights.
Notes:
1. Employment statistics are only calculated for individuals between the ages of 15 and 62.
2. 'Unemployed' includes both the 'strict' and 'discouraged' unemployed.
3. 'Percentage with tertiary qualifications' limited to adults above the age of 23.

In terms of racial composition the middle class is very different to the vulnerable class, with whites having a population share in the middle class which is seven times higher than their share of the vulnerable class. Importantly, the middle class's low unemployment rate of 6.3 percent is less than a half that of the vulnerable class, indicating an important difference in the middle class's labour market power. The employment rate of the middle class is more similar to that of the elite than to that of the vulnerable. This suggests that the dividing line between the vulnerable class and the middle class is fundamentally determined by inequalities in the labour market.

## 6.3 The middle class at work

A decomposition of income sources (Figure 10) reveals that, except for the poor (for whom remittances and government grants constitute a large share of total income), in all other classes the contribution of labour market earnings to total income is clearly dominant.[27] For this reason, a closer investigation into the labour market will be particularly important in trying to understand how differences in the world of work determine the cleavages between the vulnerable, the middle class and the elite.

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[27] Note that the 'poor' class is a large and heterogeneous group on our schema and constitute over 60 percent of the total population. If income source composition were reported for the bottom 6 deciles the contribution of grants in the bottom deciles would be significantly higher than the contribution of grants to the income of the poor as presented in Figure 10.

**Figure 10: Composition of income by class, 2014/15**



Source: Own calculations using NIDS Wave 4 applying post-stratified weights.
Notes: Figures represent percentage composition of the sum of the five income sources represented in the graph.

For this reason, it is interesting to explore how class relates to occupation in the vulnerability approach. An exploration of the relationship between occupation and class is typically the starting point in the sociological analysis of class (Southall, 2016; Seekings and Nattrass, 2005). What we find when exploring this relationship in our class schema is that occupational categories map very closely to class for the poor (where almost all the poor work in service and elementary occupations) and for the elite (where more than half of the employed work in managerial and professional occupations). However, for the vulnerable and for the middle classes, in which no single occupational category is clearly dominant, it is not clear that occupation is as important as a determinant of class as it is for the elite and the poor.

Despite the middle and vulnerable classes' more even spread of occupational composition compared to the poor and the elite, these classes are nevertheless clearly distinct from each other in terms of their occupational characteristics. For example, the most significant occupational category in the middle class is that of managers and professionals, while in the vulnerable class service and elementary occupations provide most of the jobs. However, the relatively high number of clerical, service, and sales workers, machine operators, and craft and trade workers in the middle class indicates that occupation has possibly become less important in determining membership of the middle class. This is especially clear when comparing the slightly more evenly spread occupational composition in 2014/15 to that of 1993.

**Table 13: Occupational composition by class, 1993 and 2014/15**

| | Poor | | Vulnerable | | Middle Class | | Elite | |
|---|---|---|---|---|---|---|---|---|
| | *1993* | *2014/15* | *1993* | *2014/15* | *1993* | *2014/15* | *1993* | *2014/15* |
| **Managers, professionals, semi-professionals and technicians** | 6.33 | 8.71 | 15.00 | 14.94 | 47.08 | 39.40 | 73.37 | 51.68 |
| **Clerical, service and sales occupations** | 34.09 | 22.62 | 38.42 | 26.24 | 33.88 | 29.15 | 19.00 | 21.18 |
| **Craft and trade workers, supervisors** | 7.21 | 12.55 | 14.49 | 16.63 | 11.42 | 11.43 | 5.29 | 21.31 |
| **Plant and machine operators** | 11.48 | 12.00 | 12.52 | 16.21 | 3.92 | 12.57 | 1.06 | 2.88 |
| **Elementary occupations** | 40.90 | 44.12 | 19.57 | 25.98 | 3.70 | 7.46 | 1.29 | 2.95 |

Notes:
1. Occupational categories do not map precisely from PSLSD to NIDS. In 'Managers, professionals, semi-professionals and technicians' we include 'Managers', 'Professionals' and 'Technicians and associate professionals' (from NIDS) and 'Professional, semi-professional and technical occupations', 'Managerial, executive and administrative occupations' (from PSLSD). In 'Clerical, service and sales occupations' we include 'Clerical support workers' and 'Service and sales workers' (from NIDS) and 'Communications and transport occupations', 'Clerical and sales occupations' and 'Service occupations' (from PSLSD). In 'Craft and trade workers, supervisors' we include 'craft and trade occupations' (from NIDS) and 'Artisan and related occupations' and 'Production foremen and supervisors' (from PSLSD). In 'Plant and machine operators' we include 'Plant and machine operators' (from NIDS) and 'Operators, production workers, and related semi-skilled occupations' (from PSLSD). In NIDS elementary occupations include unskilled agricultural work while in PSLSD unskilled agricultural work is classified separately. In the table 'Elementary occupations' include unskilled agricultural work for both 1993 and 2014/15.
2. Dark shaded blocks indicate the occupational category with the highest share in each class; the lighter blocks indicate the occupational category with the next highest share.
Source: Own calculations using PSLSD 1993 (with census raised weights) and NIDS Wave 4 (with post-stratified weights).

While this is an open issue which will require more research, our findings suggest that occupational class is perhaps less fundamental in the determination of social class than the sociological literature argues. The rise of precarious and casualised forms of labour in South Africa may have increased the importance of the type of employment relationship over the type of occupation in determining vulnerability – which in turn determines class structure in our schema. One way of exploring this is by distinguishing between written and unwritten employment contracts. As can be seen from Table 14, we find that there is a significant difference in the proportion of workers in the vulnerable class without written contracts, compared to the middle class. 1 in 4 workers in the vulnerable class do not have written contracts, which is almost three times higher than the proportion in the middle class.

**Table 14: Type of employment agreement by class, 2014/15**

| | Poor | Vulnerable | Middle Class | Elite |
|---|---|---|---|---|
| **Written contract** | 63.09 | 76.08 | 90.19 | 93.29 |
| **Verbal contract** | 36.91 | 23.92 | 9.81 | 6.71 |

Source: Own calculations using NIDS Wave 4 and applying post-stratified weights.

# 7. Conclusion

This paper aims to add clarity to the debate that is currently unfolding regarding the size, growth, economic power, and transformative potential of South Africa's middle class, by making two main contributions: First, we provide a structured overview of a wide array of definitions of the middle class that have been suggested in the literature, and assess their strengths and shortcomings with an application to South Africa. Second, having identified the need for an empirically and theoretically rigorous definition of what it means to be middle class in the South African context, we suggest an approach that relies on (in)vulnerability to poverty as the key criterion identifying class thresholds.

Our analysis highlights three main weaknesses of existing approaches defining the middle class that are pervasive in the mainstream economics literature. First, like Visagie and Posel (2013), we find that central tendency measures that locate the middle class in the literal middle of the income distribution are unsuitable for a country marked by high levels of poverty and inequality such as South Africa, where the median income earner falls below the poverty line.

Second, absolute income thresholds that enjoy particular popularity in the context of cross-country analyses (with the AfDB 2011 report being the most prominent example for Africa) often lack a clear theoretical basis, making it difficult for these class definitions to resonate with the broader sociological understandings of class. Many of these studies, by locating the middle class just above the poverty line, assume that the middle class starts where poverty ends. This is to ignore that being able to afford a certain basket of goods at a given point in time does not give any indication as to whether the same will be true in the next period. Furthermore, by focusing exclusively on the sum of income, these approaches are generally blind to how this income is acquired, and thus fail to provide an insight into the long-term sustainability of observed welfare levels. This is highly problematic given that a number of studies in the social sciences as well as in the psychology and health literature show that being in a situation of vulnerability is welfare reducing even if poverty does not materialise (Dercon, 2006; Cafiero and Vakis, 2006). Including the vulnerable amongst the middle class conflicts with both sociological and popular understandings of the middle class, where economic stability has been found to be fundamental to the self-identification of being middle class (see for example Phadi and Ceruti, 2011).

Lastly, there have been several attempts to come up with a workable definition of the middle class in South Africa that better resonates with the sociological understanding of class. One of the most promising among these is the approach suggested by Burger et al. (2015), who identify a 'capability threshold' which comprises a set of minimum criteria considered necessary for being middle class based on the notion of 'empowerment'. Despite being conceptually compelling, we raise two main points of critique. First, the empirical implementation of the approach is heavily oriented towards basic needs and as such is better suited as a measure of multidimensional deprivation than as an indicator of economic empowerment. Second, it does not allow for the differentiation between the middle class and the elite. In the South African context marked by a high concentration of income at the top, making this distinction seems to be an important element in developing a class schema which is able to reflect real differences in social and economic power.

Given the shortcomings of existing approaches, in this paper we elaborate a further attempt at defining the South African middle class in a conceptually and empirically rigorous manner. Taking up the argument that the notion of 'empowerment' is central to the social and political meanings of 'middle class', we propose an empirical strategy that uses (in)vulnerability to poverty as the key criterion defining middle class status. The underlying vulnerability criterion is based on the notion that members of the middle class should be at reasonably low risk of falling into a situation in which they are incapable of meeting basic needs.

Using panel data from the nationally representative National Income Dynamics Study, we present a probability model that predicts the risk of staying in or falling into poverty between 2008 and 2014/15

depending on a broad array of initial household conditions and resources. We select the expenditure level associated with a maximum risk to poverty of 10 percent as the lower bound of the middle class, and the expenditure level associated with effective invulnerability to poverty as the upper bound. This gives us a monthly per capita expenditure range of R3,104 to R10,387 (January 2015 prices). We present a number of robustness and sensitivity checks that increase confidence in the derived upper and lower bounds, and we provide strong arguments for preferring these thresholds over alternatives that have already been suggested in the South African literature.

The application of this vulnerability approach results in a South African middle class that is small and has grown sluggishly since 1993. With an estimated population share of 13.5 percent in 2014/15, the middle class that we identify is considerably smaller than the range of 30 to 55 percent that the application of alternative approaches suggests (Visagie and Posel, 2013; Burger et al., 2014; Burger et al., 2015). However, consistent with the existing literature, we find that there has been rapid growth in the African share of the middle class, with Africans now outnumbering whites in the middle class by a significant margin. 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 poverty in South Africa, with Africans being at the highest risk to poverty even after controlling for differences in education and employment. Members of larger, female headed, or rural agricultural households also face a higher risk of poverty, and are thus less likely to enter the ranks of the middle class. Having access to stable labour market income, by contrast, is a key determinant for households to achieve economic stability in South Africa. A higher level of education of the household head and having a working household head (ideally in a white collar occupation in the formal sector), are strong predictors for lower vulnerability to poverty, according to our findings.

Looking beyond the above discussion in relation to the South African middle class, this research also has important implications for the investigation of poverty transitions. The vulnerability assessment presented in the paper highlights the need to understand poverty not only as a static state, but also as a dynamic phenomenon, taking into account that households are moving both into and out of poverty. The vulnerability threshold we calculate is an attempt at measuring welfare in this dynamic way by reflecting the ability of households to respond adequately to negative stochastic events (Hoddinott and Quisumbing, 2003). Just as the upper bound poverty line indicates an expenditure level at which individuals are typically able to satisfy their basic needs, the vulnerability line we calculate indicates the minimum monetary threshold above which individuals are typically able to afford the cost of insuring against the risk of falling into poverty. This is to acknowledge the fact that material deprivation does not only exist below the basic needs poverty line, but also that deprivation which is welfare-reducing (over the short or long term) also exists for those who find themselves just above the poverty line. In the sense that the vulnerability threshold can be understood as a *dynamic* poverty line based on the *static* SALDRU poverty line, this research makes an important addition to the work done by Budlender et al. (2015) on defining poverty in South Africa. While much attention has been devoted to measuring the incidence, depth, and severity of poverty in South Africa, the vulnerability to poverty of those who find themselves above, but close to, the poverty line has largely been neglected in existing research and should be explored further.

# 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

Atkinson, A. B., Piketty, T., & Saez, E., .2011. Top Incomes in the Long Run of History. *Journal of Economic Literature*, 49(1): 3–71.

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]

Bhorat, H, Tseng, D, & Stanwix, B., 2014. Pro-poor growth and social protection in South Africa: Exploring the interactions. *Development Southern Africa*, 31(2): 219-240.

Birdsall, N., Graham, C., & Pettinato, S. 2000. S*tuck 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. P., Klasen, S., & Zoch, A. 2016. *Estimating income mobility when income is measured with error: The case of South Africa*. (ERSA Working Paper 607). South Africa: Economic Research Southern Africa

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.

Carter, M., & May, J., 2001. One Kind of Freedom: Poverty Dynamics in Post-apartheid South Africa. *World Development*, 29(12): 1987-2006.

Carter, M., & Barrett, C., 2006. The Economics of Poverty Traps and Persistent Poverty: An Asset-Based Approach. *The Journal of Development Studies* 42(2), 178-199.

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 Eco-nomic Growth*, 6(4), 317-335.

Finn, A., Leibbrandt, M., & Woolard, I. 2013a. The significant decline in poverty in its many dimensions since 1993, *Econ3x3* Available: http://www.econ3x3.org/article/significant-decline-poverty-its-many-dimensions-1993 [4 February 2016]

Finn, A., Leibbrandt, M., & Woolard, I., 2013b. *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

Fourie, F., 2014. How inclusive is economic growth in South Africa? *Econ3x3* Available: http://www.econ3x3.org/article/how-inclusive-economic-growth-south-africa [1 April 2016]

Giesbert, L., & Schotte, S. 2016. Africa's new middle class: Fact and fiction of its transformative power. GIGA Focus Africa, 1.

Gordon, R. J., & Dew-Becker, I., 2007. Selected Issues in the Rise of Income Inequality. *Brookings Papers on Economic Activity*, 2007(2), 169–190.

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.

Jayadev, A., Lahoti, R., & Reddy, S., 2015. *The Middle Muddle: Conceptualising and Measuring the Global Middle Class,* (Georg-August-Universität Göttingen Courant Research Centre Discussion Paper No. 193) Gottingen: Georg-August-Universität Göttingen

Kharas, H. 2010. *The emerging middle class in developing countries*. (OECD Development Centre Working Paper No. 285). Paris, France: OECD Development Centre

Lee, N. 2009. Measurement error and its impact on estimates of income and consumption dynamics. Available at SSRN 1299330.

Lee, N., Ridder, G., & Strauss, J. 2010. *Estimation of poverty transition matrices with noisy data.* (Departamento de Economía Working Paper 2796). Río de Janeiro: PUC.

Leibbrandt, M., Woolard, I., Finn, A., & Argent, J., 2010. *Trends in South African Income Distribution and Poverty since the fall of Apartheid,* (OECD Social, Employment and Migration Working Paper No. 101) Paris, France: Organisation for Economic Co-operation and Development.

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.

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

Phadi, M. & Ceruti, C., 2011. The multiple meanings of the middle class in Soweto, South Africa. *African Sociological Review,* 15(1): 87-107

Ranieri, R. & Ramos, R., 2013. *Inclusive growth: Building up a concept*, (International Policy Centre for Inclusive Growth Working Paper No. 104). Brasilia: United Nations Development Programme, International Policy Centre for Inclusive Growth.

Ravallion, M., 1994. *Poverty comparisons.* Switzerland: Harwood Academic Publishers.

Ravallion, M., 2010. The Developing World's Bulging (but Vulnerable) Middle Class, *World Development*, 38(4): 445-454.

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.

Sen, A., 1999. *Development as Freedom.* New York: Oxford University Press.

Seekings, J. & Nattrass, N., 2005. *Class, Race and Inequality in South Africa*. New Haven and London: Yale University Press.

Seekings, J. 2007. *Perceptions of class and income in post-apartheid Cape Town.* (CSSR Working Paper No. 198). Cape Town, South Africa: Centre for Social Science Research, University of Cape Town.

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.

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].

Standing, G. 2011. *The Precariat: The New Dangerous Class.* USA: Bloomsbury.

Statistics South Africa, 2011. *Consumer Price Index: March 2011.* (Statistical release P0141). Statistics South Africa.

Statistics South Africa, 2011. *Consumer Price Index: December 2012.* (Statistical release P0141). Statistics South Africa.

Statistics South Africa, 2011. *Consumer Price Index: January 2015.* (Statistical release P0141). Statistics South Africa.

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.

Stiglitz, J., 2015. *The Measurement of Wealth: Recessions, Sustainability and Inequality.* (NBER Working Paper 21327). Cambridge, M.A.: National Bureau of Economic Research.

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. 2013a. Who are the middle class in South Africa? Does it matter for policy? *Econ3x3*. Available: http://www.econ3x3.org/article/ who-are-middle-class-south-africa-does-it-matter-policy [29 February 2016]

Visagie J. 2013b. 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.

Yeung, J.W. & Xu, Z., 2012. Economic stress, quality of life, and mortality for the oldest-old in China. *Social Indicators Research* 108 (1): 131–52.

Zizzamia, R., Schotte, S. & Leibbrandt, M., *forthcoming*. *Social Class, Life Chances and Vulnerability to Poverty in South Africa,* paper to be presented at the Development Studies Association Conference, Oxford, 12-14 September 2016.

# Appendix

**Table A: Estimated coefficients (OLS) used to predict household income or expenditure**

| | Real log p.c. HH expenditure (with full imputations) | | | Real log p.c. HH monthly income (with full imputations) | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| **Characteristics of the head of household (HoH)** | | | | | | |
| Age of HoH | 0.0184*** | 0.0082 | -0.0110* | 0.0191** | -0.0016 | -0.0136* |
| | (0.0061) | (0.0056) | (0.0056) | (0.0080) | (0.0081) | (0.0080) |
| Age squared of HoH | -0.0000 | 0.0001 | 0.0002*** | -0.0000 | 0.0002*** | 0.0003*** |
| | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) |
| Female HoH | -0.2618*** | -0.1760*** | -0.1426*** | -0.4348*** | -0.2613*** | -0.2407*** |
| | (0.0384) | (0.0374) | (0.0338) | (0.0451) | (0.0457) | (0.0444) |
| Education of HoH | 0.1029*** | 0.0822*** | 0.0487*** | 0.0956*** | 0.0696*** | 0.0459*** |
| | (0.0055) | (0.0057) | (0.0053) | (0.0061) | (0.0063) | (0.0060) |
| Race of HoH (Base = African) | | | | | | |
| Coloured | 0.5328*** | 0.4136*** | 0.1111* | 0.3811*** | 0.2830*** | 0.0752 |
| | (0.1016) | (0.0884) | (0.0641) | (0.0869) | (0.0917) | (0.0779) |
| Asian/Indian | 1.0511*** | 0.9774*** | 0.3378*** | 0.8578*** | 0.7761*** | 0.4573*** |
| | (0.1528) | (0.0943) | (0.1047) | (0.2418) | (0.1468) | (0.1101) |
| White | 1.3271*** | 1.1534*** | 0.5326*** | 1.2326*** | 1.0657*** | 0.5898*** |
| | (0.1099) | (0.0964) | (0.0832) | (0.1135) | (0.1131) | (0.1113) |
| Occupation of HoH (Base = Inactive) | | | | | | |
| Unemployed (discouraged) | | -0.1656* | -0.1597* | | -0.3609*** | -0.3513*** |
| | | (0.0985) | (0.0907) | | (0.1007) | (0.1017) |
| Unemployed (strict) | | -0.1557** | -0.1160* | | -0.4532*** | -0.4369*** |
| | | (0.0649) | (0.0635) | | (0.1023) | (0.1010) |
| Managers, professionals and technicians | | 0.8357*** | 0.5189*** | | 1.3097*** | 1.0354*** |
| | | (0.0810) | (0.0700) | | (0.0959) | (0.0921) |
| Clerical, service and sales occupations | | 0.4279*** | 0.2572*** | | 0.8251*** | 0.6394*** |
| | | (0.0683) | (0.0613) | | (0.0927) | (0.0868) |
| Craft and trade workers, supervisors | | 0.3412*** | 0.2867*** | | 0.7589*** | 0.7046*** |
| | | (0.0819) | (0.0739) | | (0.0820) | (0.0742) |
| Plant and machine operators | | 0.2089*** | 0.1506** | | 0.8318*** | 0.7544*** |
| | | (0.0702) | (0.0687) | | (0.0815) | (0.0825) |
| Elementary occupations | | 0.0883 | 0.0995* | | 0.5623*** | 0.5595*** |
| | | (0.0582) | (0.0545) | | (0.0756) | (0.0723) |
| Other | | 0.1342** | 0.0776 | | 0.2747*** | 0.2203*** |
| | | (0.0537) | (0.0489) | | (0.0624) | (0.0622) |
| **Characteristics of the household (HH)** | | | | | | |
| Number of HH residents | -0.0996*** | -0.1059*** | -0.1132*** | -0.0749*** | -0.0755*** | -0.0801*** |
| | (0.0111) | (0.0097) | (0.0093) | (0.0086) | (0.0075) | (0.0083) |
| Area of HH residence (Base = Traditional) | | | | | | |
| Urban | 0.2985*** | 0.2609*** | 0.0227 | 0.4102*** | 0.3479*** | 0.1630*** |
| | (0.0763) | (0.0752) | (0.0808) | (0.0711) | (0.0564) | (0.0577) |
| Farms | 0.0048 | -0.0094 | -0.0427 | 0.3137*** | 0.2141*** | 0.2382*** |
| | (0.0703) | (0.0771) | (0.0746) | (0.0960) | (0.0659) | (0.0642) |
| Controls for standard of living | | | | | | |
| HH lives in house, cluster, town house | | | 0.0327 | | | -0.0427 |
| | | | (0.0406) | | | (0.0426) |
| HH has tap water in house/on plot | | | 0.0953 | | | 0.0907** |
| | | | (0.0649) | | | (0.0455) |
| HH has flush toilet in/outside house | | | 0.1351** | | | 0.1302** |
| | | | (0.0671) | | | (0.0610) |
| HH owns at least one electric stove | | | 0.0975*** | | | 0.0782* |

|  | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
|  |  |  | (0.0374) |  |  | (0.0438) |
| HH owns at least one fridge/freezer |  |  | 0.1317*** |  |  | 0.0629 |
|  |  |  | (0.0403) |  |  | (0.0515) |
| HH owns at least one washing machine |  |  | 0.1564*** |  |  | 0.0334 |
|  |  |  | (0.0454) |  |  | (0.0606) |
| HH owns at least one microwave |  |  | 0.2642*** |  |  | 0.2012*** |
|  |  |  | (0.0418) |  |  | (0.0555) |
| HH owns at least one motor vehicle |  |  | 0.3857*** |  |  | 0.3741*** |
|  |  |  | (0.0661) |  |  | (0.0615) |
| HH owns at least one computer |  |  | 0.4423*** |  |  | 0.3815*** |
|  |  |  | (0.0577) |  |  | (0.0774) |
| Province fixed effects | YES | YES | YES | YES | YES | YES |
| Constant | 5.2974*** | 5.6339*** | 6.2111*** | 5.1134*** | 5.4403*** | 5.8502*** |
|  | (0.1849) | (0.1801) | (0.1670) | (0.2374) | (0.2277) | (0.2110) |
| Observations | 6,807 | 6,088 | 5,910 | 6,683 | 5,975 | 5,801 |
| R-squared | 0.6171 | 0.6550 | 0.7187 | 0.5005 | 0.5870 | 0.6200 |

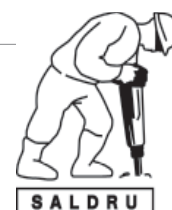Robust standard errors (adjusted for 400 survey clusters) in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Source: Own calculations using NIDS Wave 1, accounting for survey design and post-stratification weights.

# southern africa labour and development research unit

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

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