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Investigating transitory and chronic poverty in South  
Africa, 2008-2015



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of Commerce in the Department of Economics, University of the Western Cape.

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## DECLARATION

I declare that “*Investigating transitory and chronic poverty in South Africa, 2008-2015*” is my own work, that it has not been submitted for any degree or examination in any university, and that all the sources that I have used or quoted have been indicated and acknowledged by complete references.

**Ken Jason Kruger**

Signature:



Date: 10 August 2018



## ABSTRACT

In post-apartheid South Africa, the thrust of macroeconomic framework and corresponding policies inaugurated by the first democratically elected government have been geared towards, amongst others, poverty alleviation, employment creation and economic growth. To date, South Africa still faces many challenges in the fight against poverty. These challenges are characterised by a dynamic nature, in that certain people transition in and out of poverty, whilst others remain deeply rooted in chronic poverty. Injecting resources towards addressing this complex nature of poverty is still one of the major problems faced by the South African government.

In spite of the fact that there are many money-metric studies on poverty in South Africa, these studies failed to accurately depict the dynamic nature of poverty; throughout the years, many studies have only attempted to examine poverty using static analysis by comparing cross-sectional household surveys. It is for this foremost mentioned reason that these studies have produced information that is inadequate for the elimination of persistent poverty. Examining and identifying the characteristics of the different groups of poor using longitudinal data for the purpose of comparing poverty levels and trends observed over time perhaps better capture the nature of poverty in South Africa. Hence, in this study, panel data will be utilised to investigate the dynamic aspect of poverty for the evaluation of dynamics at the individual level.

Using the balanced component of the panel data from the first four available waves of the National Income Dynamics Study (NIDS) conducted in 2008-2015, the empirical findings indicate that the followings individuals are significantly more likely to be chronically poor: female Africans without Matric, aged younger than 25 years at the time of the first wave in 2008 (mean age being slightly above 20 years), living in traditional areas or farms in the KwaZulu-Natal, Eastern Cape, Limpopo, Northern Cape, Mpumalanga and Free State provinces, and inactive in the labour market. Also, they came from households headed by unemployed female Africans with relatively higher mean dependency ratio (above one) and household size (about seven) with either none or only one employed member, as well as associated with a greater likelihood of the households receiving social grant income and having inferior non-income welfare.

**Keywords:** Poverty, Transitory poverty; Chronic poverty; National Income Dynamics Study

**JEL:** J30, J32

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## TABLE OF CONTENTS

<b>DECLARATION</b> .....	<b>ii</b>
<b>ABSTRACT</b> .....	<b>iii</b>
<b>ACKNOWLEDGEMENTS</b> .....	<b>iv</b>
<b>TABLE OF CONTENTS</b> .....	<b>v</b>
<b>LIST OF ABBREVIATIONS</b> .....	<b>viii</b>
<b>LIST OF TABLES</b> .....	<b>ix</b>
<b>LIST OF FIGURES</b> .....	<b>x</b>
<b>CHAPTER ONE: INTRODUCTION</b> .....	<b>1</b>
1.1 Background and problem statement.....	1
1.2 Objectives of the study.....	2
1.3 Relevance .....	3
1.4 Structure of the study .....	3
<b>CHAPTER TWO: LITERATURE REVIEW</b> .....	<b>5</b>
2.1 Introduction .....	5
2.2 Conceptual framework .....	5
2.2.1 Defining poverty .....	5
2.2.2 The dimensions of poverty.....	6
2.2.2.1 Poverty as a material concept .....	6
2.2.2.2 Poverty as economic circumstances.....	7
2.2.2.3 Poverty as social circumstances.....	8
2.2.2.4 Poverty as a moral judgement.....	9
2.2.3 Absolute, relative, objective, subjective, transitory and chronic poverty .....	10
2.2.3.1 Absolute poverty vs. Relative poverty.....	10
2.2.3.2 Objective poverty vs. Subjective poverty .....	11
2.2.3.3 Transitory poverty vs. Chronic poverty .....	12
2.2.4 Poverty line .....	13
2.2.4.1 Absolute poverty lines vs. Relative poverty lines.....	14
2.2.4.2 Objective poverty lines vs. Subjective poverty lines .....	19
2.2.5 Foster-Greer-Thorbecke indices .....	20
2.2.6 Cumulative density function for dominance testing .....	21

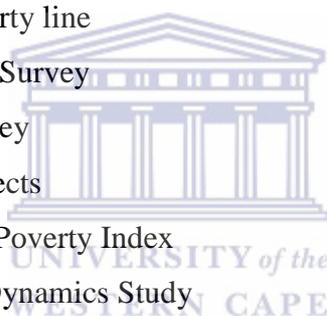
2.3	Theoretical framework .....	23
2.3.1	Classical theory .....	23
2.3.1.1	Behavioural theory .....	23
2.3.1.2	The sub-culture of poverty .....	24
2.3.2	Neoclassical theory .....	25
2.3.2.1	Market failures and poverty .....	25
2.3.2.2	Human capital theory .....	27
2.3.3	Keynesian theory .....	29
2.3.3.1	Poverty as a structural failing .....	30
2.3.3.2	Unemployment and poverty .....	31
2.3.4	Marxist theory .....	32
2.3.4.1	Discrimination and class .....	33
2.3.4.2	Poverty and the environment .....	34
2.4	Review of studies using money-metric approaches .....	34
2.4.1	Studies that have used the IES data .....	34
2.4.2	Studies that have used Census and Community Survey data .....	35
2.4.3	Studies that have used the AMPS data .....	36
2.4.4	Studies that have used the KIDS data .....	37
2.4.5	Studies that have used the NIDS data .....	39
2.4.6	Studies that have used various sources of data .....	41
2.5	A brief review of studies using non-money-metric approaches .....	43
2.6	Conclusion .....	44
<b>CHAPTER THREE: METHODOLOGY AND DATA.....</b>		<b>46</b>
3.1	Introduction .....	46
3.2	Methodology .....	46
3.2.1	Poverty line .....	46
3.2.2	Welfare measure .....	46
3.2.3	Identification of the different groups of poor .....	47
3.2.4	Descriptive analysis .....	48
3.2.5	Econometric analysis .....	49
3.2.5.1	Probit model .....	49
3.2.5.2	Order logistic model .....	50
3.2.5.3	Random-effects probit model .....	50

3.3	Data .....	52
3.4	Conclusion.....	53
<b>CHAPTER FOUR: EMPIRICAL FINDINGS .....</b>		<b>54</b>
4.1	Introduction .....	54
4.2	Descriptive statistics.....	54
4.2.1	Profile of the balanced panel.....	54
4.2.2	Transition matrices.....	59
4.2.3	Descriptive statistics on the different groups of poor .....	61
4.3	Econometric analysis.....	69
4.3.1	Probit regressions.....	69
4.3.2	Ordered logistic regressions.....	71
4.3.3	Random-effects panel data regression .....	73
4.4	Conclusion.....	75
<b>CHAPTER FIVE: CONCLUSION .....</b>		<b>76</b>
5.1	Introduction .....	76
5.2	Review of findings .....	76
5.3	Conclusion.....	84
<b>REFERENCES.....</b>		<b>81</b>
<b>APPENDIX.....</b>		<b>92</b>



## LIST OF ABBREVIATIONS

AMPS	All Media Products Survey
CBN	Cost-of-basic needs
CDF	Cumulative density function
CPI	Consumer Price Index
CS	Community Survey
FA	Factor Analysis
FEI	Food-energy intake
FGT	Foster-Greer-Thorbecke
FPL	Food poverty line
ICP	International Comparison Program
IES	Income and Expenditure Survey
LBPL	Lower bound poverty line
LCS	Living Conditions Survey
LFS	Labour Force Survey
MFxS	Marginal fixed effects
MPI	Multidimensional Poverty Index
NIDS	National Income Dynamics Study
OHS	October Household Survey
PCA	Principle Components Analysis
PPP	Purchasing Power Parity
PSLSD	Project for Statistics on Living Standards and Development
RDP	Reconstruction and Development Programme
SALDRU	Southern Africa Labour and Development Research Unit
Stats SA	Statistics South Africa
TFR	Total Fuzzy and Relative approach
UBPL	Upper bound poverty line



## LIST OF TABLES

Table 4.1: Summary statistics of the balanced panel (%).....	54
Table 4.2: Simple poverty transition matrix – comparing wave 1 and wave 4 (row total).....	59
Table 4.3: Detailed poverty transition matrix – comparing wave 1 and wave 4 (row total).....	59
Table 4.4: Simple poverty transition matrix – comparing wave 1 and wave 4 (cell total).....	60
Table 4.5: Detailed poverty transition matrix – comparing wave 1 and wave 4 (cell total).....	61
Table 4.6: Demographic characteristics of the balanced panel in each poverty status category using method (1).....	62
Table 4.7: Characteristics of the three groups of poor using method (2).....	64
Table 4.8: Personal characteristics of the five groups of poor using method (3).....	65
Table 4.9: Probit regressions on poverty transition likelihood using method (1).....	70
Table 4.10: Order logistic regression using method (3).....	72
Table 4.11: Pooled data and random-effects panel data probit regressions on poverty likelihood.....	74
Table A.1: Simple poverty transition matrix – comparing wave 1 and wave 2 (row total).....	92
Table A.2: Simple poverty transition matrix – comparing wave 2 and wave 3 (row total).....	92
Table A.3: Simple poverty transition matrix – comparing wave 3 and wave 4 (row total).....	92
Table A.4: Detailed poverty transition matrix – comparing wave 1 and wave 2 (row total).....	93
Table A.5: Detailed poverty transition matrix – comparing wave 2 and wave 3 (row total).....	93
Table A.6: Detailed poverty transition matrix – comparing wave 3 and wave 4 (row total).....	93
Table A.7: Poverty status category breakdown by method.....	93
Table A.8: Characteristics of the three groups of poor using method (2).....	94
Table A.9: Household characteristics of the five groups of poor using method (3).....	96
Table A.10: Non-income welfare characteristics of the five groups of poor using method (3).....	98
Table A.11: Ordered logistic regression using method (2).....	101

## LIST OF FIGURES

Figure 2.1: The Food-Energy Intake (FEI) Method .....	15
Figure 2.2: Cumulative density functions of a hypothetical country, 2011 vs. 2012.....	22
Figure 2.3: The Beveridge Curve.....	27
Figure 2.4: Augmented version of the human capital theory.....	29
Figure 3.1: Graphical illustration of the five groups of poor using method (3).....	48



## CHAPTER ONE: INTRODUCTION

### 1.1 Background and problem statement

There is complete unanimity on the general trend of money-metric poverty in South Africa. However, this consensus on poverty has been derived from various cross-sectional data, which suggest that the level of money-metric poverty in South Africa increased in the 1990s before showing a steady decline since the early 2000s (Von Fintel & Zoch, 2015). Although these findings help paint the picture of poverty in South Africa, much is yet to be discovered about the dynamic facet of deprivation.

In the current South African economic climate, importance is placed on investigating the poverty dynamics of the population to explore possible (if any) changes in poverty status over time (e.g. whether they are persistently trapped in poverty, in and out of poverty, or never experience poverty). Focusing poverty research on the dynamics of poverty serves to progressively aid the South African economy in terms of its poverty reduction policies as consideration is given to welfare movements over time. Analysing the movements in the wellbeing of households over time provides valuable information on what causes movements into and out of poverty and offers explanations as to why some households remain poor (Oduro, 2002). This makes poverty evaluation<sup>1</sup> vital for the development of poverty reduction policies and for the efficacy of their implementation over time (Hargreaves *et al.*, 2007).

Reducing poverty in South Africa has always been a key macroeconomic objective for the economy. In 1993 the Project for Statistics on Living Standards and Development (PSLSD), South Africa's first national living standards survey, specified that approximately 50 percent of the total black<sup>2</sup> South African populace were subjected to poverty (Carter & May, 2001), essentially depicting a country characterised by material deprivation and inequality. South Africa's first democratically elected government set out to combat this circumstance of deprivation in its Reconstruction and Development Programme (RDP) but the government's efforts to eradicate poverty was continually deterred because of persistently high unemployment and too slow real GDP growth in the country, as well as by the fact that an

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<sup>1</sup> The assessment of methods aimed at reducing poverty.

<sup>2</sup> The black citizens include Africans, Coloureds and Indians.

effective poverty-reduction policy is dependent on government and civil society capacity, which is still largely under-developed (Aliber, 2003).

Analysing poverty trends over time by means of various cross-sectional surveys (different people took part in each survey) has become unreliable for combatting poverty of a persistent nature because of its tendency to analyse poverty at a specific point in time. Poverty dynamics presents an additional facet to the inherent features of poverty in a country. By means of static welfare analysis based on longitudinal data, the poor can be differentiated on the basis of education, labour profile and living standards (Oduro, 2002). Households observed to be below the poverty line at a particular period, for example, may only temporarily be poor when a panel data set is used. This motivates this study as there are already a plethora of studies that analysed cross-sectional data to examine money-metric and non-money-metric poverty in South Africa at a particular point in time, but hardly any studies that examine poverty dynamics over time. The research problem is therefore focused on examining the characteristics of the different groups of poor using longitudinal data for the purpose of comparing poverty levels and trends observed over time.

The research questions that arise are as follows: Are chronically poor individuals distinctly different from transiently poor individuals? What are the characteristics of individuals identified as chronically poor? What are the levels and trends that arise from making use of longitudinal data on chronic and transitory poverty?

## **1.2 Objectives of the study**

The general research objective of this paper is to use the balanced<sup>3</sup> component of the panel data from the four waves of the National Income Dynamics Study (NIDS) conducted in 2008-2015 to examine poverty dynamics. The specific objectives of the study are to:

- Examine the distinction between transitory and chronic poverty.
- Investigate the profile of individuals considered to be chronically poor, transiently poor and chronically non-poor.
- Examine the depth of deprivation among the South African populace and trace the variations in poverty over the period.

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<sup>3</sup> This study follows Finn & Leibbrandt (2013) by defining a balanced panel as those who were successfully interviewed in all four waves of the NIDS.

### **1.3 Relevance**

Investigating the dynamics of poverty serves to provide valuable information in the design of South African poverty-reduction policies. Essential to this is the ability to distinguish between transitory (temporary) and chronic (continuous) poverty. Oduro (2002) finds that there are key differences between factors that drive chronic poverty, as opposed to transitory poverty. Examining these differences can assist in expanding the knowledge base on what causes movements into and out of poverty or roots certain households in poverty. Additionally, it would support government in making key decisions on how to allocate resources targeted at households considered to be chronically poor which is different from households who are only trapped in transitory poverty.

Chronic and transitory poverty are distinct terms and the policies aimed at combating them are conspicuously different. If a country is characterised by poverty of a temporary nature, priority should be given to measures such as safety nets, credit and insurance schemes that are designed to smoothen the incomes (or consumption expenditures) of the poor around the poverty line (Arif & Bilquees, 2007). In contrast, if poverty is as chronic, efforts should be devoted to structural reform and long-term investments such as infrastructure development and investment in human capital (Dang *et al.*, 2014). Therefore, being able to distinguish the transient from the chronic poor will help sharpen the focus of South Africa's poverty profile.

The significance of investigating poverty dynamics is rooted in the fact that studies which investigated poverty using static analysis produced information that is inadequate for the elimination persistent poverty (Addison *et al.*, 2008). Poverty estimations based on cross-sectional data only provide brief insights into poverty levels and trends. Investigating the dynamic aspect of poverty requires the use of panel data for the evaluation of dynamics at the household level which can notify policymakers involved in the reduction of poverty and assist in the design of social protection interventions.

### **1.4 Structure of the study**

The study is structured as follows: Chapter One introduces the background and problem statement, research objectives, relevance and the structure of the study. Chapter Two offers an assessment of the main concepts, schools of thought in addition to the review of past empirical literature conducted on the topic. Chapter Three presents the methodology and data to be

utilised throughout the study. Chapter Four presents the empirical findings of the study. The analysis will be focused on poverty levels and trends for the period of 2008-2015. The chapter will also illustrate the profile of the different types of poor (chronically poor, transitory poor and chronically non-poor) based on characteristics such as educational attainment, province, race, among others. Lastly, Chapter Five concludes the study by providing a summary of the findings, as well as some policy suggestions.



## CHAPTER TWO: LITERATURE REVIEW

### 2.1 Introduction

This chapter consists of three main sections: conceptual framework, theoretical framework and review of past empirical studies. In Section 2.2, the conceptual framework will examine how poverty is defined and outline the explanations of other significant concepts relating to poverty. In Section 2.3, the theoretical literature analyses the views of poverty adopted by different economic schools of thought. In Section 2.4, the past empirical studies conducted on the subject are reviewed. This section will first review the studies which utilise money-metric approaches to establish poverty trends. Secondly, it will review studies on poverty trends that made use of non-money-metric approaches. Section 2.5 will conclude the literature review by making explicit the highlights of the empirical literature, indicate the research gap this study intends to address, as well as specify the predominant econometric approach used to investigate chronic and transitory poverty in the empirical literature reviewed.

### 2.2 Conceptual framework

#### 2.2.1 Defining poverty

According to the Haughton & Khandker (2009), poverty is “pronounced as deprivation in wellbeing”. It relates to a state of wellbeing that lacks a sufficient means to live comfortably and the want of things or needs that are deemed crucial to life (Govender *et al.*, 2007). Gordon (2006) refers to poverty as having resources (material, cultural and social) considered to be so limited that it excludes people from a minimum acceptable way of life. This lack of basic capacity to successfully partake in society speaks to a denial of choices and opportunities that violates human dignity.

Poverty is perceptible to the human eye and is described by homelessness, unemployment, casual labour, inadequate infrastructure and the lack of access to basic services (Triegaardt, 2006). It influences various aspects of people’s lives and occurs when individuals are subjected to a lack of opportunities to work, learn and better equip themselves, to live healthy and fulfilling lives and to enjoy their retirement years in security (Gordon, 2006). Poverty is not only described as a lack of income or consumption but also refers to restricted access to quality healthcare, schooling and housing, and the standard of the local environment, all of which has an impact on the wellbeing of people. The term “poverty” hence encompasses broader aspects of deprivation, as opposed to only referring to income deficiency.

Poverty conventionally links wellbeing predominantly to a lack of asset-based resources, considering the poor as those who lack adequate income and consumption levels to sustain life above a certain minimum threshold (Haughton & Khandker, 2009). Addae-Korankye (2014) signifies poverty as a circumstance associated with a lack of human necessities to maintain functional and operational efficiency such as nutritional food, clothing, housing, clean water and healthcare. Poverty also implies insecurity, powerlessness and the exclusion of individuals, families and groups of people who are continuously susceptible to violence and live in environments that lack sanitation. Simply put, poverty is the shortage of basic essentials or implies relative deprivation (Bradshaw, 2006). Poverty therefore encompasses both money-metric and non-money-metric dimensions (this study focuses on the former).

### 2.2.2 The dimensions of poverty

According to Spicker (1999), in the field of social sciences, poverty is frequently considered to have many distinct senses. In fact, this term is deemed to have a range of overlapping meanings depending on the subject matter or context in which it is used (Gordon, 2006). These senses or meanings are intertwined but are distinctive because they can rationally be separated, so that conditions which apply to one sense do not automatically apply in others. The 12 dimensions of poverty can broadly be classified into these four groups: (1) poverty as a material concept; (2) poverty as economic circumstances; (3) poverty as social circumstances; (4) poverty as a moral judgement.

#### 2.2.2.1 Poverty as a material concept

**Need:** People are considered to be poor because they lack something they require, or because they do not have the resources to acquire the things they need. Poverty is termed as a circumstance characterised by a society that hardly survives on a minimum subsistence level, accompanied by inadequate access to necessities such as clothing, food, and suitable accommodation, in view of upholding a basic degree of wealth and material comfort (Addae-Korankye, 2014). Poverty is therefore understood to be a condition that describes the absence of material goods or services.

**A pattern of deprivation:** Poverty is defined as the existence of a pattern of deprivation, as opposed to the deprivation itself (Spicker, 1999). The time period of the circumstances experienced by the poor is crucial because an individual may be poor due to a negative shock

but still have adequate resources to make sure that needs are met. In the dimensions of income and health, poverty serves as a risk that households or individuals will be susceptible to income and health poverty over time (World Bank, 2001). Duration is therefore significant because deprivation of a temporary nature (like those experienced by victims of natural disasters) is not sufficient enough to amount to “poverty”. The definition of poverty therefore largely depends on a cumulative experience over a lengthy period of time.

**Limited resources:** An individual’s needs are closely related to whether they hold adequate initial assets. For this reason, poverty is associated with having inadequate resources to meet basic needs (Davis & Sanchez-Martinez, 2014). Poverty can also be referred to as circumstances of deficiency in income, wealth or resources to obtain or consume the things needed to sustain life. It describes economic deprivation as pertaining to a person’s lack of economic resources for the consumption of economic goods and services (Govender *et al.*, 2007). Poverty therefore has a dimension that characterises a lack of income and productive resources to ensure a sustainable livelihood (Gordon, 2005).

#### 2.2.2.2 Poverty as economic circumstances

**Standard of living:** A person’s standard of living is closely related to his/her need but generally makes reference to the fact that some live with less than others. Simplistically, households are considered to be poor when their degree of wealth (measured in terms of income or consumption) falls below a minimum subsistence level (Spicker, 1999). Denying a household an adequate standard of living acts to weaken their economic status towards becoming poor (Sameti *et al.*, 2012). Thus, the inability to attain a minimum standard of living is an important factor to be considered before defining someone as poor.

**Inequality:** It is not easy to make a significant statement about poverty without making reference to its inequality aspect. Inequality portrays itself when households are considered to be poor because they are relatively disadvantaged in comparison to others (Spicker, 1999). Even though poverty and inequality are considered to be distinctly different issues, if a larger proportion of the populace subsists below the poverty line, the presumption is of a rise in inequality (Beteille, 2003). It is also revealed through a shortage of natural resources; a two-tiered schooling system (e.g. where one year of black education is not necessarily equal to one year of white education); a dual health system (where there are great disparities between the healthcare received by different racial groups, largely due to income inequality); and other

socio-economic dimensions (Triegaardt, 2006). Poverty therefore points to differences in circumstances.

**Economic position:** The term “social class” identifies individuals based on their socioeconomic status in society. Whereas inequality represents disparities in resources, class signifies inequalities in the social structure. To a large degree this makes reference to the Marxist theory when conceptualising social structures. Distinct inequalities of class as defined economically are the inequalities that occur as a result of the dissemination of power in society (Beteille, 2003). It implies a sense of statistical discrimination because individuals or groups are classified on the basis of their “presumed” qualities which ultimately influence their wellbeing (Aue & Roosen, 2010). In other words, poor people are predominantly those who are marginalised in relation to the economic system.

#### 2.2.2.3 Poverty as social circumstances

**Social class:** Social class associates economic position with socioeconomic status in relation to others on the basis of income, education, and occupation (Spicker, 1999). It makes reference to the poor as a group subjected to social risk because they lack the ability to obtain an adequate amount of income for their needs through the labour market (Watson *et al.*, 2016). The poor therefore have a social class that personifies lower life opportunities as a result of lower market power which is typically linked to the ownership of assets or lack of marketable skills.

**Dependency:** Poverty encompasses a dimension of dependency as poor people are frequently those who are dependent on some form of grant support due to their lack of resources. The poor are continuously dependent on social grants as it is seen as an instrument used by government to reduce the hardship faced by the inferior members of society (Armstrong & Burger, 2009). Through cash transfers, government ensures that the poor have a minimum means to meet their basic needs (Guthrie, 2002). Kimenyi (1991) argues that the dependency of the poor is a result of behavioural paucities such as teenage pregnancies that are consequences of the “sub-culture of poverty”. Dependency is therefore a major element of poverty because the poor are always in need of some form of support.

**Lack of basic security:** This refers to poor people who live under conditions that prohibit them from obtaining the necessities of life as well as making ends meet because of the absence of factors that allow individuals and families to undertake basic responsibilities (Spicker, 1999).

The poor not only have restricted access to resources, but also lack sustainable capacity, which in turn threatens their security (Addae-Korankye, 2014). Poverty speaks to inadequate security and makes reference to insufficient capacity and opportunity to better one's life (Davis & Sanchez-Martinez, 2014). The denial of economic security surrounding the poor is therefore a key descriptor when referring to someone as being poor.

**Lack of entitlement:** Entitlement refers to the actual or possibly obtainable resources available to society on the basis of their own production, resources and mutual arrangements (Adger, 2006). Lack of entitlements in livelihoods are characterised by severe economic conditions of food insecurity, civil strife and social turmoil. Deprivation and lack of resources are said to reflect a lack of entitlements, as opposed to the absence of essential items themselves (Spicker, 1999). For example, homelessness occurs because of restricted access to housing and not from the lack of housing itself. The chain of poverty is rooted in the lack of entitlements and ultimately results in the inability to satisfy basic needs (Zeller *et al.*, 2006). Lack of entitlements is therefore a crucial condition of poverty because people who have the needed entitlements are not subjected to poverty.

**Exclusion:** Social exclusion primarily focuses on relational issues, such as the lack of social relations to the family, friends, local community, government services and organizations or more commonly to the society to which an individual belongs (Adato *et al.*, 2006). Although social exclusion makes reference to a lack of opportunities to earn a working wage, it also refers to limited relationships with families and communities. The exclusion of poor people from partaking in the labour market and their restricted access to opportunities and activities are seen as a key non-money-metric dimension of poverty (Sen, 2000). The experience of deprivation therefore encompasses difficulties that arise as a result of economic exclusion and social rejection.

#### 2.2.2.4 Poverty as a moral judgement

**Poverty as a moral judgement:** The last “sense” of poverty makes reference to it as unacceptable hardships. Poverty is made up of severe deprivation and people are considered to be poor when their lack of resources is judged to be morally unacceptable (Spicker, 1999). Miller (2001) argues that society should be castigated for its materialistic way of life which comes at the expense of an alternative morality that emerges from a selfless concern with poverty and the desire to ensure that the poor have greater access to resources. Poverty therefore

carries a moral imperative that something must be done about it because of its negative impact on society.

### 2.2.3 Absolute, relative, objective, subjective, transitory and chronic poverty

Key to understanding any indicator of poverty is a realisation for the differences between the various types of poverty. These forms of deprivation describe numerous circumstances faced by the poor and sometimes act to contrast each other because they speak to different dimensions or conditions of poverty. Three contrasts of poverty are discussed below.

#### 2.2.3.1 Absolute poverty vs. Relative poverty

Poverty encompasses both absolute and relative dimensions. Absolute poverty is well thought-out to be established in segregation of relative wealth. Govender *et al.* (2007) consider absolute poverty to be an actual, systematic determination of poverty because it is centred on the basic necessities needed to sustain life. Therefore, when reference is made to those who are absolutely poor, it becomes evident that these individuals lack the basic capacity for sustained economic wellbeing (Suich, 2012). For this reason, absolute poverty is compared to non-income aspects of deprivation such as a lack of food supplies, undernourishment and insufficient healthcare, however it is also related to the monetary aspects of deprivation such as having an income that is not adequate enough to sustain economic wellbeing. Absolute poverty is therefore largely based on the basic nutritional requirements and essential goods needed to sustain life.

Generally speaking, absolute poverty makes reference to a situation exemplified by a relentless lack of basic living standards, which includes water sanitation, adequate sewage disposal and quality schooling (Gordon, 2006). Mowafi & Khawaja (2005) suggest that absolute poverty occurs when households are unable to acquire a set of resources needed to sustain life above the poverty line. Nevertheless, absolute poverty ultimately corresponds to a situation where an individual would persist below the poverty line for a lengthy period of time (Bourgignon, 1999).

In essence, relative poverty considers the degree of poverty households experience in comparison to the poverty status of other households in the community (Suich, 2012). As opposed to absolute poverty, relative poverty is more subjective in its approach because it classifies an individual as poor relative to the quality of housing, material comfort, and wealth

experienced by society (Govender *et al.*, 2007). In other words, an individual is considered to be poor relative to the living standards of society. Technically, relative poverty is a situation where some people in society have a considerably lower likelihood of earning an income that is in excess to some restricted proportion of the mean income of society (Bourgignon, 1999).

Also, Mowafi & Khawaja (2005) articulate that relative poverty is associated with the inferior quality of life experienced by an individual in comparison to the livelihood of others in the same social bracket. Deficiency of income and production capacity to guarantee sustainable living conditions, hunger and undernourishment and hazardous environments are all dimensions that describe the crux of relative poverty (Gordon, 2006).

#### 2.2.3.2 Objective poverty vs. Subjective poverty

Even though absolute and relative poverty definitions dominate existing poverty research, objective and subjective definitions of poverty serve to provide a different view to human need. An objective indicator of poverty is typically related to quantitative measurements of poverty. Poverty researchers utilise these objective indicators (typically income or expenditure) of economic welfare to measure poverty by comparing it to a money-metric poverty line (Posel & Rogan, 2013). Objective poverty is therefore largely based on a quantitative evaluation of poverty as the focus is on measuring factual data, such as income in national currency or housing in square meters (Veenhoven, 2001).

Jansen *et al.* (2013) state that objective poverty requires the establishment of a minimum consumption basket for the essential items needed to sustain life. This basket is then used to set a quantifiable estimator that allows for the distinction between the poor and non-poor. By making reference to the lack of adequate income or assets needed to generate income, an individual may therefore be objectively defined as poor (Govender *et al.*, 2007). These quantitative differences in wellbeing are crucial for the assessment of money-metric poverty.

As opposed to objective poverty, the subjective approach of poverty allows individuals to self-assess their poverty status. Subjective poverty utilises a qualitative analysis of poverty and assumes people can rank the level of deprivation they experience. It places a premium on individual preferences and utility, and includes indicators such as experiences (e.g. constant worry), livelihood concerns (e.g. lack of employment), social circumstances and political issues (Govender *et al.*, 2007). Subjective poverty is therefore grounded on the individual opinions of

people regarding their own circumstances, which should ultimately be a detrimental factor in defining poverty (Jansen *et al.*, 2013).

Subjective poverty examines who people consider to be poor on the basis of perceived opinion. Nándori (2011) states that subjective poverty defines the poor subjectively by collecting data on people's self-assessed opinions about their socioeconomic status in a system characterised by inequality. It focuses its attention on matters that are frequently overlooked such as the utility derived from a certain level of income or the satisfaction with the area of residence (Veenhoven, 2001). Subjective poverty therefore characterises an alternative way to measure poverty by simply taking into consideration the self-assessed level of poverty experience by the poor (Posel & Rogan, 2013).

### 2.2.3.3 Transitory poverty vs. Chronic poverty

Poverty is not static but rather dynamic in nature because it includes a dimension of time. Chronic and transitory poverty captures the dynamic nature of poverty in that it explains the extent to which households are embroiled in poverty over an extended period of time. As explained by Woolard & Leibbrandt (1999), chronic poverty may be frequently connected with continuous inter-generational destitution. It conceptualises a form of poverty that is transferred from one lifespan to the next (Aliber, 2003). This implies that adults produce offspring that are exposed to poverty and whose children in turn will be subjected to poverty. Chronic poverty is therefore longitudinal in nature, referring to persistence in poverty for long periods of time (Arif & Bilquees, 2007).

Chronic poverty may occur when a household undergoes significant capability deprivations for an extended period of time (Hulme & Shepherd, 2003). Similarly, Haddad & Ahmed (2003) state that chronic poverty takes place when the mean consumption of an individual over time falls below the poverty line. The chronically poor therefore have an income level that is substantially below the poverty line and as a result suffer from a continuous lack of resources (Mowafi & Khawaja, 2015).

As opposed to the chronically poor, the transiently poor move between being poor and non-poor (Govender *et al.*, 2007). For this reason, they may also be termed the “fluctuating poor” as they are considered to experience poverty in some periods but not in others, or the “occasionally poor” because they are subjected to poverty in at least one period (Arif &

Bilquees, 2007). Transitory poverty can therefore be more generally described as the proportion of the populace that moves in and out of poverty during a given time period (Oduro, 2002).

Transitory poverty also makes reference to the frequent transition in income above and below the poverty line. It characterises a circumstance where expected income hovers narrowly above the poverty line but is considered to be close to falling below the poverty line and does so quite often but is not predominantly so (Shepherd, 2007). The transiently poor therefore have a supply of money, materials and other assets that is only marginally above the poverty threshold (Mowafi & Khawaja, 2005).

#### 2.2.4 Poverty line

A poverty line serves to establish a minimum socially acceptable standard of living for a predetermined welfare indicator to separate the poor from non-poor (Statistics South Africa, 2015). Poverty lines serve two distinctive roles (Ravallion, 1998): firstly, to determine the basic living conditions so as to distinguish the poor from the non-poor; secondly, to make social comparisons (for example, estimate poverty lines for households of different sizes and compositions). The author goes on to state that a poverty line serves as a monetary cost incurred by society in reference to a certain level of welfare.

Global estimations of poverty utilise a benchmark poverty line expressed in a common unit across countries. The new global line was updated to US\$1.90 (previously used was a US\$1.25 global line) based on International Comparison Program (ICP) purchasing power parity (PPP) calculations that represent the international equivalent of what \$1.90 could buy in the United States in 2011 (World Bank, 2016). These global lines are established as a minimum level of income needed to purchase a given basket of goods or services (Titumir & Rahman, 2013). Poverty lines as a result indicate an approximation of what a household needs to spend in order to maintain a minimum standard of living. It serves as a statistical tool instituted by the state for the purpose of measuring the annual income required for a household to endure day-to-day living (Bradshaw, 2006).

Shepherd (2007) further states that poverty lines are not confined to definitions of money-metric expenditure, income or consumption but may also be expressed in terms of broader or individual facets of deprivation. With poverty being broadly understood to be a

multidimensional phenomenon, this implies that it is possible to include non-money-metric indicators to derive a “welfare index” and establish a cut-off point (e.g. an index value at the 40th percentile) that is used as a poverty line to distinguish the poor from the non-poor. Ultimately though, a poverty line describes an individual as being poor when their earnings decrease lower than the required amount needed to sustain a basic standard of living (Davis & Sanchez-Martinez, 2014).

#### 2.2.4.1 Absolute poverty lines vs. Relative poverty lines

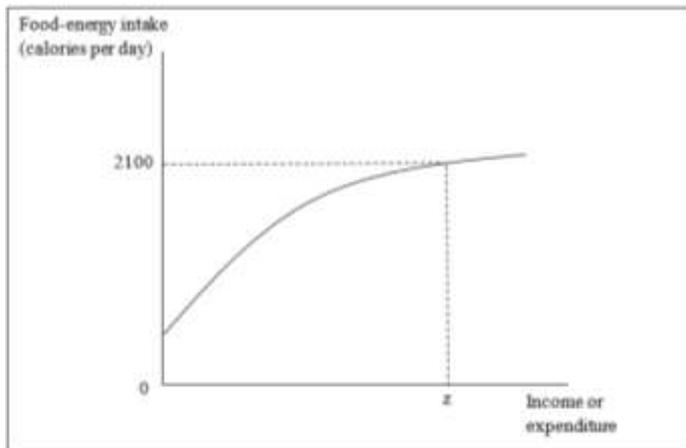
Foster (1998) identifies an absolute poverty line to be a fixed (group-specific) subsistence level  $z$  that is applied across all prospective resource distributions. An absolute poverty line is said to be fixed over time because it only adjusts for inflation, thereby making it a good measure for tracking variations in poverty overtime. Conversely, the author denoted a relative poverty line to be a method that utilises existing data to establish the current poverty line by expressing the cut-off level as proportion of a certain standard of living  $r(x)$  for the distribution  $x$ . The focus is now centred on the standard of living in society, as opposed to physical wellbeing.

Jansen *et al.* (2013) maintain that money-metric absolute poverty is based on an independent measurement of the bare minimum a person needs for survival, such as food, water, shelter and clothing. It is an estimation of household income and expenditure that is weighted on the basis of a household’s consumption of goods considered to be adequate enough to sustain a minimum standard of living (Hargreaves *et al.*, 2007). An absolute poverty line is said to be derived in a number of ways but the two commonly adopted approaches are the food-energy intake (FEI) method and the cost-of-basic needs (CBN) method.

The FEI method is a prevalent method for setting poverty lines as it aims to measure the consumption expenditure (or income) at which an individual’s food energy intake is just enough to meet a pre-determined food energy requirement (Ravallion, 1998). The focus of the FEI method is therefore on food/calorie needs. This method necessitates the use of a calorie norm to determine how much food is needed by an individual. This calorie intake measurement is usually measured as a food basket that provides 2 100 calories per person per day and meets the recommended requirements of protein, fat and carbohydrates (Kakwani & Son, 2016). If an individual consumes less than the stipulated amount of 2 100 calories person per day, he/she would be considered as poor. In the same way it makes reference to a threshold below which households cannot sustain a basic level of living (Mowafi & Khawaja, 2005). The FEI method

plots expenditure (or income) per capita against this level of food consumption (in calories per person per day) to determine the expenditure (or income) level at which a household requires enough calories (Haughton & Khandker, 2009).

**Figure 2.1: The Food-Energy Intake (FEI) Method**



Source: Adapted from Ravallion (1998: 11).

Figure 2.1 illustrates the method by showing the observed relationship between food-energy intake (plotted on the vertical axis) and the total income or expenditure (plotted on the horizontal axis). The line of best fit represents the expected value caloric intake at a given value of consumption. Upon inverting this line, one is able to determine the level of expenditure  $z$  at which a typical individual attains the specified food-energy requirement (Ravallion, 1998). Once the food-energy requirement is established (in this case 2 100 calories per person per day), the FEI method may be used to compute the mean income or expenditure of a sub-sample of households whose estimated caloric consumption are equal to the specified requirements.

The FEI method has a number of practical advantages, as noted by Ravallion (1998). Fundamentally, the method automatically includes an allowance for both food and non-food consumption on the basis that one is able to identify the total consumption at which an individual attains the needed caloric requirement. The method is also particularly useful in the absence of price information and allows for differences in preferences among sub-groups (Haughton & Khandker, 2009).

There are however a few shortcomings to the FEI method. For example, the method does not permit researchers to make comparisons across different sub-groups of the population by

means of utilising a common measure for standards of living because it suffers from an inconsistency problem (Baye, 2005). This implies that the relationship between food-energy intake and income is likely to differ with differences in tastes, activity levels, relative prices, publicly-provided goods or other determining factors of wealth in addition to consumption expenditure (Ravallion, 1998). Therefore, at a particular income (or expenditure) level suitable for certain families to acquire the needed calorie intake, others may have more than met the calorie target, given their consumption patterns (Govender *et al.*, 2007).

With regard to the CBN method, absolute poverty lines are constructed by first estimating the cost of acquiring enough food for adequate nutrition – usually 2 100 calories per person per day – and then adding the cost of other essential non-food items such as clothing and shelter (Haughton & Khandker, 2009). Ravallion (1998) states that the CBN method may be interpreted in two distinctive ways: firstly, it can be interpreted as the cost-of-utility, though this interpretation only holds true if the utility-compensated substitution effects are assumed to be zero. If this restrictive assumption is upheld, then the estimated CBN – normalized by its value for some reference – is a utility-consistent cost-of-living index. Secondly, the method can be interpreted by definition of basic needs in that it is deemed to be a socially-determined normative minimum for avoiding poverty, and the cost-of-basic needs is then closely related to the idea of a statutory minimum wage rate. Ultimately, this approach considers poverty to be a lack of command over basic consumption needs, and the poverty line is then deemed to be the cost of those needs (Baye, 2005).

A short framework for constructing an absolute poverty line as proposed by the CBN method is demonstrated below. According to the Haughton & Khandker (2009), it should be noted that although the CBN approach starts off by identifying an adequate consumption basket (food, housing, electricity etc.), the poverty line acts as a monetary measurement. This implies that the method does not require each basic need to be met by each person, only that it could be met. Operationally, these steps are stipulated as follows:

- Specify a dietary requirement that is adequate for good health, usually 2 100 calories per person per day, as this is the most widely used caloric standard. It serves as an acceptable approximation given that dietary requirements differ across individuals by climate, individual activity and seasonally.

- The next step would be to estimate the cost of meeting this dietary requirement, as previously stated the daily intake per person of 2 100 calories was decided upon because it best reflects the diet of households near the poverty line. This food component may be denoted as  $z^F$ .
- Moreover, the essential non-food items denoted as  $z^{NF}$  should be added.
- Then the basic needs poverty line is given by the equation:  $z^{BN} = z^F + z^{NF}$ .

To give an example, in 2015 Statistics South Africa (Stats SA) applied the CBN approach to link welfare to the consumption of goods and services captured in the Income and Expenditure Survey (IES) 2010/2011. Using the updated consumption basket from this survey, Stats SA (2015) constructed three absolute poverty lines (per capita, per month, in 2011 February-March prices) as follows:

- Food poverty line (R335): the Rand value below which individuals are unable to purchase or consume food to supply them with the minimum per capita per day energy requirement for good health (approximately 2 100 kilocalories).
- Lower bound poverty line (R501): this was constructed for households whose “total expenditure” was equal or close to R335 (per capita per month) in IES 2010/2011. The average non-food expenditure among these households at the mid-point of the IES 2010/2011 amount to R166 (per capita per month). Hence, the lower bound poverty line was equal to R501 (= R335 + R166).
- Upper bound poverty line (R779): this was derived for households whose food expenditure was equal or close to R335 (per capita per month) in IES 2010/2011. The average non-food expenditure of these households at the mid-point of the IES 2010/2011 amounted to R444 (per capita per month). Therefore, the upper bound poverty line was equal to R779 (= R335 + R444).

As with the FEI approach, the CBN approach also has a few shortcomings. Firstly, setting the non-food component of the poverty line is contentious. This may be attributed to the lack of consensus surrounding the role played by the food-energy requirement in setting the food component of the poverty line (Baye, 2005). As a result, there tends to be much arbitrariness in determining the level of poverty. Secondly, the non-food component of the poverty line has a tendency to increase as national income increases (Woolard & Leibbrandt, 2006). Thirdly, the CBN approach is dependent on the availability of price data. Given that it requires

information on the prices of the goods consumed by the poor – especially when making comparisons across regions or over time – following the four step approach outlined above would become difficult (Haughton & Khandker, 2009). Lastly, although the CBN approach is expected to yield similar poverty lines when making comparisons across countries, this is not the case. Woolard & Leibbrandt (2006) attribute this drawback to the different types of food consumed by the poor across the globe.

While absolute poverty lines are meant to define someone as poor when they lack the command over resources, relative poverty lines are expected to change with the standard of living in society. Suppose the standard of living was represented by, say, median income, the poor people are effectively those who suffer from relative deprivation (Woolard & Leibbrandt, 2006). Poverty as defined by the relative conceptualisation is therefore a comparative status in relation to the societal position of others, and the poverty line is then determined as a cut-off point in the welfare distribution below which a given percentage (e.g. the bottom 40%) of the population is located (Stats SA, 2015).

The aim is to compare fluctuations in the level of expenditure among these poor individuals in relation to the overall distribution of income, consumption or any needed material possession in a given region (Mowafi & Khawaja, 2005). Utilising economic data, a relative poverty line may then proportion a certain group of individuals as being poor. For example, a simple relative poverty line would be a specified level of income (or expenditure) below which 40 percent of the population falls (Govender *et al.*, 2007). To give another example, a relative poverty line may be a measurement that defines the poor as those individuals whose per capita income falls below 50 percent of the median income. At the same time as median income increases, so does the poverty line, signifying relative poverty to be a crude measure of inequality rather than of absolute poverty (Haughton & Khandker, 2009).

There is much debate to whether poverty should be interpreted as a state of absolute or relative deprivation when constructing a poverty line (Woolard & Leibbrandt, 2006). The distinction is essential because it influences the design of poverty reduction policies. Ravallion (1998) maintains that for the purposes of advising poverty reduction policies, a poverty line should always be absolute in the context of welfare. An absolute poverty line ensures consistent poverty comparisons in the sense that it treats individuals with identical levels of welfare the same. Relative poverty lines, representing a predetermined level of poverty, are therefore not

particularly reliable tools for assessing the impact of interventions designed to alleviate poverty (Govender *et al.*, 2007).

#### 2.2.4.2 Objective poverty lines vs. Subjective poverty lines

Poverty lines may be defined objectively as a benchmark level that describes a lack of resources to satisfy basic needs but may also be defined subjectively because it is based on psychological components of deprivation that pertains to the income level people personally consider to be the absolute minimum (Van Praag & Ferrer-i-Carbonell, 2008).

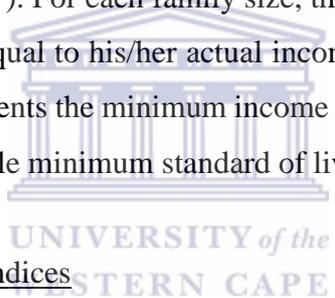
Van Praag & Ferrer-i-Carbonell (2008) argue that objective poverty has become a relatively restricted indicator of poverty. Government or “research experts” select a consumption level that most accurately reflects the level of poverty in a given region and such a line is then “objectively fixed”. Objective approaches therefore attempt to fix a reference utility to attainments of resources such as the stock of money, materials and other assets deemed to be adequate enough for consumption and the successful participation in society but this is ultimately a restricted method because it does not guarantee that everyone at the poverty line will actually attain these resources (Ravallion, 1998).

Objective poverty lines may also be referred to as a “subsistence-level” poverty definition (Goedhart *et al.*, 1977). The fundamental idea is that an individual has certain basic needs which have to be satisfied (e.g. food, clothing, housing, etc.). Nevertheless, the objective measurement of poverty has come under criticism because it is largely concerned with income and consumption levels that are objectively determined by researchers (Jansen *et al.*, 2013). This makes reference to the fact that it is not clear if households considered as poor under the objective definition of poverty recognise themselves to be poor, while other households that feel poor are classified as non-poor (Van Praag & Ferrer-i-Carbonell, 2008).

The subjective approach of poverty starts by questioning households on how they evaluate their own situation in terms of descriptive labels such as bad, adequate or good (Van Praag & Ferrer-i-Carbonell, 2008). By assigning numerical values (e.g. between zero and five) to these ordered labels, researchers may then estimate the utility derived from a given level of income. Ravallion (1998) goes on say that the subjective approach of poverty answers the fundamental question: “What income level do you personally consider to be absolutely minimal?”, that is to say that the poor are those whose actual income is less than the amount they give as an answer to this

question which may be interpreted as points on the consumer's cost function (providing the minimum expenditure required to guarantee a given level of utility) at a point of "minimum utility", interpreted as the poverty line in utility space.

Flik & Van Praag (1991) point out that deriving a subjective poverty line requires people considered to be poor according to the corresponding measurement method to deem themselves as poor, while individuals with household incomes above the poverty threshold should in turn consider themselves as non-poor. This implies that a subjective poverty line could indeed differ for everyone, for example in a hypothetical survey a respondent may be asked: "Which amount of income distinguishes the poor from the non-poor?", one respondent may say R3 000, whereas the other could say R1 000, so everyone would have his/her own subjective answers which is not based on a particular consumption basket. This minimum income level deemed to be adequate enough to sustain life is positively related to their own income and to the size of their family (Goedhart *et al.*, 1977). For each family size, there is an income level at which an individual's stated minimum is equal to his/her actual income. This level is then taken as the subjective poverty line that represents the minimum income level an individual considers to be sufficient to maintain an acceptable minimum standard of living (Jansen *et al.*, 2013).



### 2.2.5 Foster-Greer-Thorbecke indices

The Foster-Greer-Thorbecke (FGT) index is a poverty measure that allows for the variation in the amount of weight put on the income (or expenditure) level of the poorest members in society (Foster *et al.*, 1984). The indices were first introduced in a 1984 paper by James Foster, Joel Greer and Erik Thorbecke. FGT indices are considered to be a class of measures of the level of absolute poverty (Todaro & Smith, 2015). The FGT class is primarily based on the normalized gap  $g_i = (z - y_i)/z$  of a poor person  $i$ , wherein the lack of earnings is denoted as a percentage of the subsistence level (Foster *et al.*, 2010).

The index is defined as follows:

$$P_\alpha = \frac{1}{n} \sum_{i=1}^q \left( \frac{z - y_i}{z} \right)^\alpha \mid (y_i \leq z)$$

Where

$P_\alpha$  = class of poverty measures

q = number of individuals in poverty

$n$  = total population

$z$  = subsistence level

$y_i$  = the  $i$ -th lowermost earnings level

$\alpha \geq 0$  is the poverty aversion parameter

The  $P_\alpha$  index varies in form, conditional on the index number of parameter  $\alpha$ :

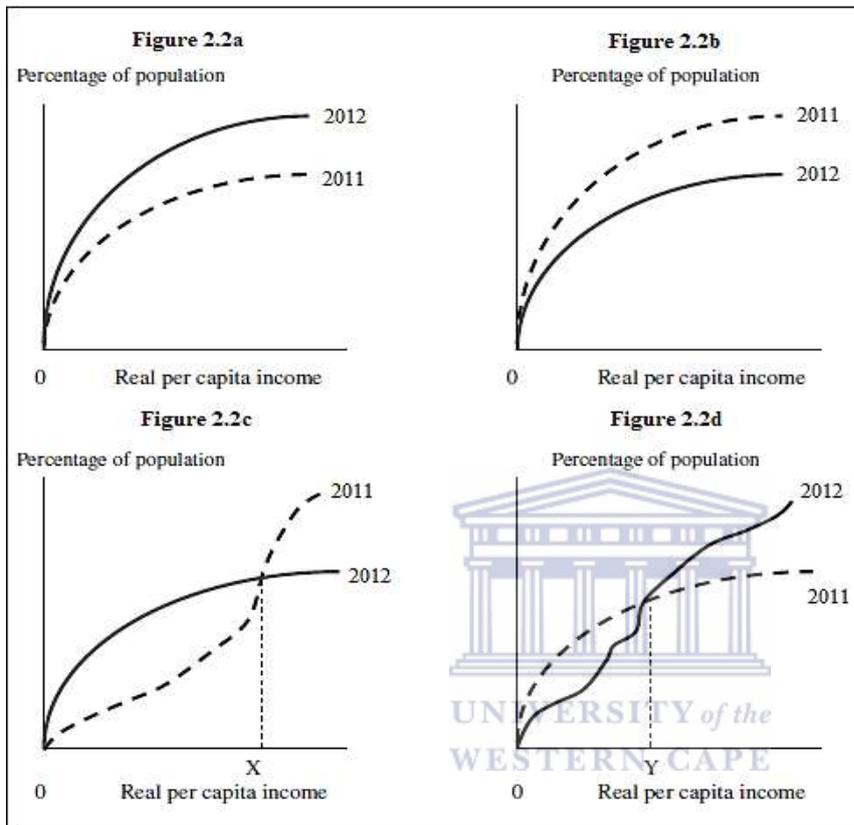
- If  $\alpha = 0$ , the numerator is equivalent to the value  $q$  and the number of individuals that subsist below the poverty line is derived as  $q/n$ . This headcount poverty index ( $P_0$ ) is given by the proportion of the populace considered to live in a household with an income per capita of less than the poverty threshold (Osowole & Bamiduro, 2013).
- If  $\alpha = 1$ , a normalized (per capita) poverty gap is derived. As a result,  $P_1$  holds the properties that poverty goes up when either the fraction of people in poverty increases or the fractional income deficits rises (Todaro & Smith, 2015). The poverty gap index indicates the extent of the poverty situation by measuring the fluctuation distance of a poor person's income from the threshold earnings level (Osowole & Bamiduro, 2013).
- If  $\alpha = 2$ , poverty severity is accounted for in that the effect on the degree of poverty from an increase in the earnings of a poor individual rises relative to the square of the distance of the individual from the income threshold. This distribution sensitive instrument of the mean shortfall of the total population from the poverty line is termed as the average of the squared proportional poverty that reflects the depth of poverty (Foster *et al.*, 1984).

### 2.2.6 Cumulative density function for dominance testing

The choice of a poverty line and associated rate of poverty (for example, headcount index, poverty gap index) is sometimes deemed arbitrary (Haughton & Khandker, 2009). Although these decisions matter, this may not always be the case. By way of comparing the cumulative distribution function (CDF) of expenditure (or income) per capita (occasionally referred to as the poverty incidence curve) between two situations, it is possible to determine whether the choice of poverty line has an impact on the conclusion about the change in poverty. The poverty incidence curve is traced out as the headcount index ( $P_0$ ) is plotted on the vertical axis and the poverty line is plotted on the horizontal axis, allowing the latter to range from zero to maximum consumption. Each point on the curve indicates the proportion of the population that consumes less than the amount given on the horizontal axis (Haughton & Khandker, 2009). Hence, if the real income increases, the corresponding cumulative proportion of the population will also

increase. This approach makes it possible to compare the changes in poverty from one period to the next, independent of any single poverty line (Yu, 2012). This poverty measure may further be explained by the aid of Figure 2.2.

**Figure 2.2: Cumulative density functions of a hypothetical country, 2011 vs. 2012**



Source: Adapted from Yu (2012: 206).

Figure 2.2a shows that the 2012 CDF is positioned above the 2011 CDF. This implies that poverty has increased, regardless of the selected poverty line, as the proportion of the population with a certain real income or less has increased. If the opposite takes place (Figure 2.2b), poverty has decreased at all the poverty lines. In Figure 2.2c, two CDFs cross each other. This suggests that the comparison of poverty estimates between two periods is sensitive to the selected poverty line. In this figure, poverty was lower in 2011 at any income level below X. In contrast, at any income level greater than X, the 2012 CDF lies below the 2011 CDF, meaning poverty was lower in 2012. With similar reasoning, Figure 2.2d shows that any poverty line lower than Y would result in a decrease in poverty between 2011 and 2012, whereas the opposite would occur if any poverty line greater than Y was utilised.

## 2.3 Theoretical framework

The theoretical framework aims to introduce and describe the theories that explain why poverty predominantly exists. In order to deepen the understanding of poverty, it analyses the views of poverty adopted by different economic schools of thought, thereby making use of a more collective synthesis in explaining poverty. It should however, be mentioned that one drawback of these theories is that none of them explicitly discusses chronic or transitory poverty. Four poverty schools of thought are discussed below.

### 2.3.1 Classical theory

Classical economics schools of thought argue that individuals are ultimately responsible for poverty as a result of poor economic decision-making. Poverty is therefore largely seen as a consequence of poor individual choices or a lack of “self-control” that affects productivity negatively and ultimately leads to poverty or welfare traps. Furthermore, classical theory views state intervention adversely as a source of economic inefficiency because it generates incentives that are misaligned between poor households and society as a whole, i.e. it assumes welfare programs further exacerbates the poverty situation.

#### 2.3.1.1 Behavioural theory

The behavioural approach to poverty looks at the cognitive, motivational and sociological limits of society. It suggests that people subjected to poverty should be held liable as a result of their inadequate decision-making. For example, the poor tend to borrow more, save less, fail to invest in education, consume high levels of alcohol and cigarettes and often disregard the need for money management. The responsibility of an individual’s outcomes, such as economic welfare, may therefore be attributed to their own economic decisions (Davis & Sanchez-Martinez, 2014). Anand & Lea (2011) highlight that the bad decisions made by the poor may be informed by the human capital theory, as the poor simply do not have the motivation to invest in their children’s education, thereby making reference to their lack of cognitive skills.

Cognitive resources serve a vital role in the economic performance of people as it directly facilitates economic deliberation and comprehensive decision-making (Spears, 2010). Economic decision-making depresses the self-controlled behaviour of the poor in that it depletes their mental processing capacity when confronted with difficult decisions. An individual may therefore ultimately fail to make optimal decisions because of limited mental

reasoning for considering the benefits and costs of every decision, which may be portrayed in the decision of graduates to participate in underemployment because of their immediate demand for income (Gandy *et al.*, 2016).

Behavioural biases or internal constraints such as narrow-mindedness, lack of willpower and lack of ambition are often cited as traits to be expected from the poor (Dalton *et al.*, 2016). Conscientious work habits as well as other behaviours such as leadership, sociability, self-confidence and emotional stability are therefore not often found among the poor (Anand & Lea, 2011). As a result of these “poor” behavioural traits, the underclass unfortunately develops cognitive expectations that suggest educational and occupational successes are improbable, which according to Gould (1999) is quite accurate.

#### 2.3.1.2 The sub-culture of poverty

The concept “sub-culture of poverty” usually holds the notion that the poor share distinctive patterns of values, beliefs, and achievements, and display a way of life that is significantly different from that of the main culture (Roach & Gurrslin, 1967). Gould (1999) supports this notion by referring to this cultural orientation as a secondary cultural difference from the majority culture. The culture of poverty is characterised by poverty-stricken individuals that live in ghettos, rural areas or communal settings where they cultivate shared belief systems (Bradshaw, 2006). These shared belief systems are often considered to be distinct from but entrenched in the culture of the main society.

Anand & Lea (2011) argue that neighbourhoods (referred to as places where people cultivate shared belief systems) are likely to have an impact on workplace participation and the development of positive social relationships by means of informal social control (disapproval of behaviours expected to have negative consequences). For example, the development of cognitive, linguistic, and other educational and job-related skills required for the workplace in the mainstream culture is adversely affected by high rates of unemployment found among members of the neighbourhood (Gould, 1999). Poverty therefore produces poverty because of the inability of the poor to acquire the social and workplace skills needed to fully operate in society, a “trait” of the poor which is in turn passed on to other members of the same society (Davis & Sanchez-Martinez, 2014).

This secondary, minority, cultural orientation obstructs the successful adjustment to majority group societies in a way that exacerbates poverty (Gould, 1999). Secondary cultures are often said to arise because it serves as a means for dealing with dominant-group members. Individual's build strategies based on culturally shaped perspectives, skills, and behaviours because they lack the capacity to compete with upper-class members of society by virtue of their skills, habits and knowledge (Anand & Lea, 2011). They generate, sustain and transfer to forthcoming generations, beliefs that reinforce numerous social and behavioural shortcomings (Jordan, 2004). In essence, the sub-culture of poverty describes a "way of life of the poor" that is distinct from that of the main society.

### 2.3.2 Neoclassical theory

Neoclassical (or mainstream) economics schools of thought provide more diverse explanations of poverty and recognise reasons for poverty that is beyond the control of people. Evolving from the classical approach, neoclassical theory emphasises the role of preliminary differences in talents, skills and capital which determine the productivity of an individual in generating poverty within a market-based competitive economic system. This lack of ability and ownership of private assets is further worsened by market failures that exclude the poor from the normal operations of society and in time lead to barriers to education, poor health and lack of employment opportunities.

#### 2.3.2.1 Market failures and poverty

Market imperfections such as credit market failure, externalities and asymmetric information are theoretically linked to poverty. The theoretical relationship stems from the interaction of market failures with the livelihoods of the poor, so as to worsen their living conditions. The reason is that market failures result in the inefficient usage of assets by the poor and may in certain cases lead to poverty traps (Dercon, 2003). By means of their own resources, the poor often consider these poverty traps difficult to escape.

Lack of access to credit markets has been identified as a primary causal factor of poverty. In the same way this speaks to the initial asset inequality of the poor. Davis & Sanchez-Martinez (2014) argue that a lack of access to credit markets causes poverty because it prevents individuals that have an initial lack of assets from gaining finance that could be used to stimulate business activities and subsequently, lead them out of poverty. In this case, asset inequality combined with market failure results in discrepancies between the efficacy of the

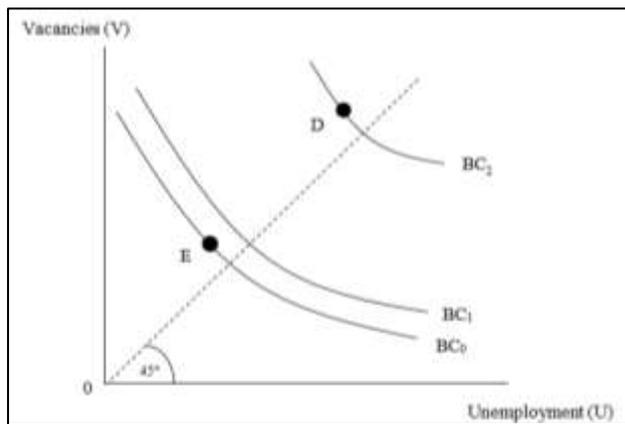
poor and the rich. Entry in profitable activities is, therefore, closed off for those with inadequate assets and as a result they remain trapped in poverty while others climb the welfare ladder (Dercon, 2003). In short, credit and insurance instruments are heavily under-supplied to the poorest members of society, thereby directly and indirectly contributing to the persistence of chronic poverty (Barnett *et al.*, 2008).

Dercon (2003) identifies externalities to be another common cause for market failure. Externalities are said to exist because of economic occurrences that create social gains or losses to society without their immediate consideration for these externalities. For example, the environmental damage caused by the production of a particular good is not taken into consideration by the buyers and sellers of that product. These externalities therefore interact with the initial resource disparities of the poor in a way that further exacerbates poverty, as the poor by and large already inhabit areas that are declining (Barbier, 2010).

An equally important source of market failure related problems is the mismatch of skills in the labour market (Davis & Sanchez-Martinez, 2014). This draws attention to the types of skills needed to escape poverty, in other words, having skills that are misaligned with what is needed in the labour market can further worsen the poverty situation of the poor. Under-education (or inadequate skills) is therefore, seen as a sign of market failure (specifically, asymmetric information) in the labour market but may also be linked to the lack of investment in education (or training) by the poor as a result of their insufficient resources. In the same way this points toward the mismatch between the demand for highly educated workers and their supply. While this may be the case in a particular country, a significant proportion of the labour force might still have tertiary education (Rutkowski, 2013). The supply of highly educated workers will exceed its demand, leading to a high unemployment rate among individuals with tertiary education.

The Beveridge curves, depicted by  $BC_0$ ,  $BC_1$  and  $BC_2$  in Figure 2.3, refer to the observed statistical relationship between the level of unemployment,  $U$ , and the number of open vacancies,  $V$ . In this case a simplified explanation of the skills mismatch problem is utilised by comparing two contrasting countries, South Africa (a country with high poverty rates) and Singapore (a country with low poverty rates).

**Figure 2.3: The Beveridge Curve**



Source: Adapted from Laing (2011: 821).

Point D on the curve  $BC_2$ , which is furthest away from the origin, illustrates the serious skills mismatch problem in South Africa, namely high unemployment and high number of vacancies. However, the number of vacancies exceeds the number unemployment at Point D, thereby causing individuals to remain trapped in poverty (the skills mismatch problem may occur because a lack of vocational training, even though these individuals may have tertiary education). In contrast, point E on the curve  $BC_0$  closer to the origin characterises Singapore's situation, namely low unemployment but due to the brain drain, some vacancies may be left unfilled (immigration of skilled people needed). These individuals therefore, have a lower likelihood of falling into poverty because they have the required skills to compete in the labour market.

### 2.3.2.2 Human capital theory

The central theme of the human capital theory focuses on a process of investment (forgoing current resources in order to enjoy future returns) incurred in the form of education and by means of on-the-job training that is expected to yield returns over the lifespan of the individual concerned (Schultz, 1972). Becker (1962) advocates that people differ significantly in economic wellbeing because of differences in human capital investment, thereby creating a platform for understanding inequality in income among people. Investment in education and training passes on knowledge and skills that encourages sustained economic wellbeing.

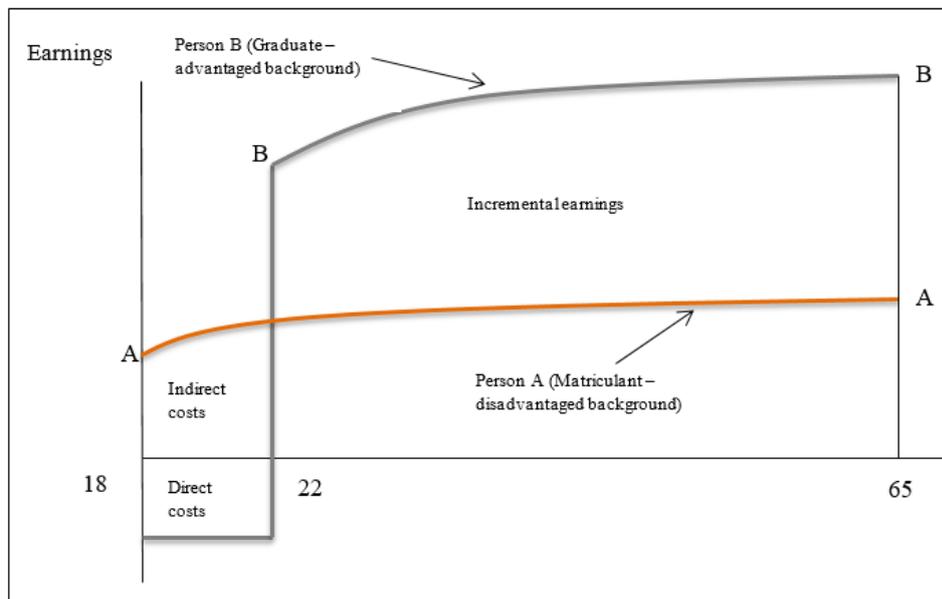
Ali & Ahmed (2013) assert that a strong negative relationship exists between achieved education and the level of economic wellbeing. To elaborate this point further, investment in education enhances the earnings potential of the poor by increasing their productivity.

Employers are attracted to productive workers and as a result these workers have an increased likelihood of finding employment as well as getting paid a competitive market wage. Poverty is negatively related to earnings therefore, a higher income suggests a decrease in the level of poverty (Awan *et al.*, 2011).

Schultz (1972) asserts that investment resources should be allocated to education on the basis of economic efficiency in favour of children from poor homes. Education serves as the most effective way for the youth with poor backgrounds to climb the welfare ladder because human capital is the main asset of ninety percent of any population (Becker, 1995). For this reason, income inequality in a country is greater when inequality in education is greater. Education of the poor does not only raise productivity (and subsequently income) but also induces them to make better, healthier choices (Becker, 1995). This in turn emphasises an important goal of economic development, which is to improve the health and education of people since these fields are critical to the development process. Health and education allows households to produce and earn a higher income, which in turn lifts them out poverty (Quang Dao, 2008). The disparity between prosperity and poverty is therefore, placed on the ability of a country to achieve economic development (or growth), which is largely dependent on human capital development, since it creates economic advancement (Chavez & Andrés, 2015).

Figure 2.4 presents an augmented version of the human capital theory, which has been augmented to take into consideration the fact that these individuals come from disadvantaged backgrounds. As explained by Barker (2007), education and training are likely to produce immediate benefits e.g. self-fulfilment, in addition to the long-term earnings prospects associated with education. However, an individual may face cost constraints in his/her attempt to achieve the highest possible level of education, as indicated in the figure. It makes reference to the direct costs which consist of tuition, books and other related expenses, and the indirect costs which stand for the earnings forgone since the individual has chosen to pursue higher education, as opposed to working and acquiring a working wage. Figure 2.4 therefore, takes into consideration the total direct and indirect costs of education, the increased earnings of an individual due to higher educational attainment, as well as the fact that these individuals come from different backgrounds, in order to determine the benefit of investing in education, as opposed to working immediately after school.

**Figure 2.4: Augmented version of the human capital theory**



Source: Adapted from Barker (2007: 207).

If person A (Matriculant, who comes from a disadvantaged background) chooses not to invest in education (as a result of initial resource constraints or because the poor tend to make irrational decisions) and starts working immediately after school (at age 18 years), he would immediately earn a salary and have an earnings profile of AA. In other words, because of person A's inferior background, he is unable to pursue higher education and is therefore, likely to be trapped in a job with low pay, subsequently having a greater likelihood of being trapped in poverty. That is to say, poor backgrounds lead to more poverty.

On the other hand, if person B (Graduate, who comes from a relatively more advantaged background) chooses to invest in education, he may incur the direct and indirect costs associated with educational attainment. However, assuming the person enters the labour market after completing their educational term, person B can instantly enjoy an earnings level higher than that of person A. Person B will therefore, have an earnings profile equal to the line BB. The difference in the incremental earnings of person B and person A indicates that an individual may be subject to greater earnings potential upon investing in education.

### 2.3.3 Keynesian theory

Keynesian schools focus on macroeconomic forces and stress the key role of government in providing economic stability. Although the neoliberal school adopts a money-centred

approach, importance is also assigned to the government's ability to combat poverty and inequality. For instance, a more equal income distribution can facilitate the participation of disadvantaged groups of society in economic activities that can assist in the poor's ability to escape poverty. Unlike in the classical approach, unemployment is regarded as a major cause of poverty and is largely seen as involuntary and in need of government intervention to combat it. Publicly provided capital (including education) also has an important role to play, with physical and human capital forming the basis of economic prosperity. Keynesian theory however, ultimately supports the neoclassical approach in that overall growth in income is the most effective element in combating poverty.

### 2.3.3.1 Poverty as a structural failing

Rank *et al.* (2003) assert that individual attributes as the cause of poverty is illogical and incorrect. Structural failings of the economic, political, and social system are the main sources of poverty instead (Bradshaw, 2006). Advocates of the structural theory argue that large-scale labour market and demographic conditions expose people to the threat of poverty, and cross-sectional and over time changes in these structural factors account for variations in poverty (Brady, 2006). Structural theorists claim that people who are excessively impacted by structural factors tend to be subjected to poverty. Structural theory can therefore be seen as a compositional explanation, i.e. the more people in demographic or labour market circumstances, the more poverty exists (Brady, 2006). In this sense, structure refers to the employment likelihood and demographic susceptibility of the populace in explaining their chances of being poor.

The inability of the economy to produce enough decent paying jobs has also been interpreted as the result of failings at the structural level (Rank *et al.*, 2003). Bradshaw (2006) states that the working poor are confronted with wage problems (having below living-wage jobs) that may be linked to structural barriers that prevent poor families from getting better jobs, which is further worsened by the shortage of jobs near workers and the lack of growth in sectors that accommodate for low-skilled work. Insufficient wages, shortage of job creation and poor working conditions serve as indications of the way the structural system has created increasingly difficult problems for individuals who seek employment (Rank *et al.*, 2003). In the same way this speaks to the failure of the labour market to provide sufficient job opportunities to keep up with the pace of the growing labour force, thereby exposing people to unemployment, and subsequently poverty (Burger & Woolard, 2005).

Addae-Korankye (2014) contends that the origin of poverty may be traced back to issues inherent in the economy that give preference to certain groups over others. For example, certain groups of workers are preferred by employers, such as whites or males, even if this preference has a cost attached to it in the form of higher remuneration (Barker, 2007). While this is the case, there are other marginalised groups that are socially “shamed” as a result of their race, gender, religion etc., leading them to have restricted opportunities through factors not associated with the labour market (Bradshaw, 2006). Poverty can therefore not be eliminated without realising that the groups against which discrimination is practised have limited opportunities despite the many laws against practices that ostracise certain groups of people.

Structural failings may also be found at the political level which fails in its ability to reduce the level of poverty. The inability of the state to devote resources to programs aimed at supporting the poor and the lack of social and insurance programmes, ultimately contribute to families falling into poverty (Rank *et al.*, 2003). Bradshaw (2006) argues that the limited involvement of the poor in political discussions marginalises their interests in the political process and as a result, they are excluded at many levels. Combined with discrimination, poor people lack the power to mobilise economic benefits and justice through the political system.

#### 2.3.3.2 Unemployment and poverty

Keynesian theory assigns significance to unemployment as a principle cause of poverty on the basis that labour market participants are restricted from labour income and therefore have a higher likelihood of being poor (Davis & Sanchez-Martinez, 2014). Kiaušienė (2015) emphasises this point of view by maintaining that excessive levels of unemployment serve as a key problem of poverty because it is linked to the inadequate income of the poor which restricts them from the necessities of life and the ability to retain personal physical power. The consequence of unemployment is that it limits the access to labour income but at the same time it increases benefits directed at the poor which results in deterrent structures that further exacerbates poverty (Saunders, 2002).

Šileika & Bekerytė (2012) maintain that unemployment has a substantial impact on poverty because it diminishes earnings, decreases government revenue (thereby limiting the amount of funding allocated to combatting poverty) and affects the mental and physical health of people, which incites poverty. High levels of unemployment therefore, erodes the source of funding

and increases the demand for welfare programs (e.g. social grants) because of the excessive cost to society that arises from increased levels of poverty (Saunders, 2002). In the same way the efficacy of social benefits is reduced because it decreases the willingness to work and deters competitiveness, which causes rising poverty under social insurance programmes. Unemployment can therefore largely be seen as an economic phenomenon that destroys the funding base of welfare programs and at the same time increases poverty and inequality.

Employment provision plays an important role in the economic sustainability of an individual and may sometimes be regarded as the best mechanism for protecting against poverty and social exclusion. Kiaušienė (2015) argues that unemployment does not only result in a loss of income but also causes people to face social and psychological problems. It alters job availability, limits promotion possibilities, reduces real wages and affects the self-esteem and self-consciousness of the poor (Defina, 2002). Additionally, high levels of unemployment reduce the purchasing power of the poor, leading to a lower standard of living and increasing the gap between rural and urban family income and welfare (Šileika & Bekerytė, 2012). These circumstances in turn reduce the poor's access to quality education, labour market opportunities and higher wages. Thus, if there are limited educational and development opportunities, inadequate labour market status and low income, individuals may be at risk of being socially excluded (Kiaušienė, 2015).

#### 2.3.4 Marxist theory

Marxist theorists perceive the role of class and group discrimination (which are largely political issues), as central to poverty. Advocates of this school hold the notion that the market is inherently dysfunctional. Attention is drawn to the possibility that economic growth alone may not be adequate enough to combat poverty because minority groups would not benefit from the overall growth in income. By emphasising the concept of class, it provides a change of view because it focuses on group (as opposed to individual) traits, where an individual's economic standing is deemed to be reliant on the socio-economic environment in which they live. Nevertheless, Marxists maintain that having sufficient income to sustain economic wellbeing remains a crucial factor. Furthermore, the Marxist school of thought may also be utilised to analyse links of environmental problems to poverty.

#### 2.3.4.1 Discrimination and class

Labour market discrimination is associated with the behaviour of prejudice towards individuals in relation to occupational law, through factors not associated with the labour market, such as an individual's racial group (Barker, 2007). Stemming from this is the implication of human capital discrimination, as individuals who only had access to inferior-quality education and training would have a greater likelihood of falling into poverty because they lack the skills or cognitive ability to compete in the labour market. This also serves to indicate that individuals who possess inadequate education and training because of factors that condition inequality and the accessibility to resources (for example, ethnic origin, class, gender, age etc.) would experience a barrier before entering the labour market (Davis & Sanchez-Martinez, 2014).

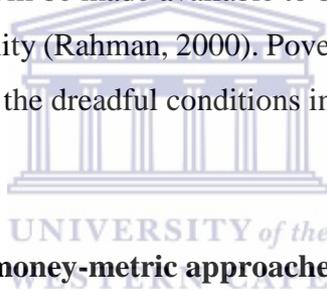
Given that education is tied to productivity, it may serve as the cheapest method of selecting personnel. However, many employers select personnel based on skin colour or gender with the belief that, for various reasons (such as the quality of schooling, family and cultural background), one group is somehow less productive than another. These individuals, who are deemed to be less productive, have a lower chance of earning a working-wage and are thus susceptible to poverty. Barker (2007) maintains that certain groups of workers are preferred by employers, for example Whites or males, even if this preference has a cost attached to it in the form of paying a higher wage for their preferred workers. These employers therefore, infer that they incur a cost (psychic disutility) by employing black workers. Considering that the black population consists of the majority of poor, discrimination acts to further distort the livelihoods of these individuals (Van der Berg *et al.*, 2006). Discrimination according to this perspective is therefore, viewed as preventing the full participation of individuals in social and economic activities. Involuntarily isolating certain groups of individuals from society acts exclude them from acquiring economic resources that would assist in the transition from poverty, thereby inevitably relating economic and social discrimination to poverty (Davis & Sanchez-Martinez, 2014).

#### 2.3.4.2 Poverty and the environment

The relationship between poverty and the environment is based on the notion that people cannot be lifted out of poverty if the environment and natural resources they rely on are not conserved. Similarly, the environment cannot be protected if the needs of the poor are not addressed. Rahman (2000) proposes two fundamental reasons for the poor's exposure to environmental degradation. Firstly, the areas inhabited by the poor are in many instances tainted. In the same

way, this makes reference to the tendency of the poor to be clustered in less favoured areas (Barbier, 2010). These areas accessed by the poor are often characterised by poor living conditions and are therefore hazardous to health and earnings potential. The health of poverty-stricken individuals is considerably impaired by air, water and land pollution, which erodes the stock of human capital for poor individuals, thus making them more susceptible to living below the threshold of poverty (Davis & Sanchez-Martinez, 2014).

Secondly, poor people are exposed to environmental degradation because of the lack of a secure resource base that does not allow for the movement out of the degraded environment. The poor therefore attempt to scrape out living with substitute sources of livelihoods that are less demeaning. Barbier (2010) states that the majority of poor individuals who are located in fragile settings are liable for a great portion of the world's ecosystem degradation and loss, while their upkeep is unwaveringly affected by such environmental destruction. Degraded communal settings imply that less resource will be made available to both present and future generations with greater risk and unsustainability (Rahman, 2000). Poverty therefore causes environmental degradation and at the same time, the dreadful conditions in the environment would aggravate poverty.



## **2.4 Review of studies using money-metric approaches**

### 2.4.1 Studies that have used the IES data

Van der Berg & Louw (2004) investigated income distributions patterns in South Africa between 1995 and 2000. By comparing the IES 1995 and IES 2000 data, the authors found that real income in South Africa declined. Using various data sources (censuses, household surveys, marketing surveys, published wage data series, etc.) the authors derived the distribution of remuneration income by race and applied these proportions to the total remuneration income in the National Accounts data. Their results indicated a clear increasing trend for Africans, but the same cannot be said about the other racial groups. Furthermore, the authors found that a greater proportion of the population managed to sustain a living standard equivalent to a monthly income level of more than the R250 per month (2000 prices) poverty line utilised in the study.

Hoogeveen & Özler (2006) also used the IES 1995 and 2000 data to investigate poverty. The authors applied three poverty lines – LBPL of R322 and UBPL of R593 (both in 2000 prices, per capita per month), along with the international poverty line of US\$2 per day (equivalent to

R174 in 2000 prices). Using the LBPL, the authors found that about 58 percent of the population was poor in both years, with about one-third of populace subsisting below the \$2/day poverty line in 2000. For any poverty line below R322, the poverty gap and poverty severity (poverty gap squared) indices were significantly higher in 2000 than they were in 1995. Furthermore, the increase in poverty was accompanied by positive per capita household expenditure growth that was estimated to be statistically insignificant.

Bhorat & Van der Westhuizen (2008) investigated poverty by using the 1995 and 2005 IES data. They applied two poverty lines – R174 and R322 (per capita per month in 2000 prices). The poverty headcount rate declined from 31 to 23 percent using the former line, but decreased from 53 to 48 percent with the latter line. The measure of relative poverty (poverty gap ratio) indicated a similar trend on the national sphere. For example, when taking into consideration the lower line in 1995 a poor individual lived approximately 12 percent below the poverty line, as opposed to living 7 percent below the poverty line in 2005. In short, the key result from the study based on the initial analysis of the IES 2005 data is that both absolute and relative poverty have declined considerably over the first ten years of democracy in South Africa.

#### 2.4.2 Studies that have used Census and Community Survey data

Ardington *et al.* (2005) used the 1996 and 2001 Census data to examine poverty. Using the monthly per capita poverty lines of R124 and R400 in 2001 prices, they found that the poverty headcount rate increased across the two censuses (from 38 to 42 percent for the R124 poverty line; from 60 to 68 percent for the R400 per month poverty line).

Leibbrandt *et al.* (2006) used the same data to examine poverty trends. The authors used the US\$2 per day and R250 per capita per month (in 1996 prices) poverty lines, and found that the headcount rate increased from 1996 to 2001 for both lines. Empirically this depicted a movement from 26 to 28 percent for the former line and from 50 to 55 percent for the latter line. With regard to the poverty gap ratio, the results of the study indicated that an average household had an income that fell 30 percent short of the R250 per month poverty line in 1996, but it increased to 32 percent in 2001. Furthermore, the authors examined poverty rankings by race, and found considerable differences in absolute income levels between race groups; Africans were the poorest, followed by Coloureds, Indians/Asians and Whites.

Yu (2009) investigated poverty in South Africa by utilising the 1996 and 2001 Census as well as the 2007 Community Survey (CS). His findings support those of the above two studies that poverty increased from 1996 onwards, before a downward trend took place since 2000. Three poverty lines were employed (R211, R322 and R593 in 2000 prices). The CDF analysis suggests that poverty increased between 1996 and 2001, before a significant decrease took place between 2001 and 2007. Also, poverty headcount by race at all poverty lines increased between the two censuses, before showing a rapid decrease between 2001 and 2007.

#### 2.4.3 Studies that have used the AMPS data

Van der Berg *et al.* (2006) investigated trends in poverty and income distribution over the post-apartheid period using the All Media Products Survey (AMPS) data. By employing the poverty lines of R250 and R281 per capita per month (both in 2000 prices), they found that the poverty headcount ratio increased across both poverty lines from 1993 to 2000 after which a downward trend took place between 2000 and 2004. Similarly, the number of people subjected to poverty increased between 1993 and 2000 before a decrease took place between 2000 and 2004 for both poverty lines. This is equivalent to 16.2 million people having less than R250 per month in 1993, with this number rising to 18.5 million in 2000 before dropping to 15.4 million in 2004. Furthermore, the authors highlighted that the declining poverty may be attributed to the upward mobility displayed by the African population, given that this racial group comprises of the majority of the poor.

Van der Berg *et al.* (2007) utilised the adjusted AMPS-based estimates to investigate poverty over the period 1993 to 2004. As with Van der Berg *et al.* (2006), the poverty line selected for the analysis was a monthly per capita household income of R250 in 2000 prices. The results of the study support that of Van der Berg *et al.* (2006), as the poverty headcount ratio was yet again found to have increased between 1993 and 2000 after which the incidence of poverty fell substantially by 2004. This corresponds to a reduction of 8 percentage points – equivalent to three million people subsisting below the poverty line in 2004. Furthermore, contrasting results have been found by race, with the headcount ratio being the highest for Africans and the lowest for Whites.

Van der Berg *et al.* (2008) also used AMPS data in order to establish alternative estimates of poverty in South Africa. The study follows Van der Berg *et al.* (2006) and Van der Berg *et al.* (2007) by employing a R250 per month (2000 prices) poverty line. Applying this poverty line

to household per capita incomes, the authors found similar results to that of the previous studies. The conclusion was that money-metric poverty increased in the 1990s (attributed to the lack of job opportunities and slow economic growth), before a downward trend took place since 2000. The reduction in the incidence of poverty was indicated by the decrease in the poverty headcount ratio from 50.1 percent in 1993 to 46.9 percent in 2004, which may be credited to the greater income mobility among the African population, better job market opportunities, improved economic growth and increased social spending by the government.

#### 2.4.4 Studies that have used the KIDS data

Carter & May (2001) was one of the first studies to investigate the dynamics of poverty in South Africa. The study utilised the 1993 and 1998 KwaZulu-Natal Income Dynamics (KIDS) panel data to decompose household mobility into its structural and stochastic components. The sample consisted of 1 200 African households residing in KwaZulu-Natal. The authors found a substantial increase in the poverty rates among this group, and that the distribution of economic wellbeing has become less equal. Primary to these findings was a biased pattern of income mobility, as households displaying a better level of economic wellbeing to begin with were associated with more upward mobility than households considered as being poor from the offset. The authors also found that about 18 percent of the representative sample were chronically poor (trapped in poverty in both waves), whereas 35 percent were temporarily poor (poor in only one wave).

Roberts (2001) used the same data to investigate chronic and transitory poverty in KwaZulu-Natal. By using the R118.50 and R237.00 per-adult equivalent monthly expenditures (in 1993 prices) poverty lines, the author found that the incidence of poverty between 1993 and 1998 increased from 5 to 9 percent using the former line, but rose from 34 to 42 percent using the latter line. The increase of poverty incidence was particularly evident for rural localities and for female-headed households. Also, about 22.3 percent of households were characterised by poverty of a chronic nature, as opposed to 30.7 percent of households trapped in transitory poverty. Furthermore, of those households deemed to be poor in 1993, approximately 66 percent of them remained trapped in poverty in 1998.

Woolard & Klasen (2005) also utilised the KIDS panel data to examine the household mobility and poverty transitions of these African households. Splitting the perceived household mobility into measurements that capture demographics and workforce participation, the authors found

these factors to be crucial drivers of household flexibility. It was found that both demographic and employment changes were related to excessive degrees of joblessness and resulted in labour market churning, which contributed to changes in the level of economic welfare among these households. The authors also identified certain traps that cause poverty to persist. The main contributors were related to early factors of barriers such as household capacity, low-quality schooling and lack of involvement in the job market. In opposition, the provision of quality schooling, decreased domestic capacity and better chances of employment were central to a household's transition out of poverty.

Aguero *et al.* (2007) investigated poverty and inequality in South Africa by adding a third wave (which took place in 2004) to the KIDS. The authors further expanded upon the poverty analysis by estimating poverty rates using expenditure data. Moreover, the results of the study indicated a significant improvement in access to basic household services between 1993 and 2004, thereby showing a slight recovery from the increasing poverty and inequality in the mid-1990s. Furthermore, the authors stressed the key role of government in combatting poverty (particularly via government grants) by highlighting the positive impact of the child support grant on the distribution of income and economic upliftment.

A more recent study by Pool (2017) investigated the impact of migration in core<sup>4</sup> and dynasty<sup>5</sup> households on poverty in dynasty households, using data from the three waves of the KIDS. The poverty line used was R250 per person per month in 2000 prices. With regards to the poverty headcount ratio, 25.2 percent of the core households fell below the poverty line of R250 (at 2000 prices) in 1993, which is lower than both the 1998 (42.3 percent) and 2004 (29.3 percent) core households. Additionally, the level of poverty was found to be the lowest for dynasty households, as 22.5 percent of dynasty households fell below the poverty line in 2004, which was significantly lower than the poverty levels recorded for core households in both 1998 and in 2004.

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<sup>4</sup> The “core” households refer to the original households which included all core and dynasty individuals in Wave 1 of the data.

<sup>5</sup> The “dynasty” households refer to all the next-generation split-off households that since Wave 1, split from the core household and formed their own household.

To examine poverty transitions in core households, the author constructed three categories (never poor<sup>6</sup>, transitory poor<sup>7</sup> and chronically poor<sup>8</sup>) in which to capture the movements of these households. The results of the analysis indicate that 38.6 percent of core households were never subjected to poverty, whereas 52.3 percent experienced transitory poverty. Of these core households who experienced transitory poverty, 30.3 percent of them transitioned out of poverty during the period under consideration, as opposed to 22 percent of such households transitioning into poverty. As for the chronically poor households, 9.2 percent were subjected to severe poverty.

#### 2.4.5 Studies that have used the NIDS data

Finn *et al.* (2014) conducted the first nationwide panel data analysis to expand the knowledge base on income mobility in South Africa. The study utilised longitudinal data from the 2008 and 2010 NIDS to examine the wage mobility of the balanced panel members (those who took part in both waves of the NIDS). The study restricted the analysis to households with an income per capita per month of less than R5 000 and made use of a cost-of-basic threshold of R515 per capita per month in 2008 prices. The results of the study indicated an overall upswing in earnings, as the mean monthly income of the sample increased from R470 to R500 by 2010. Furthermore, the proportion of people in poverty in 2008 was 52.8 percent, as opposed to 49.7 percent in 2010.

To elucidate the movements across a series of real-income thresholds, the study utilised a transition matrix. The balanced sample was split into four categories in this matrix: (1) less than the LBPL of R515<sup>9</sup>; (2) between the LBPL of R515 and the UBPL of R949; (3) between the UBPL and R1 898; (4) real household income per capita above R1 898. The results of the transition matrix indicated that, using the LBPL of R515, for those defined as the poorest (i.e. category (1)) in 2008, 70 percent of them remained in this category in 2010. For the remaining 30 percent, about two-thirds of them moved to category (2) (between the lower and upper poverty lines) in 2010.

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<sup>6</sup> Never poor: this group is categorised by core households that never experienced poverty.

<sup>7</sup> Transitory poor: comprises of core households who experienced poverty in any wave of the KIDS.

<sup>8</sup> Chronically poor: includes core households who were considered poor because they were rooted to poverty in all three waves (1993-2004) of the KIDS.

<sup>9</sup> This category comprises of individuals that are considered to be the poorest of all four categories.

In addition, for those in category (2) in 2008, only 26 percent of them managed to transition out of poverty (i.e. moving to categories (3) or (4) in 2010), as opposed to 42 percent of them falling deeper into poverty (i.e. moving to category (1)). Furthermore, for those in category (3) in 2008, 22 percent of them earned a real household income per capita of more than R1898 in 2010. Finally, those in category (4) in 2008 displayed the least movement, as 75 percent of the respondents remained rooted to this group in 2010.

Finn & Leibbrandt (2013) expanded on the previous study by using data from the first three waves of NIDS. They restricted the analysis to a sub-sample of balanced panel respondents and found that an increasing number of households escaped poverty over time. However, a considerable share of the populace was confined to severe poverty, which was defined as having a household income of less than half the poverty threshold (the study utilised a R636 per capita per month poverty line, in constant 2012 August prices).

The study once again made use of transition matrices to depict a trend to the dynamics of poverty over the period. For the balanced panel, about 75 percent of the respondents who were poor in wave 1 were still subjected to poverty in wave 2. Similarly, of those who were not considered poor in wave 1, only about a quarter of them became poor by wave 2. Moreover, the results of the study indicated that the exit rate (transition from poor to non-poor) increased from 25 percent to 36 percent, whereas the entry rate (transition from non-poor to poor) was lower for wave 1 to 3, as opposed to the wave 1 to 2. Furthermore, whilst 42 percent of the balanced panel members were considered to be poor in both waves 1 and 2, only 36 percent were distinguished as poor for wave 1 to 3, while 37 percent of the sub-sample retained its non-poor status for the wave 2 to 3 period. The authors also indicated that the reduction in non-money-metric (multidimensional) poverty was significantly larger than the contemporary reduction in income poverty over the period.

Finn & Leibbrandt (2017) investigated the dynamics of poverty in South Africa from 2008 to 2014/2015 by using a balanced four wave sample of NIDS, comprising of 17 265 respondents. The welfare measure employed in the study was real monthly household income per capita. By using a R1 283 (per capita per month in 2015 prices) poverty line, Finn & Leibbrandt (2017) found that the rate of escaping poverty was higher between waves 2 and 3, and between waves 3 and 4 than it was between waves 1 and 2. The authors also found that approximately 47 percent of the weighted sample subsisted below the poverty line in each of the four waves.

Through the utilisation of transition matrices, they found that 54 percent of the balanced panel were poor in both waves 1 and 4, with more than half in extreme poverty (defined by the authors as having a household income per capita of less than R641.50). Furthermore, the authors find inter-wave demographic changes to be the main triggers for 56 percent of those who entered poverty and 59 percent of those who escaped poverty between wave 1 and 4, while government grant income serves as the trigger that leads to poverty exit for 23 percent of the previously poor balanced panel members between wave 1 and 4. One serious drawback of the study was that it hardly examined and compared the characteristics of the chronically poor, transitory poor and chronically non-poor, but rather focused on identifying the main poverty triggers.

#### 2.4.6 Studies that have used various sources of data

Meth & Dias (2004) investigated poverty in South Africa over the period 1999 to 2002, using the 1999 October Household Survey (OHS) and 2002 Labour Force Survey (LFS). In order to measure changes in poverty, the study made use of a R497 per capita per month (in 2000 prices) poverty line. The authors found that the number of people subsisting below this poverty threshold had increased by 2 million, which equated to about 4.5 million people living in poverty in 2002. However, the study attempts to go beyond the usual technique<sup>10</sup> of conducting headcount for the purpose of attempting to measure nationwide changes in poverty. Differently said, the study pointed towards counting the total number of people in poverty in the two bottom expenditure categories (those households whose expenditure lies between R0-R399 and R400-R799 per month, respectively). Moreover, the results indicated that 31 percent (2.9 million) more people fell within the lowest expenditure category. For the higher expenditure category (R400-R799 per month), 11 percent (1.4 million) more people lived within these bounds by 2002.

Armstrong *et al.* (2008) utilised the 2005 IES as well as the 2006 General Household Survey (GHS) to provide a snapshot-like profile of poverty in South Africa. The authors applied two poverty lines – LBPL of R322 and UBPL of R593 (per capita per month in 2000 prices). Using the LBPL, the authors found that about 33.2 percent of all households subsisted below this threshold, as opposed to the 53.3 percent of households having consumption levels lower than the UBPL. These results were however, only based on the 2005 IES data. Another essential

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<sup>10</sup> The usual technique for conducting a headcount is to establish a poverty line and then count the number of individuals who subsists below this threshold.

finding of the study pertains to some groups (blacks, female-headed households, the elderly, less educated individuals, the unemployed, and the inhabitants of rural areas, KwaZulu-Natal, Limpopo and the Eastern Cape) experiencing poverty more severely than others. Also, the authors found income poverty to be highly linked with other dimensions of poverty, such as deficient access to essential services, long travelling distances to institutions rendering public services and other amenities, low levels of educational attainment, and inadequate health conditions. Lastly, social grants were found to be a useful tool for alleviating poverty.

Posel & Rogan (2012) investigated gendered trends in poverty during the post-apartheid period (1997 to 2006), using data from the 1997 and 1999 OHS as well as the 2004 and 2006 GHS. This study also follows Hoogeveen & Özler (2006) by employing a R322 per capita monthly household income (in 2000 prices) poverty line. The authors found significantly higher rates of poverty among females and female-headed households for each measure (income, the extent, depth and severity) in all four years. The study highlighted an overall decrease in poverty between 1997 and 2006, but this somewhat contrary to the gendered trends in poverty depicted over the period 1997 to 2006. This could be seen by the fall in the extent, depth and severity of poverty among males and male-headed households, which further widened the differences in poverty rates by gender. Furthermore, the study highlighted the key role played by social grant income in curving the depth and severity of poverty among females and female-headed households.

In the study by Stats SA (2014a), absolute poverty was investigated in South Africa over the period 2006 to 2011 by making use of the 2005/2006 and 2010/2011 IES as well as the 2008/2009 Living Conditions Survey (LCS). Three poverty lines were employed in the study. A FPL (valued at R210, R305 and R321 in 2006, 2009 and 2011, respectively), a LBPL (valued at R300, R416 and R433 in 2006, 2009 and 2011, respectively) and a UBPL (valued at R431, R577, R620 in 2006, 2009 and 2011, respectively). Using the UBPL, the study found that poverty had decreased from 57.2 percent to 45.5 percent by 2011. Poverty measured by the FPL however, increased from 26.6 percent (12.6 million) in 2006 to 32.4 percent (15.8 million) in 2009. Due to factors such as income growth, above inflation wage increases and decelerating inflationary pressure this number dropped to 10.2 million (20.2 percent) in 2011. With regard to the depth of poverty (indicated by the UBPL and FPL), the poverty gap decreased to 19.6 percent based on the UBPL, as opposed to 6.2 percent when the FPL is employed.

## 2.5 A brief review of studies using non-money-metric approaches

Bhorat & Van der Westhuizen (2013) examined the non-money-metric dimensions of poverty in South Africa over the period 1993 to 2004, using the 1993 South African Integrated Household Survey from the PSLSD, as well as the 1999 OHS and 2004 GHS. By employing the Factor Analysis (FA) method, the study found government asset and service delivery to have a positive impact on the livelihoods of the poor, reflected by the increase in the mean asset values of households. In short, non-income welfare significantly improved over the period analysed. Finn *et al.* (2013) on the other hand, utilised the 1993 PSLSD and 2010 NIDS to analyse multidimensional poverty in South Africa. Applying the Multidimensional Poverty Index (MPI) approach, the study found that MPI poverty had decreased considerably over the period, attributing this decrease to improved access to public services and increased public expenditure.

In the study by Bhorat *et al.* (2015), non-income welfare was investigated using the 1993 PSLSD as well as the first two waves (2008 and 2010/2011) of the NIDS. Employing the Principle Components Analysis (PCA), the authors found that the ownership of assets was highly correlated with higher non-income welfare. Additionally, the results of the study indicated an overall decrease of about 17 percent in asset poverty over the period considered. The authors also highlight significant decreases in poverty among the poorer quintiles as well as among female-headed households. In contrast to Bhorat *et al.* (2015), Stats SA (2014b) used the 2001 and 2011 Census data to investigate multidimensional poverty in South Africa. The conclusion of the study was that multidimensional poverty decreased over the period but it was more associated with a decrease in the poverty headcount ratio than a decline in the intensity of poverty.

Bhorat *et al.* (2014) performed an analysis on the 1993 PSLSD, 1999 OHS as well as the 2005 and 2010 GHS, in an attempt to determine whether non-income welfare had improved since the advent of democracy. The study found that an increased number of households now had access to public assets such as drinking water, energy for cooking, energy for lighting as well as sanitation facilities. In brief, asset poverty was found to have decreased considerably over the period, accompanied by a decrease in the headcount rate and poverty ratio (especially among female-headed households). Adams *et al.* (2015) instead utilised the 2005, 2008 and 2012 GHS to assess the quality of public assets and service delivery in South Africa. The results of the study indicated an overall improvement in the access to assets and services, particularly

among the black racial group, however the black population were still found to contain the majority of the poor. Furthermore, the study recorded an overall decrease in poverty over the period, as indicated by the decrease in the poverty headcount ratio.

Rogan (2016) utilised an income-based and multidimensional approach to measure the gender poverty gap in South Africa, using the first wave (2008) of the NIDS. Even though poverty had shown a general decline since 2000, women and people living in female-headed households were still found to be significantly worse off. In terms of income, women were found to be 30 percent poorer than men. Additionally, female-headed households were found to be between 38 percent and more than 100 percent poorer than their male-headed counterparts. Burger *et al.* (2017) adopts an alternative approach, namely the Total Fuzzy and Relative (TFR) approach to examine spatial and racial dimensions of poverty and deprivation in South Africa. The key finding of the study was that the average deprivation experienced by South Africans decreased from 0.44 to 0.29 over the period.

Omotoso & Koch (2017) utilised the 2002 and 2014 GHS to analyse child poverty in South Africa. By applying the MPI approach, the study found that child MPI decreased over the period. The authors were however, particularly concerned about the rising levels of deprivation in relation to children's health status. Mushongera *et al.* (2017) also utilised the MPI approach to analyse multidimensional poverty in South Africa, using the data from the 2011 and 2013 Quality of Life survey. The key finding of the study associated multidimensional poverty with low-income households, as these households were found to experience poverty most intensively.

## **2.6 Conclusion**

Poverty serves as a significant contributor to the deterioration in economic wellbeing. As a result, chronic and transitory poverty are associated with an array of social, political and economic factors that act to hurt the poor. Although attention is mainly given to poverty as a phenomenon characterised by a lack of basic needs because of a persistent lack of income, other factors were also identified to be contributors to an individual's level of poverty, such as undernourishment, restricted access to education and basic services, inadequate housing and hazardous environments. Poverty is thus considered multidimensional in nature.

The empirical literature reviewed considered poverty from both the money-metric and non-money-metric perspective. The general conclusion from the money-metric studies reviewed is that money-metric poverty increased in the 1990s, before a downward trend took place since 2000. The studies on non-money-metric poverty fall beyond the scope of this study and were thus only briefly reviewed. However, the general conclusion from these studies is that non-money-metric poverty has been decreasing continuously since the advent of democracy, and this trend is not surprising, considering that the government has spent a lot to improve basic service delivery since the end of apartheid.

There are only a few rare studies on chronic and transitory poverty using balanced panel data in South Africa. Most of these studies used the KIDS data, which does not provide a national representation of poverty. In addition, all but one study used less than four waves of the NIDS. Nonetheless, for the only study that used all four waves of the NIDS, there was no detailed analysis on the characteristics of the different groups of poor but the focus was rather on trigger events associated with poverty status transition. It is apparent that all these panel studies used per capita income, but in a developing country context, expenditure is a more reliable variable (to be explained in Chapter Three). Finally, all these studies did not use the same approach to identify the different groups of poor – some used a straightforward approach by simply counting the number of times (waves) the person was under the poverty line (e.g. all of the KIDS studies); while others used a more sophisticated approach by comparing mean per capita income across all waves with a poverty line (e.g. Finn & Leibbrandt, 2017). Hence, the next chapter would examine poverty dynamics using three different approaches.

## CHAPTER THREE: METHODOLOGY AND DATA

### 3.1 Introduction

This chapter outlines the methodology and data employed in this study. All four waves (2008-2015) of the NIDS data are used. The analysis is limited to a balanced panel of respondents who took part in all waves, as the focus of the study is on the poverty dynamics of individuals across these waves. The chapter is structured as follows: Section 3.2 explains the methodology used in the study. Section 3.3 provides an overview of the NIDS data, before Section 3.4 concludes the chapter.

### 3.2 Methodology

The empirical approach undertaken aims to use the balanced component of the panel data from the first four available waves of the NIDS to examine poverty dynamics. To recapitulate and elucidate the data collected on poverty dynamics and transitions, the quantitative analysis will be employed through the use of descriptive statistics and various econometric models.

#### 3.2.1 Poverty line

This study uses the lowerbound poverty line as mentioned in Section 2.2.4.1. Inflating this poverty line forward to 2016 December prices using Stats SA's CPI headline index (Stats SA, 2017), the poverty line of R689 per capita per month is derived.

#### 3.2.2 Welfare measure

Poverty levels are said to differ as a result of the welfare measure employed. When evaluating poverty in developed countries, preference is given to income as a welfare measure because income generally comes from salaries and wages, thereby making it easier to measure. In the South African context, this study rather intends to use expenditure as a welfare measure. It is because in developing countries income is relatively harder to measure, as much of it comes from self-employment, or own-account agricultural and informal activities associated with volatile earnings (Haughton & Khandker, 2009; Yu, 2016).<sup>11</sup> Even though random irregularities and seasonal patterns could be present in expenditure, they are normally smaller than those of income, as expenditure is less tied to seasonal and weather-related patterns in agriculture (Yu, 2016).

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<sup>11</sup> Finn & Leibbrandt (2017) employed income as a welfare measure in their NIDS balanced panel study.

### 3.2.3 Identification of the different groups of poor

Whereas Finn & Leibbrandt (2017) only used one approach to distinguish the different groups of poor (refer to Section 2.4.5), this study intends to use three approaches to identify the chronically poor, transiently poor and chronically non-poor. Nonetheless, the third method serves as the main focus of the analysis.

Method (1) adapts the approach by Anand *et al.* (2015)<sup>12</sup>. Restricting the analysis to the first and fourth wave of the balanced panel component, the transition in poverty status is coded as follows:

- 1) **Unchanged (poor & poor):** those identified as poor in both waves 1 and 4.
- 2) **Poverty entry:** those classified as non-poor in wave 1 but were identified as poor in wave 4. In other words, the poverty entry rate represents the proportion of non-poor in wave 1 who entered poverty in wave 4.
- 3) **Poverty exit:** those classified as poor in wave 1 but identified as non-poor in wave 4. Differently said, the poverty exit rate means the percentage of poor in wave 1 who moved out of poverty in wave 4.
- 4) **Unchanged (non-poor & non-poor):** those classified as non-poor in both waves.

Method (2) simply adds up the total number of times (waves) someone is identified as poor; this straightforward approach was adopted by Carter & May (2001), Roberts (2001), Woolard & Klasen (2005), Agüero *et al.* (2007) and Pool (2017). The following three groups are identified:

- 1) **Chronic poor:** those who were identified as poor in all four waves;
- 2) **Transitory poor:** those classified as poor in one to three waves;
- 3) **Chronic non-poor:** those who were identified as non-poor in all four waves.

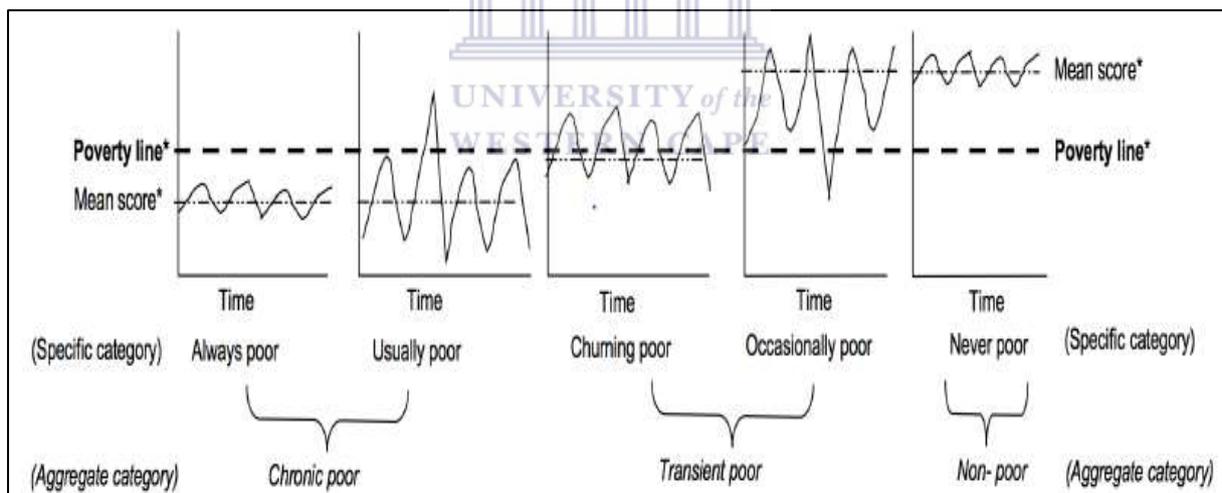
The more thorough approach, method (3), proposed by Hulme & Shepherd (2003) and was used by Finn & Leibbrandt (2017), defines the different groups of poor as follows (see also Figure 3.1 for the graphical illustration):

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<sup>12</sup> This study analyses how labour market transition probabilities depend on individual characteristics. The authors constructed three dependent variables: (i) job-finding rate, which is concerned with individuals who are unemployed in quarter  $t$  but became employed in quarter  $t+1$ ; (ii) the opposite interpretation applies to the second variable of interest, the job-exit rate; (iii) the probability of transitioning to formal employment, which looks at individuals who are either informally employed or unemployed in quarter  $t$  but are formally employed in quarter  $t+1$ .

- 1) **Chronic poor – always:** real household expenditure per capita was below the poverty line in all four waves of NIDS.
- 2) **Chronic poor – usually:** mean real household per capita expenditure over the four waves is less than the poverty line and not in the proximity of this line (the meaning of “proximity” is explained below), but the person was only identified as poor between one and three waves.
- 3) **Transitory poor – churning:** mean real household per capita expenditure over the four waves is in the proximity of the lowerbound poverty line (10% below the poverty line, i.e. R619.79) but the person was only identified as poor between one and three waves.
- 4) **Transitory poor – occasionally:** mean real household per capita expenditure over the four waves is above the poverty line, but the respondent was classified as poor in one to three waves.
- 5) **Chronic non-poor:** real household expenditure per capita was above the poverty line in all four waves of NIDS.

**Figure 3.1: Graphical illustration of the five groups of poor under method (3)**



Source: Finn & Leibbrandt (2017: 13).

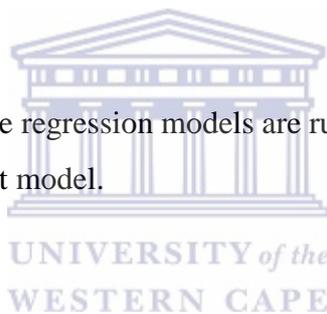
### 3.2.4 Descriptive analysis

The quantitative analysis will investigate the balanced panel across all four waves of the NIDS data to examine the person- and household-level characteristics of the different groups of poor (with greater emphasis on method (3), unless stated otherwise), using the lowerbound poverty line mentioned in Section 3.2.1. The focus of the descriptive statistics will be on:

- (A) Transition matrices (focusing on the results derived from method (1)): the study intends to use absolute expenditure transition matrices to illuminate the movement of households across the poverty lines mentioned above, with particular focus on the comparison of wave 1 versus wave 4.
- (B) Geographical characteristics: province, geotype.
- (C) Personal characteristics: age, gender, race, educational attainment.
- (D) Labour market characteristics: labour market status, the number of times the person is employed.
- (E) Household characteristics: dependency ratio, total number of employed household workers, the gender, race and income source characteristics of the head of the household where the person comes from.
- (F) Non-income welfare characteristics: ownership of private assets, access to public services.

### 3.2.5 Econometric analysis

For the econometric analysis, three regression models are run: a probit model, ordered logistic model and a random-effects probit model.



#### 3.2.5.1 Probit model

Two probit regressions are conducted to investigate the impact of the person- and household-level characteristics on the likelihoods of poverty entry and poverty exit respectively, based on method (1). The dependent variable in both cases is modelled as linear combination of binary outcome variables:

- Poverty entry likelihood: the dummy variable equals zero if the person is classified as non-poor in both waves 1 and 4, but one if the person is non-poor in wave 1 but poor in wave 4;
- Poverty exit likelihood: the dummy variable is equal to zero if the person is poor in both waves 1 and 4, but one if the person is poor in wave 1 but non-poor in wave 4.

In both probit regressions, the marginal fixed effect (MFX) measures the instantaneous rate of change of a variable. That is, the MFX provides a good approximation of the change in the dependent variable for a unit change in the independent variable (Festus *et al.*, 2015: 15).

### 3.2.5.2 Ordered logistic model

In an ordered probit model the independent (response) variable has more than two ordered, or ranked, categories that are often ordinal in nature (Gujarati & Porter, 2009). As commonly found in survey research, these responses are measured on a Likert scale, for example “strong disapprove,” “disapprove,” or “approve”. Another example would be the responses in a customer satisfaction survey, such as “not satisfied at all,” “moderately satisfied,” or “completely satisfied”. These responses may then be coded as 1 (not satisfied at all), 2 (moderately satisfied), 3 (completely satisfied), indicating clear ranking among the categories. However, one cannot say that 2 (moderately satisfied) is twice 1 (not satisfied at all) or 3 (completely satisfied) is three times 1 (not satisfied at all).<sup>13</sup>

An ordered logistic regression analysis will be conducted on the basis of method (3), as the five poverty groups in this method involve ordered ranking. An ordered logistic regression will enable the study to uncover which of the explanatory variables has a statistically significant influence on the dependent variable (the different groups of poor mentioned in method (3)). In this case it will be used to predict the poverty status of individuals over time based on their individual-level (such as the age, gender, race, education, labour market status) and household-level (such as the province of residence, number of employed in the household, number of social grants recipients in the household) characteristics. Based on method (3), the ordinal dependent variable will be coded as follows: (1): Chronic poor – always; (2): Chronic poor – usually; (3): Transitory poor – churning; (4): Transitory poor – occasionally; (5): Chronic non-poor.

### 3.2.5.3 Random-effects probit model

A random-effects probit model is particularly useful when the same units are sampled repeatedly at each level of an independent variable (Gibbons & Bock, 1987). In other words, the aim of the model is to estimate trend in a binary variable measured repeatedly in the same subjects. Relative to the study, NIDS measured poverty status four times. The rationale behind

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<sup>13</sup> Looking at recent South African studies that conducted the ordered logistic model, to measure self-perceived relative income poverty, Jansen *et al.* (2015) applies ordered ranking to the participant’s self-assessment of his/her income as compared with the income of other people in the community. The dependent variable was coded as follows: Option 1 – much above average income; Option 2 – above average income; Option 3 – average income; Option 4 – below average income; and Option 5 – much below average income. On the other hand, Finn *et al.* (2012) apply ordered ranking to investigate unconditional income distributions by education between 1993 and 2008. The unconditional distributions were constructed by dividing up household per capita income into five income quintiles, which then functioned as the dependent variable in an ordered probit model.

the random effects model is that the variation across entities is assumed to be random and uncorrelated with the predictor (or independent) variables included in the model. The model is therefore advantageous because it allows for the inclusion of time-invariant variables (for example, gender). Emphasised by Gibbons & Hedeker (1994), the model provides the maximum likelihood estimates for time-varying and time-invariant covariates in the longitudinal case and covariates which vary at the level of the individual.

Adapting the model for longitudinal data, the random effects model may be defined as follows:

$$y_{ik} = \alpha_i + \beta_0 + \beta_1 t_{ik} + \beta_2 x_{2i} + \beta_3 x_{3ik} + \varepsilon_{ik}$$

Where

$y_{ik}$  = the unobservable continuous “response strength” or “propensity” on time k for subject i (this dependent variable is binary in this study)

$t_{ik}$  = the time that corresponds to the kth measurement for subject i

$\beta_0$  = the overall population intercept or response propensity at baseline  $t = 0$

$\beta_1$  = the overall population trend coefficient describing rate of change in response propensity over time

$\alpha_i$  = the random effect for subject i

$\beta_2$  = the fixed effect of the subject level covariate  $x_{2i}$

$\beta_3$  = the fixed effect of the time-specific covariate  $x_{3ik}$

$\varepsilon_{ik}$  = an independent residual distributed  $N(0, \sigma^2)$

In this case,  $\alpha_i$  is a coefficient describing deviation of subject i from the overall group response conditional on the covariate vector for that subject and the assumed distribution for  $\alpha_i$  is  $N(\mu_\alpha, \sigma_\alpha^2)$ . In practice, the population intercept  $\beta_0$  and trend  $\beta_1$  are integrated into the model as the first two columns of  $X_i$ , in which the first column is a vector of ones and the second column contains the  $n_i$  measurement occasions for subject i (Gibbons & Hedeker, 1994: 287).

As in the probit model, the dependent variable is modelled as linear combination of binary outcome variables (0: non-poor; 1: poor), and thus a random-effects probit regression is run.

### 3.3 Data

The NIDS data is the first national panel data of its kind in South Africa and forms part of the initiative by the government to track and comprehend fluctuations in poverty status over time (Casale & Posel, 2011). NIDS was established by the Southern Africa Labour and Development Research Unit (SALDRU), primarily based at the University of Cape Town's School of Economics.

The study began in 2008 with a national sample in excess of 28 000 individuals in 7 300 households across South Africa. The survey is continually repeated with the same respondents after a 2-year interval. However, over time people move and household compositions change. In order to account for attrition, NIDS therefore makes provision to record events such as a death within a household for the purpose of ensuring an up-to-date database containing this sort of information before going into field for the next wave (Leibbrandt *et al.*, 2009). These missing permanent sample members are then replaced as they move away.

A distinctive attribute of the NIDS data is its adeptness to model the dynamics of poverty over time. NIDS provides critical income and non-income welfare data for the analysis of welfare trends across South Africa. In the first wave of the study 31 144 individuals were interviewed. This number increased to 36 156 in 2010/2011 (wave 2). By the time the third wave was released, the sample size increased to 42 150 in 2012. The fourth wave of the study was conducted in 2014/2015 and accounted for the greatest number of respondents (49 540 individuals). However, this study restricts the analysis to a balanced panel of 17 235<sup>14</sup> respondents who were successfully interviewed in all four waves to investigate the poverty dynamics of these individuals over time.

For all the forthcoming empirical analysis in the next chapter, all the results are weighted with the panel weight variable. The total weighted number of people amounted to 34 173 516 who took part in all four waves with specified expenditure information.

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<sup>14</sup> The original balanced panel sample size is 17 270 but 35 observations were omitted because these individuals did not have specified expenditure information in all four waves, even after imputations.

### **3.4 Conclusion**

Chapter Three discussed the methodology and data to be employed in this study. The section presented an overview of the poverty line, as well as the welfare measure this study intends to utilise. Three methods for identifying the different groups of poor were discussed in the chapter, with reference being made to the targeted descriptive statistics of the balanced panel. The econometric approach the study intends to follow has also been identified. Lastly, the study intends to use all four waves (2008-2015) of the NIDS, as the focus of the study is on the poverty dynamics of individuals over the seven-year period.



## CHAPTER FOUR: EMPIRICAL FINDINGS

### 4.1 Introduction

The objective of the empirical analysis is to examine the characteristics of the different groups of poor using the three approaches mentioned in Chapter Three, with greater emphasis on the results derived from method (3). The chapter is structured as follows: Section 4.2 presents the descriptive statistics of the balanced panel, while Section 4.3 presents the results of the econometric analysis. Finally, Section 4.4 concludes the chapter.

### 4.2 Descriptive statistics

#### 4.2.1 Profile of the balanced panel

Table 4.1 presents the summary statistics of the balanced panel. For this panel, the female share was more dominant (54%). As expected, Africans accounted for the greatest share of the balanced panel (84%), whereas the coloured and white proportions stood at 8% and 6% respectively. Indians, on the other hand, accounted for the smallest proportion of the balanced panel (2%). With regard to the age categorical variable at the time of wave 1, those aged younger than 15 years accounted for 37% of the balanced panel, whereas those aged between 15-24 years accounted for the second highest proportion at about 19%.

Table 4.1: Summary statistics of the balanced panel (%)

<b>Gender</b>		<b>Province of residence</b>	
Male	46.23	Western Cape	8.26
Female	53.77	Eastern Cape	11.60
<b>Race</b>		Northern Cape	2.43
African	84.33	Free State	5.30
Coloured	7.81	KwaZulu-Natal	21.33
Indian	2.20	North West	5.04
White	5.65	Gauteng	21.09
<b>Age at Wave 1</b>		Mpumalanga	8.32
Younger than 15 years	36.68	Limpopo	9.49
15-24 years	18.85	Province changed	7.15
25-34 years	13.66	<b>Geo-type</b>	
35-44 years	11.92	Traditional	33.27
45-54 years	8.98	Urban	50.49
55-64 years	5.93	Farms	3.63
65 years or above	3.97	Geo-type changed	12.61
Unspecified	0.00		

Table 4.1: Continued

	Wave 1	Wave 2	Wave 3	Wave 4
<b>Educational attainment</b>				
None	22.10	17.21	13.01	6.85
Incomplete primary	26.36	25.65	25.03	23.56
Incomplete secondary	34.06	37.63	40.44	45.09
Matric	11.87	12.06	12.33	12.83
Matric + Certificate/Diploma	3.88	5.59	7.03	8.96
Degree	1.29	1.51	1.87	2.29
Other/Unspecified	0.44	0.36	0.29	0.41
<i>Proportion with at least Matric</i>	<i>17.04</i>	<i>19.16</i>	<i>21.23</i>	<i>24.08</i>
<b>Labour market status</b>				
Inactive	37.70	48.58	45.35	44.84
Unemployed	20.06	14.75	16.65	12.54
Employed	42.25	35.67	37.72	42.33
Unspecified	0.00	1.01	0.28	0.29
<b>Dependency ratio</b>				
0	15.76	16.46	17.97	20.80
(0; 0.5)	15.30	18.25	18.39	17.53
0.5	11.09	11.30	11.34	11.59
(0.5;1)	14.91	15.38	14.16	13.77
1	17.56	15.54	16.63	15.00
(1; 2)	11.70	11.84	10.54	10.08
[2;+∞)	12.54	10.13	9.72	9.54
Undefined <sup>#</sup>	1.12	1.09	1.29	1.68
<i>Mean</i>	<i>0.90</i>	<i>0.81</i>	<i>0.79</i>	<i>0.76</i>
<b>Number of employed in the household</b>				
None	30.82	35.88	32.17	27.73
One person	40.34	38.60	38.81	38.76
Two persons	19.57	18.73	20.16	22.32
More than two persons	9.26	6.79	8.86	11.19
<i>Mean</i>	<i>1.12</i>	<i>1.00</i>	<i>1.10</i>	<i>1.21</i>
<b>Gender of household head</b>				
Male	49.50	42.34	32.99	42.58
Female	50.50	57.66	67.01	57.42
<b>Race of household head</b>				
African	79.23	83.60	83.44	82.48
White	5.80	5.83	5.83	6.40
Coloured or Indian	14.97	10.57	10.73	11.12
<b>Employment status of household head</b>				
Employed	46.63	38.79	40.66	46.74
Not employed	53.37	61.21	59.34	53.26
<b>Coming from a household receiving income from labour market activities</b>				
Yes	58.21	50.15	58.02	59.39
No	41.68	49.47	41.91	40.59
Unspecified	0.11	0.38	0.07	0.02

<sup>#</sup> It is possible that some individuals come from households with undefined dependency ratio, because there are no working-age members in these households.

Table 4.1: Continued

	Wave 1	Wave 2	Wave 3	Wave 4
<b>Coming from a household receiving income from social grants</b>				
Yes	64.20	61.97	64.25	63.79
No	35.39	37.61	35.68	36.02
Unspecified	0.41	0.42	0.07	0.19
<b>Household size</b>				
1 person	5.19	5.85	6.86	8.95
2 persons	8.47	7.78	8.98	9.98
3 persons	12.71	11.31	12.72	13.53
4 persons	16.44	15.00	14.15	14.69
5 persons	15.40	14.88	14.56	13.62
6-10 persons	33.13	36.12	34.93	31.73
More than 10 persons	8.64	9.06	7.81	7.49
<i>Mean</i>	<i>5.61</i>	<i>5.79</i>	<i>5.54</i>	<i>5.31</i>
<b>Dwelling type</b>				
Formal	71.22	73.20	78.34	79.57
Informal	9.77	10.68	8.35	9.55
Traditional	16.19	14.57	12.32	9.61
Other	0.78	0.87	0.75	1.22
Unspecified	2.04	0.69	0.23	0.03
<b>Dwelling ownership status</b>				
Owned + fully paid off	73.54	72.39	73.75	74.09
Owned + not fully paid off	9.14	10.06	5.70	6.34
Not owned + rent free	6.91	8.42	10.53	9.01
Not owned + pay rent	10.40	9.12	10.01	10.55
<b>Water source</b>				
Piped water in dwelling	39.63	50.09	43.71	46.13
Piped water in site	26.94	22.42	30.05	29.38
Public	20.77	18.15	15.44	14.02
Other	12.41	9.20	10.64	10.47
Unspecified	0.25	0.13	0.16	0.01
<b>Sanitation facility</b>				
Flush/Chemical toilet	49.59	59.53	57.28	57.51
Pit latrine with ventilation pipe	12.10	11.70	13.86	15.48
Pit latrine without ventilation pipe	27.37	20.58	22.31	21.27
Other	3.77	4.43	2.92	3.40
None	6.80	3.45	3.47	2.35
Unspecified	0.38	0.29	0.15	N/A
<b>Fuel source for cooking</b>				
Electricity/Solar	65.32	75.05	76.49	79.22
Gas	2.74	1.27	2.82	2.72
Paraffin/Coal	12.52	8.47	5.69	4.54
Other	18.75	14.16	14.91	13.44
None	0.01	0.48	0.05	0.07
Unspecified	0.65	0.59	0.04	0.01

Table 4.1: Continued

	Wave 1	Wave 2	Wave 3	Wave 4
<b>Refuse removal once a week</b>				
Yes	48.60	49.83	53.16	54.54
No	50.34	49.90	46.82	45.38
Unspecified	1.06	0.27	0.02	0.08
<b>Ownership of landline telephone</b>				
Yes – In working condition	10.72	12.22	9.65	8.43
Yes – Not in working condition	5.25	3.04	1.60	1.29
No	83.88	84.44	88.55	90.21
Unspecified	0.15	0.30	0.20	0.07
<b>Ownership of cellular telephone</b>				
Yes	88.01	84.15	90.50	84.13
No	11.47	15.52	9.47	15.85
Unspecified	0.52	0.33	0.03	0.02
<b>Ownership of television</b>				
Yes	69.84	72.89	82.59	82.74
No	30.00	23.00	17.32	17.22
Unspecified	0.16	4.11	0.09	0.04
<b>Ownership of computer</b>				
Yes	10.20	11.02	15.39	20.26
No	89.17	84.80	84.56	79.61
Unspecified	0.63	4.18	0.05	0.13
<b>Ownership of fridge</b>				
Yes	60.77	64.75	75.44	80.04
No	39.10	31.18	24.54	19.94
Unspecified	0.13	4.07	0.02	0.02
<b>Ownership of washing machine</b>				
Yes	23.12	26.66	31.14	37.96
No	76.51	69.29	68.81	62.00
Unspecified	0.37	4.05	0.05	0.04

Source: Own calculations from the first four waves of NIDS.

Turning to the province of residence, only 7% of the panel members had their province of residence changed, but the remainder of the balanced panel stayed in the same province in all four waves. The three dominant shares were KwaZulu-Natal (21%), Gauteng (21%), and Eastern Cape (12%). Looking at the geo-type, 13% of the balanced panel had their geo-type changed. For the remainder, half of them lived in urban areas in all four waves.

The individuals in the balanced panel have become more educated, as indicated by the upward trend in the proportion of individuals with at least Matric. Significantly, the share with no schooling fell from 22% in wave 1 to 7% in wave 4. In view of the labour market status, an encouraging trend can be seen as the proportion of the balanced panel who declared to be

unemployed decreased, although the employed share remained unchanged (42%). As far as the dependency ratio<sup>15</sup> is concerned, more working-age individuals were seen to be less burdened, with 21% of the balanced panel having a dependency ratio of 0 in wave 4. At the other end of the spectrum, the proportion of the balanced panel with a high dependency ratio (2 or more) decreased from 13% in wave 1 to 10% in wave 4. These key results explain why the mean dependency ratio showed a continuous downward trend across all four waves.

In relation to the number of employed in the household, the proportion of the balanced panel who came from households with zero or one employed member decreased by wave 4, with the opposite being said for those panel members who came from households where two or more persons were employed. In all four waves, more than half of the balanced panel members came from female-headed households. Also, there were about 80% of individuals who came from African-headed households. Despite some fluctuations throughout the waves, the proportion of the balanced panel who came from households headed by an employed individual remained the same (47%). With the exception of wave 2, around 58% to 59% of individuals from the balanced panel came from households who received labour market income. Conversely and again with the exception of wave 2, about 64% of individuals from the balanced panel came from households who received social grant income. Finally, the mean household size was about 5.5 across the waves.

In general, the non-income welfare living conditions improved across all four waves. This is not surprising given that South Africa's first democratically elected government set out to provide basic services to all households in the republic, which included the delivery of free basic electricity (50kWh per household per month) to underprivileged households. In addition, the government targeted the provision of free basic water, which totalled up to 6 kilolitres per household, as well as the provision of a better quality ventilated pit toilets. Lastly, in its Housing Subsidy Program, the government aimed to provide low-cost housing as part of its pro-poor programme (Bhorat & Van der Westhuizen, 2013:1). This is, however, with the exception of the share of the balanced panel that owned landline telephones that were in good working condition as well as those individuals who owned cellular telephones.

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<sup>15</sup> The dependency ratio is derived as: the sum of the number of dependents aged 0-14 years and over 64 years) / number of household members aged 15-64 years.

#### 4.2.2 Transition matrices

Table 4.2 shows the poverty transition matrix of the balanced panel for the wave 1 to 4 period, which captures movements in and out of poverty. Of those who were non-poor in wave 1, more than three quarters of them remained non-poor in wave 4. In contrast, for those balanced panel members who were poor in wave 1, almost two thirds remained poor in wave 4. In other words, poverty entry rate was 22.8% whereas poverty exit rate was 36.6%.<sup>16</sup>

Table 4.2: Simple poverty transition matrix – comparing wave 1 and wave 4 (*row total*)

		Wave 4	
		Non-poor	Poor
Wave 1	Non-poor	77.19	22.81
	Poor	36.62	63.38

Table 4.3 presents a more detailed poverty transition matrix of the balanced panel between waves 1 and 4 by apportioning the transition matrix into expenditure classes. Panel members were considered poor if their expenditure fell below the poverty line (PL), with the severely poor being those individuals whose real household expenditure per capita was less than half the poverty line. Conversely, panel members were considered non-poor if their real household expenditure per capita exceeded that of the poverty line, with the 2+ PL class representing the most affluent group.

Table 4.3: Detailed poverty transition matrix – comparing wave 1 and wave 4 (*row total*)

		Wave 4			
		0-0.5 PL	0.5-1 PL	1-2 PL	2+ PL
Wave 1	0-0.5 PL	<b>38.13</b>	33.89	17.09	10.90
	0.5-1 PL	23.76	<b>32.70</b>	25.40	18.15
	1-2 PL	8.24	30.13	<b>35.21</b>	26.42
	2+ PL	2.46	8.83	16.98	<b>71.72</b>

To derive the detailed poverty status in each wave, the lowerbound poverty line (LBPL) was used to capture household movements into four expenditure classes: (1) less than half the LBPL

<sup>16</sup> Table A.1 to A.3 compares other waves but a similar result is found: For those who are non-poor in the earlier wave, majority of them remain non-poor in the later wave. Similarly, for those who are poor in the earlier wave, majority of them remain non-poor in the later wave.

of R689 (i.e. R344.50); (2) between R344.50 and less than the LBPL of R689; (3) between the LBPL of R689 and less than twice this amount (i.e. R1 378); (4) twice the poverty line or above. The main diagonal elements of the matrix are presented in bold, and indicate the proportion of the balanced panel in each row that did not change their position between the two waves. Individuals to the left of the bold diagonal line figures experienced a decline in their well-being as measured by the poverty line employed in the study. Table 4.3 indicates that with the exception of the most affluent group in wave 1, none of the main diagonal elements exceeded 50%, indicating considerable mobility among the expenditure classes.

For those panel members defined as severely poor in wave 1, almost 40% were just as poor in wave 4, while only 27% escaped poverty. Looking at the next expenditure class (those that had wave 1 expenditures between half and one times the LBPL), 24% had fallen below half of the LBPL, whereas 44% of them had moved to higher categories in wave 4.

Turning to the panel members that had expenditures between one and two times the LBPL, about 35% remained in this expenditure class, while about 38% of them entered poverty. Also, 26% had improved their position by spending at least twice the LBPL in wave 4. With regard to the most affluent group, slightly above 70% remained in this category, while about 28% of them had moved to lower classes in wave 4.

In Table 4.4, each cell presents the total proportion of the balanced panel in each poverty transition category. Almost 37% of the balanced panel were non-poor in both waves, whereas 33% were poor in both waves. Roughly 20% of the balanced panel members exited poverty at the end of the period, while the opposite is true for 11% of the balanced panel.

Table 4.4: Simple poverty transition matrix – comparing wave 1 and wave 4 (*cell total*)

		Wave 4	
		Non-poor	Poor
Wave 1	Non-poor	36.59	10.81
	Poor	19.26	33.34

Table 4.5 presents the percentage of the balanced panel people in each detailed poverty transition category, upon comparing their real per capita expenditure in waves 1 and 4. The

four proportions (8.93%, 9.54%, 7.10% and 19.54%) represent those who stayed in the same expenditure category. In particular, 8.93% of the balanced panel were severely poor in both waves (that is, they are regarded as the “poorest of the poor”), whereas 19.54% had their expenditure amount being at least twice the poverty line in both waves (that is, they are the “richest of the non-poor”). The sum of the proportions to the left of the diagonal (22.38% in total) stands for individuals whose expenditure in wave 4 was less than the expenditure in wave 1. In contrast, the sum of the proportions to the right of the diagonal (32.52% altogether) represented people whose expenditure in wave 4 was higher than the expenditure in wave 1.

Table 4.5: Detailed poverty transition matrix – comparing wave 1 and wave 4 (*cell total*)

		Wave 4			
		0-0.5 PL	0.5-1 PL	1-2 PL	2+ PL
Wave 1	0-0.5 PL	<b>8.93</b>	7.94	4.00	2.55
	0.5-1 PL	6.93	<b>9.54</b>	7.41	5.29
	1-2 PL	1.66	6.08	<b>7.10</b>	5.33
	2+ PL	0.67	2.41	4.63	<b>19.54</b>

Source: Own calculations from the first four waves of NIDS.

#### 4.2.3 Descriptive statistics on the different groups of poor

Table 4.6 presents the profile of the people in each poverty status category using method (1). There are four categories in total: group A: unchanged (wave 1: poor; wave 4: poor), group B: poverty entry (wave 1: non-poor; wave 4: poor), group C: poverty exit (wave 1: poor; wave 4: non-poor) and group D: unchanged (wave 1: non-poor; wave 4: non-poor). On the other hand, Table 4.7 presents the characteristics of the individuals in each poverty status category using method (2), with three categories in total: group I: chronic poor (defined as poor in all four waves); group II: transitory poor (classified as poor in one to three waves); group III: chronic non-poor (defined as non-poor in all four waves).

Despite the results of these two tables not being the main attention of the analysis (it was mentioned before that method (3) is the main focus of the empirical analysis), the results from the two tables indicate that:

- Group A from method (1) and group I from method (2) share these similar attributes: they were more likely to be females, Africans, aged younger than 25 years at the time of

wave 1 (mean age being slightly above 20 years), living in the traditional areas in KwaZulu-Natal, Eastern Cape and Limpopo, without Matric, and inactive in the labour market. Also, they came from households headed by unemployed female Africans with relatively higher mean dependency ratio (above one) and household size (about seven), with either none or only one employed member, and with greater likelihood of the households receiving social grant income rather than labour market income.

- In contrast, group D from method (1) and group III from method (2) share these highly similar characteristics: they were more likely to be males, Africans (although the emergence of the white share is clear), older on average (mean age slightly above 32), living in urban areas in the Gauteng and Western Cape provinces, with Matric, and employed in the labour market. Moreover, they came from households headed by employed male Africans (the White and Coloured/Indian proportions are noteworthy) with relatively lower mean dependency ratio (just below 0.50) and household size (roughly three), with either one or two employed members, and with greater likelihood of the households receiving labour market income, as opposed to social grant income.

Table 4.6: Demographic characteristics of the balanced panel in each poverty status category using method (1)

	Group A	Group B	Group C	Group D
<b>Gender</b>				
Male	42.09	42.71	46.31	51.01
Female	57.91	57.29	53.69	48.99
<b>Race</b>				
African	96.78	90.15	92.71	66.87
Coloured	3.22	6.72	6.01	13.26
Indian	0.00	3.13	0.30	4.94
White	0.00	0.00	0.98	14.93
<b>Age at Wave 1</b>				
Younger than 15 years	47.59	37.25	38.99	25.34
15-24 years	17.65	21.04	25.17	16.04
25-34 years	9.88	13.82	12.88	17.49
35-44 years	8.68	11.39	8.01	17.06
45-54 years	7.20	7.69	7.96	11.50
55-64 years	4.84	5.08	4.60	7.87
Older than 64 years	4.16	3.70	2.38	4.70
Unspecified	0.00	0.00	0.00	0.01
<i>Mean age</i>	<i>22.34</i>	<i>24.77</i>	<i>23.06</i>	<i>30.48</i>

Table 4.6: Continued

	Group A	Group B	Group C	Group D
<b>Province</b>				
Western Cape	4.49	4.40	7.07	13.46
Eastern Cape	16.09	8.77	13.11	7.54
Northern Cape	1.46	3.18	2.53	3.04
Free State	4.26	4.14	6.18	6.14
KwaZulu-Natal	33.58	26.47	16.29	11.31
North West	4.76	5.27	5.31	5.08
Gauteng	9.51	20.07	16.10	34.56
Mpumalanga	9.45	13.35	8.41	5.74
Limpopo	12.79	8.11	11.87	5.63
Province changed	3.60	6.25	13.13	7.49
<b>Geo-type</b>				
Traditional	56.88	33.70	33.75	11.38
Urban	30.12	47.72	39.73	75.52
Farms	3.25	6.47	2.58	3.70
Geo-type changed	9.75	12.11	23.93	9.40
<b>Educational attainment at wave 1</b>				
None	33.02	21.45	21.16	12.85
Incomplete primary	32.67	28.65	28.26	18.92
Incomplete secondary	28.30	39.15	37.10	36.19
Matric	5.15	8.26	10.38	19.83
Matric + Certificate/Diploma	0.46	1.81	2.22	8.48
Degree	0.01	0.50	0.30	3.22
Other/Unspecified	0.38	0.18	0.58	0.51
<i>Proportion with at least Matric</i>	5.62	10.57	12.90	31.53
<b>Educational attainment at wave 4</b>				
None	10.37	7.50	6.02	3.90
Incomplete primary	33.07	23.09	23.75	14.95
Incomplete secondary	44.67	52.18	48.13	41.77
Matric	9.26	10.10	13.45	16.56
Matric + Certificate/Diploma	2.19	6.12	7.71	16.62
Degree	0.10	0.25	0.84	5.66
Other/Unspecified	0.34	0.76	0.10	0.54
<i>Proportion with at least Matric</i>	11.55	16.47	22.00	38.84
<b>Labour market status at wave 1</b>				
Inactive	47.95	39.99	43.87	27.87
Unemployed	24.15	21.82	24.70	14.97
Employed	27.91	38.19	31.42	57.17
Unspecified	N/A	N/A	N/A	N/A
<b>Labour market status at wave 4</b>				
Inactive	57.83	51.28	40.16	35.37
Unemployed	15.88	15.76	14.66	8.05
Employed	25.81	32.61	44.96	56.41
Unspecified	0.48	0.34	0.22	0.18

Source: Own calculations from the first and fourth waves of NIDS.

Table 4.7: Characteristics of the three groups of poor using method (2)

	Group I	Group II	Group III
<b>Gender</b>			
Male	41.19	45.70	52.22
Female	58.81	54.30	47.78
<b>Race</b>			
African	97.29	91.38	57.93
Coloured	2.71	7.33	13.76
Indian	0.00	0.87	6.95
White	0.00	0.41	21.36
<b>Age at wave 1</b>			
Younger than 15 years	49.31	37.29	23.03
15-24 years	17.33	22.20	13.91
25-34 years	9.08	13.95	17.64
35-44 years	8.02	10.62	18.28
45-54 years	7.36	7.90	12.63
55-64 years	4.69	4.96	9.04
Older than 64 years	4.21	3.04	5.47
<i>Mean age</i>	<i>21.85</i>	<i>24.31</i>	<i>32.26</i>
<b>Province of residence</b>			
Western Cape	3.67	7.70	13.84
Eastern Cape	16.49	11.34	7.27
Northern Cape	1.53	2.67	2.84
Free State	3.92	5.58	6.14
KwaZulu-Natal	36.23	18.73	11.73
North West	4.88	5.14	5.00
Gauteng	7.93	20.00	36.13
Mpumalanga	9.62	9.07	5.56
Limpopo	13.00	10.54	4.00
Province changed	2.71	9.23	7.48
<b>Geo-type</b>			
Traditional	60.96	32.24	8.03
Urban	26.94	46.93	80.53
Farms	3.63	3.25	4.39
Geo-type changed	8.47	17.58	7.05
<b>Educational attainment at wave 1</b>			
None	34.16	21.84	10.76
Incomplete primary	33.38	27.72	16.80
Incomplete secondary	26.75	37.37	34.81
Matric	4.88	10.61	21.16
Matric + Certificate/Diploma	0.40	1.78	11.37
Degree	0.02	0.33	4.41
Other/Unspecified	0.41	0.33	0.69
<i>Proportion with at least Matric</i>	<i>5.30</i>	<i>12.72</i>	<i>36.94</i>
<b>Educational attainment at wave 4</b>			
None	10.65	6.92	2.99
Incomplete primary	33.38	23.98	13.09
Incomplete secondary	44.75	48.31	39.17
Matric	8.70	12.19	18.13
Matric + Certificate/Diploma	2.00	7.42	18.78
Degree	0.14	0.77	7.36
Other/Unspecified	0.38	0.40	0.47
<i>Proportion with at least Matric</i>	<i>10.84</i>	<i>20.38</i>	<i>44.27</i>

Table 4.7: Continued

	Group I	Group II	Group III
<b>Labour market status at wave 1</b>			
Inactive	47.59	41.36	25.47
Unemployed	25.63	22.17	13.09
Employed	26.78	36.46	61.45
Unspecified	N/A	N/A	N/A
<b>Labour market status at wave 4</b>			
Inactive	59.52	43.49	35.41
Unemployed	15.63	14.52	6.50
Employed	24.42	41.63	58.01
Unspecified	0.42	0.36	0.07

Source: Own calculations from the first four waves of NIDS.

Tables 4.8, A.9 and A.10 presents the profile of the five groups of people using method (3) and the results are discussed in greater detail here. Looking across the categories, the female share was more dominant for the first four groups. With regard to the chronic non-poor, males held the higher proportion of this group (52%). As expected, for all five categories the African share was more dominant but for the first three groups they exceeded 90%. Despite being dominant in the chronic non-poor group, Africans only accounted for about 58% and the white share was considerably greater (21%), as opposed to the other four groups.

Table 4.8: Personal characteristics of the five groups of poor using method (3)

	Chronic poor (always)	Chronic poor (usually)	Transitory poor (churning)	Transitory poor (occasionally)	Chronic non-poor
<b>Gender</b>					
Male	41.19	45.31	41.21	46.56	52.22
Female	58.81	54.69	58.79	53.44	47.78
<b>Race</b>					
African	97.29	94.98	93.99	89.24	57.93
Coloured	2.71	5.02	6.01	8.65	13.76
Indian	0.00	0.00	0.00	1.43	6.95
White	0.00	0.00	0.00	0.68	21.36
<b>Age at Wave 1</b>					
Younger than 15 years	49.31	44.44	42.34	33.06	23.03
15-24 years	17.33	19.69	19.51	23.83	13.91
25-34 years	9.08	11.59	12.26	15.37	17.64
35-44 years	8.02	9.37	9.21	11.45	18.28
45-54 years	7.36	7.31	7.94	8.21	12.63
55-64 years	4.69	4.41	4.82	5.24	9.04
Older than 64 years	4.21	3.21	3.96	2.85	5.47
Unspecified	0.00	0.00	0.00	0.00	0.01
Mean age	21.85	22.56	23.66	25.25	32.26

Table 4.8: Continued

	<b>Chronic poor (always)</b>	<b>Chronic poor (usually)</b>	<b>Transitory poor (churning)</b>	<b>Transitory poor (occasionally)</b>	<b>Chronic non-poor</b>
<b>Province of residence</b>					
Western Cape	3.67	6.25	4.57	8.88	13.84
Eastern Cape	16.49	15.63	13.13	8.98	7.27
Northern Cape	1.53	2.01	2.90	2.96	2.84
Free State	3.92	5.80	9.07	4.95	6.14
KwaZulu-Natal	36.23	23.77	16.65	16.58	11.73
North West	4.88	5.02	5.68	5.12	5.00
Gauteng	7.93	12.73	11.64	24.79	36.13
Mpumalanga	9.62	10.31	11.56	8.10	5.56
Limpopo	13.00	12.67	15.16	8.81	4.00
Province changed	2.71	5.83	9.65	10.82	7.48
<b>Geo-type</b>					
Traditional	60.96	44.69	36.13	25.59	8.03
Urban	26.94	37.29	41.37	52.47	80.53
Farms	3.63	3.73	3.05	3.04	4.39
Geo-type changed	8.47	14.29	19.45	18.91	7.05
<b>Educational attainment at wave 1</b>					
None	34.16	26.83	23.64	19.13	10.76
Incomplete primary	33.38	33.79	33.83	23.86	16.80
Incomplete secondary	26.75	32.28	33.63	40.42	34.81
Matric	4.88	5.75	7.34	13.48	21.16
Matric + Certificate/Diploma	0.40	0.65	1.31	2.41	11.37
Degree	0.02	0.33	0.00	0.39	4.41
Other/Unspecified	0.41	0.38	0.26	0.32	0.69
<i>% with at least Matric</i>	<i>5.30</i>	<i>6.73</i>	<i>8.65</i>	<i>16.28</i>	<i>36.94</i>
<b>Educational attainment at wave 4</b>					
None	10.65	8.67	7.04	6.05	2.99
Incomplete primary	33.38	29.84	30.31	20.18	13.09
Incomplete secondary	44.75	47.37	49.10	48.66	39.17
Matric	8.70	10.35	7.74	13.75	18.13
Matric + Certificate/Diploma	2.00	3.64	5.65	9.53	18.78
Degree	0.14	0.08	0.00	1.23	7.36
Other/Unspecified	0.38	0.06	0.17	0.60	0.47
<i>% with at least Matric</i>	<i>10.84</i>	<i>14.07</i>	<i>13.39</i>	<i>24.51</i>	<i>44.27</i>

Table 4.8: Continued

	<b>Chronic poor (always)</b>	<b>Chronic poor (usually)</b>	<b>Transitory poor (churning)</b>	<b>Transitory poor (occasionally)</b>	<b>Chronic non-poor</b>
<b>Labour market status at wave 1</b>					
Inactive	47.59	46.78	51.75	37.84	25.47
Unemployed	25.63	20.42	21.11	23.02	13.09
Employed	26.78	32.80	27.14	39.14	61.45
Unspecified	0.00	0.00	0.00	0.00	0.00
<b>Labour market status at wave 4</b>					
Inactive	59.52	51.85	47.76	39.09	35.41
Unemployed	15.63	15.49	15.30	13.98	6.50
Employed	24.42	32.23	36.35	46.63	58.01
Unspecified	0.42	0.44	0.60	0.30	0.07

Source: Own calculations from the first four waves of NIDS.

In terms of age cohort, chronic poverty was more associated with the younger age cohorts. For the chronic poor, KwaZulu-Natal, Eastern Cape and Limpopo were more dominant, whereas Gauteng and Western Cape were more dominant for the chronic non-poor. Panel members who lived in traditional areas accounted for about 61% of the balanced panel who were always chronic poor, whereas slightly more than 80% of the chronically non-poor lived in urban areas.

As expected, the share of the balanced panel with at least Matric only made up a trivial share of the chronic poor in both wave 1 and wave 4. In contrast, the share of the balanced panel with at least Matric accounted for a considerable share of the chronic non-poor (37% in wave 1; 44% in wave 4). In view of the labour market status, employed balanced panel members made up a small proportion (about 25%) of the poorest group and a sizable share of the chronically non-poor (approximately 60%) in both wave 1 and wave 4.

As far as the mean dependency ratio is concerned, it decreased across each poverty status category. In other words, a higher dependency ratio was associated with chronic poverty and a lower dependency ratio was associated with chronically non-poor balanced panel members in both wave 1 and wave 4. In relation to the number of employed in the household, households with no employed members were considerably tied to the poorest group in both wave 1 and wave 4, whereas households with one or two employed persons were more likely to be chronic non-poor.

For those balanced panel members who were always chronic poor, roughly two thirds of them came from households headed by females but the opposite occurs for the chronically non-poor in both wave 1 and wave 4. On the other hand, more than 90% of the balanced panel who were always poor came from households headed by Africans in both wave 1 and wave 4. For the chronically non-poor, Africans (56% in wave 1; 57% in wave 4) remained the dominant group but the Coloured/Indian (22% in wave 1; 20% in wave 4) proportion increased considerably, as compared to the four groups. For the poorest group, the share of the balanced panel who came from households headed by employed individuals were less dominant (below 20%), with the opposite being true for the chronic non-poor (about 50%) in both wave 1 and wave 4.

Turning to the different income sources, the share of the balanced panel who came from households that received income from labour market activities increased across each poverty status category in both waves. This is different for individuals who came from households that received income from social grants, as the share decreased with each poverty status category. Differently said, chronic poverty was associated with the receipt of social grants, while chronic alleviation out of poverty was linked to the receipt of labour market income.

With reference to the household size variable, less than 0.20% of the poorest group consisted of single-person households in wave 1, and this share slightly increased to about 0.43% in wave 4. Also, the mean household size decreased across the five categories in both waves (or higher mean household size is associated with more serious poverty). Furthermore, the mean household size for the poorest group increased from 7.66 in wave 1 to 7.71 in wave 4.

In view of the non-income welfare characteristics, all five poverty status categories improved between the two waves, and this result was expected, given the government's efforts to improve basic service delivery<sup>17</sup>. As expected, the chronically poor balanced panel members were associated with the most inferior non-income welfare, while the opposite took place for the chronically non-poor. The only exception was the cellular phone ownership variable, as a very high proportion of individuals (between 80% and 90%) owned cellular phones in all five poverty categories in both waves, but this result was not really surprising, as it is cheaper and more affordable to own cellular phones nowadays.

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<sup>17</sup> Refer to the earlier discussion (Bhorat & Van der Westhuizen, 2013).

### 4.3 Econometric analysis

#### 4.3.1 Probit regressions

Table 4.9 presents the results of the probit regressions using method (1). For the first probit regression on poverty entry likelihood, males were approximately 4% significantly less likely to enter poverty compared to females. With regard to race, Coloureds were about 8% significantly less likely to enter poverty than their African counterparts, while Indians were 22.09% less likely to transition to poverty. In addition, there was a significant concave relationship between age and poverty entry likelihood, meaning the elderly population in the balanced panel were much less likely to have their status changed from non-poor to poor. As expected, a higher educational attainment was associated with a lower probability of poverty entry, yet Table 4.9 showed that only the three most educated dummy variables (Matric; Matric plus Certificate/Diploma; Degree) were statistically significant.

When looking at geo-type, those residing in urban areas exhibited a significantly lower probability (13%) of entering poverty, as opposed to those who resided in traditional areas. Interestingly, those individuals who had their geo-type changed were also significantly less likely to enter poverty. In opposition, those who resided in farms were 15% significantly more likely to enter poverty. Turning to the province of residence, the results of the table indicated that only the Western Cape residents were significantly less likely to enter poverty than those in the Eastern Cape. Those who resided in the Northern Cape, KwaZulu-Natal and Mpumalanga were significantly more likely to enter poverty, with the marginal effects being the highest for the KwaZulu-Natal residents. The greater number of waves that the person was employed, the lower the likelihood of poverty entry (marginal effects being -4%). Finally, turning the attention to the household-level variables, individuals who lived in households headed by employed males were significantly less likely to transition to poverty.

For the second probit regression (poverty exit), in general, the findings were almost exactly the opposite of those of the first regression. First, more educated and older male Coloureds individuals were significantly more likely to exit poverty. Secondly, poverty exit likelihood was significantly greater for those that either lived in the urban areas or had their geo-type of residence changed between the two waves. Thirdly, poverty exit probability was significantly higher for individuals from Northern Cape, Free State, North West, Gauteng and Limpopo as well as those who had their province of residence changed between the two waves. Furthermore, a higher employment frequency across the four waves was associated with

significant poverty exit likelihood (marginal effects being 4.7%). Finally, individuals who came from households with employed heads at the time of wave 1 were significantly more likely to exit poverty.

Table 4.9: Probit regressions on poverty transition likelihood using method (1)

Independent variable	Poverty Entry			Poverty exit		
	MFX	Std Error	X-bar	MFX	Std Error	X-bar
<b>Gender</b>						
Male	-0.0392**	0.0161	0.4927	0.0315**	0.0142	0.4362
<b>Population group</b>						
Coloured	-0.0825***	0.0247	0.1309	0.0656*	0.0379	0.0426
Indian	-0.2209***	0.0119	0.0494	N/A##		
White	N/A#			N/A##		
<b>Age in years</b>						
Age	0.0048*	0.0025	27.7806	-0.0062***	0.0018	22.5650
Age Squared	-0.0001**	0.0000	1104.18	0.0001***	0.0000	867.39
<b>Education</b>						
Incomplete primary	-0.0265	0.0246	0.2249	0.0783***	0.0195	0.3116
Incomplete secondary	-0.0337	0.0296	0.3827	0.1390***	0.0239	0.3135
Matric	-0.1444***	0.0253	0.1633	0.2359***	0.0376	0.0700
Matric + Certificate/Diploma	-0.1597***	0.0287	0.0545	0.4275***	0.0546	0.0111
Degree	-0.1037	0.0909	0.0124	0.5818***	0.0761	0.0012
<b>Geo-type</b>						
Urban	-0.1327***	0.0214	0.6581	0.0716***	0.0190	0.3345
Farms	0.1529***	0.0477	0.0454	-0.0024	0.0312	0.0293
Moved	-0.0537**	0.0249	0.1093	0.2479**	0.0211	0.1498
<b>Province</b>						
Western Cape	-0.0639*	0.0306	0.0968	0.0506	0.0401	0.0546
Northern Cape	0.0637**	0.0328	0.0311	0.0933***	0.0349	0.0186
Free State	-0.0423	0.0280	0.0639	0.0876***	0.0331	0.0499
KwaZulu-Natal	0.2068***	0.0334	0.1521	-0.1420***	0.0186	0.2724
North West	0.0006	0.0294	0.0486	0.0575**	0.0289	0.0499
Gauteng	-0.0196	0.0278	0.3027	0.0860**	0.0359	0.1165
Mpumalanga	0.1465***	0.0365	0.0806	-0.0241	0.0276	0.0911
Limpopo	-0.0444	0.0300	0.0690	0.0441*	0.0243	0.1251
Moved	-0.0154	0.0373	0.0714	0.1631***	0.0351	0.0712
<b>Employment frequency</b>						
Number of waves the person is employed	-0.0403***	0.0080	1.5194	0.0466***	0.0080	0.7483
<b>Household-level variable</b>						
Head of household: employed	-0.0923***	0.0173	0.5836	0.0430***	0.0150	0.3476
Head of household: male	-0.0613***	0.0171	0.5835	-0.0023	0.0145	0.3955
Head of household: white	N/A#			N/A#		
Observed probability	0.2593			0.3632		
Predicted probability (at $\bar{x}$ )	0.2170			0.3512		
Number of observations	6 180			10 713		
Probability > chi-squared	0.0000			0.0000		
Pseudo R-squared	0.1637			0.1015		

Source: Own calculations using the NIDS data.

Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Base categories: gender – female; race – African; education – none or unspecified; geotype – traditional; province – Eastern Cape.

# Omitted - Perfect collinearity: None of the whites enter poverty

## Omitted - Perfect collinearity: All Indian and whites exited poverty

### 4.3.2 Ordered logistic regressions

Table 4.10 presents the ordered logistic regression using method (3). The focus is the odds ratio, in which a one-unit increase in the independent variable is expected to change the dependent variable by its respective regression coefficient in the ordered log-odds scale with all other variables in the model being held constant<sup>18</sup>. The table shows that, first of all, the odds of the males being in a higher poverty status category (being less poor) was 1.1946 times greater, compared to females. For Coloureds, Indians and Whites, the odds of being in a higher poverty category were 3.1029, 84.9499 and 7.1119 times greater than Africans, respectively.

There exists a significantly and convex relationship between age in years and likelihood of being in the less poor categories, that is, older individuals were more likely to be non-poor. With respect to education, the odds of being in a higher poverty status category for those with incomplete primary, incomplete secondary, matric, matric in combination with a certificate (or diploma) and degree were respectively 1.4055, 1.9831, 3.6750, 9.7005 and 9.9570 times greater than the reference group (those with no or unspecified education).

When looking at geo-type, the odds of those individuals who resided in urban areas being in a higher poverty status category was 2.7617 times more than those who resided in traditional areas. For individuals having their geo-type changed, the odds ratio was 1.8902. Turning to the province of residence, residents in Free State, North West, Gauteng and Limpopo as well as those having their province of residence changed had 1.3801, 1.6614, 2.0080, 1.4372 and 2.2000 times greater odds respectively of being in a higher poverty status category, compared to the Eastern Cape residents. Furthermore, the odds ratio was less than one (0.6435) but statistically significant for KwaZulu-Natal residents, meaning they were significantly less likely to be in a higher (less poor) poverty status category.

For a one-unit increase in the number of times the individual was employed, the odds of the person being in a higher poverty status (less poor) category was 1.2773 times greater. In view of the household-level variables, Table 4.10 showed that individuals coming from households headed by employed white males were associated with significantly greater odds of being in a higher poverty status category.

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<sup>18</sup> This standard interpretation of the ordered logit coefficient is applied to Table 4.10.

Table 4.10: Ordered logistic regression using method (3)

Independent variable	Coefficient	Std Error	Odds ratio
<b>Gender</b>			
Male	0.1778***	0.0448	1.1946
<b>Population group</b>			
Coloured	1.1323***	0.1030	3.1029
Indian	4.4421***	0.2385	84.9499
White	1.9618***	0.5417	7.1119
<b>Age in years</b>			
Age	-0.0359***	0.0057	0.9647
Age squared	0.0006***	0.0001	1.0006
<b>Education</b>			
Incomplete primary	0.3404***	0.0642	1.4055
Incomplete secondary	0.6847***	0.0763	1.9831
Matric	1.3015***	0.1044	3.6750
Matric + Certificate/Diploma	2.2722***	0.1674	9.7005
Degree	2.2983***	0.4447	9.9570
<b>Geo-type</b>			
Urban	1.0158***	0.0584	2.7617
Farms	-0.4331***	0.1202	0.6485
Moved	0.6367***	0.0659	1.8902
<b>Province</b>			
Western Cape	-0.0328	0.1182	0.9677
Northern Cape	0.0818	0.1000	1.0853
Free State	0.3222***	0.1029	1.3801
KwaZulu-Natal	-0.4408***	0.0699	0.6435
North West	0.5077***	0.0889	1.6614
Gauteng	0.6972***	0.0979	2.0080
Mpumalanga	0.1322	0.0905	1.1413
Limpopo	0.3627***	0.0832	1.4372
Moved	0.7885***	0.0988	2.2000
<b>Employment frequency</b>			
Number of waves the person is employed	0.2447***	0.0236	1.2773
<b>Household-level variable</b>			
Head of household: employed	0.6686***	0.0462	1.9515
Head of household: male	0.3110***	0.0458	1.3648
Head of household: white	2.2084***	0.4929	9.1015
<b>Summary statistics</b>			
Number of observations	17 235		
Probability > chi-squared	3245.3100		
Pseudo R-squared	0.1938		

Source: Own calculations using the NIDS data.

Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Base categories: gender – female; race – African; education – none or unspecified; geotype – traditional; province – Eastern Cape.

Last but not least, Table A.11 in the Appendix presents the results of the ordered logistic regression using method (2) instead, and the results are highly similar to those discussed above (Table 4.10 using method (3)).

### 4.3.3 Random-effects panel data regression

Table 4.11 presents the results of the pooled data probit regression and random-effects panel data regression on poverty likelihood. Focusing on the random-effects panel data regression, males were significantly less likely to be poor, as opposed to females. Coloureds, Indians and Whites were significantly less likely to be poor than their African counterparts. There was a significant, concave relationship between age and poverty likelihood, i.e. this likelihood decreased at an increasing rate for older individuals. Turning to the educational attainment, the coefficient is larger in absolute terms across the more educated dummy variables, meaning higher educational attainment was associated with lower poverty likelihood.

Individuals residing in urban areas enjoyed significantly lower probability of being poor, as opposed to those who resided in traditional areas. In contrast, those who resided in farms were significantly more likely to be poor. Turning to the province of residence, the results of the table indicated that Northern Cape, Free State and KwaZulu-Natal residents were significantly more like to be poor, while the opposite took place for those living in North West and Gauteng, compared with the reference group, namely Eastern Cape.

Pertaining to the labour market status of the balanced panel members, unemployed persons were found to have significantly higher poverty likelihood than the inactive working-age population. Moving on to household-level variables, individuals who came from households headed by employed white males and with more number of employed members were significantly less likely to be poor. In opposition, individuals who lived in African-headed households with relatively higher dependency ratio<sup>19</sup> and greater household size were significantly more likely to be poor.

Individuals who came from households that received income from labour market activities were significantly less likely to be poor. This is different for individuals who came from households that received income from social grants, as the receipt of social grant income was associated with greater poverty likelihood. As highlighted by Van der Berg *et al.* (2010), if social grant resources are stretched too far some households fall into poverty because of the pressure put on these resources.

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<sup>19</sup> For the individuals coming from households with undefined dependency ratios, these ratios were reset as zero to avoid losing them for the econometric analysis. However, a dummy variable called “undefined dependency ratio” was created and included as an explanatory variable to clearly distinguish the abovementioned individuals.

Table 4.11: Pooled data and random-effects panel data probit regressions on poverty likelihood

Independent variable	Random-effects Probit regression		Pooled data Probit regression	
	Coefficient	Std Error	Coefficient	Std Error
<b>Gender</b>				
Male	-0.0387**	0.0172	-0.0236**	0.0119
<b>Population group</b>				
Coloured	-0.2223***	0.0488	-0.1702***	0.0370
Indian	-2.3127***	0.1365	-1.9197***	0.0997
White	-1.3026***	0.4283	-0.8671**	0.3429
<b>Age in years</b>				
Age	0.0104***	0.0024	0.0099***	0.0018
Age squared	-0.0002***	0.0000	-0.0002***	0.0000
<b>Education</b>				
Incomplete primary	-0.1374***	0.0242	-0.1331***	0.0169
Incomplete secondary	-0.3256***	0.0286	-0.3188***	0.0204
Matric	-0.7059***	0.0391	-0.6393***	0.0276
Matric + Certificate/Diploma	-1.3263***	0.0690	-1.1378***	0.0485
Degree	-1.4176***	0.1434	-1.2079***	0.1035
<b>Geo-type</b>				
Urban	-0.4327***	0.0220	-0.3485***	0.0149
Farms	0.3983***	0.0426	0.3289***	0.0294
<b>Province</b>				
Western Cape	0.0624	0.0424	0.0555*	0.0289
Northern Cape	0.0727*	0.0393	0.0509*	0.0268
Free State	0.0943**	0.0400	0.0696**	0.0271
KwaZulu-Natal	0.1776***	0.0256	0.1452***	0.0178
North West	-0.0848**	0.0375	-0.0736***	0.0258
Gauteng	-0.2480***	0.0378	-0.1984***	0.0258
Mpumalanga	-0.0006	0.0364	0.0109	0.0250
Limpopo	-0.0097	0.0337	-0.0102	0.0232
<b>Labour status</b>				
Employed	0.0362	0.0232	0.0760***	0.0189
Unemployed	0.0530**	0.0249	0.0875***	0.0212
Age: 0-14 years	-0.1038***	0.0294	-0.1352***	0.0242
Age: Above 65 years	1.1076	1.2668	1.0601	1.0377
<b>Household-level variable</b>				
Head of household: male	-0.1124***	0.0154	-0.0996***	0.0125
Head of household: African	0.1029***	0.0370	0.0836***	0.0310
Head of household: white	-0.7686*	0.4021	-0.8528***	0.3246
Head of household: employed	-0.0723***	0.0179	-0.0562***	0.0150
Number of employed household members	-0.2040***	0.0099	-0.1795***	0.0082
Household size	0.2615***	0.0038	0.2145***	0.0028
Dependency ratio	0.1003***	0.0099	0.0867***	0.0080
Undefined dependency ratio (dummy)	-0.4095***	0.0657	-0.3987***	0.0526
Household source of income: labour market income	-0.3926***	0.0160	-0.3823***	0.0135
Household source of income: social grant income	0.2408***	0.0166	0.2901***	0.0136
<b>Summary statistics</b>				
Number of observations	68 940		68 940	
Probability > chi-squared	0.0000		0.0000	
Pseudo R-squared	N/A		0.3014	

Source: Own calculations using the NIDS data.

Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Base categories: gender – female; race – African; education – none or unspecified; geotype – traditional; province – Eastern Cape; labour status – inactive.

For the pooled data probit regression, in general, the findings were highly similar as those of the random-effects panel data regression:

- Individuals with significantly lower poverty likelihood were more likely to be: males, Coloureds, Indians, Whites, elderly, highly educated, living in the urban areas in North West and Gauteng, coming from households headed by employed white males, with a high number of employed members receiving income from work activities;
- In contrast, these people were associated with significantly greater poverty likelihood: female African unemployed residents living on farms in the Western Cape, Northern Cape, Free State and KwaZulu-Natal, coming from households headed by unemployed Africans, with relative higher dependency ratio and greater household size, and receiving social grant income.

#### **4.4 Conclusion**

This chapter examined the characteristics of the different groups of poor in South Africa for the period 2008-2015 using three approaches, focusing on method (3) adapted from Hulme & Shepherd (2003). Section 4.2 looked at the descriptive statistics of different groups of poor by using the three different methods to identify poverty status. Section 4.3 examined poverty likelihood by means of various regression models. Using the three methods to identify poverty status as well as running different regression models, in general, the following people are more likely to be chronically poor: females, Africans, aged younger than 25 years at the time of wave 1 (mean age being slightly above 20 years), living in traditional areas (or on farms) in KwaZulu-Natal, Eastern Cape, Limpopo, Northern Cape, Mpumalanga and Free State, without Matric, and inactive in the labour market. Also, they came from households headed by unemployed female Africans with relatively higher mean dependency ratio (above one) and household size (about seven) with either none or only one employed member, with greater likelihood of the households receiving social grant income and struggling with relatively inferior non-income welfare.

## CHAPTER FIVE: CONCLUSION

### 5.1 Introduction

Over the years, many studies investigated poverty in South Africa by means of cross-sectional data, primarily analysing poverty at a specific point in time. However, within the current South African climate, the focus in recent years has shifted to the movements in welfare of households over time, with the availability of the NIDS data. Increasing importance is placed on investigating the poverty dynamics of the populace in order to explore possible changes in poverty status over time. Investigating the profile of the different groups of poor serves to aid the fight against this complex nature of poverty and in essence supports the development of poverty reduction policies. For the purpose of investigating poverty dynamics, this study examined the characteristics of the different groups of poor in South Africa from 2008 to 2015 by utilising the balanced component of the panel data from the four available waves of NIDS as consideration is given to welfare movements over time.

### 5.2 Review of findings

The empirical findings of this study indicated that poverty exit (36.6%) outweighed poverty entry (22.8%) likelihood over the period. However, for those panel members defined as severely poor in wave 1, almost 40% were just as poor in wave 4. In the thorough examination of the characteristics of the different groups of poor, using the three methods mentioned in Section 3.2.3, the descriptive results suggested that chronic poverty was more prevalent among younger African females (mean age being slightly above 20 years). These individuals predominantly lived in traditional areas (or on farms) in KwaZulu-Natal, Eastern Cape, Limpopo, Northern Cape, Mpumalanga and Free State. The descriptive results also indicated that chronic poverty was associated with lower levels of education and inactive labour market status. Another important finding was that poverty was more prevalent among individuals coming from households headed by unemployed female Africans that had relatively higher dependency and household size with either none or only one employed member. Furthermore, the receipt of social grant income was found to be common among these households who were generally associated with having inferior non-income welfare.

Turning the attention to the findings of the econometric analysis, the first regression model (probit model) on poverty exit likelihood revealed that more educated and older male Coloured individuals had a greater chance of escaping poverty. The geographical location of these

individuals correlated to urban areas within the Northern Cape, Free State, North West, Gauteng and Limpopo. Another key finding was that the balanced panel members who had their geo-type (or province) of residence changed between the first and last wave were associated with significant poverty exit likelihood. Furthermore, having higher employment frequency across the four waves and coming from households headed by employed individuals increased the probability of transitioning out of poverty.

In view of the second regression model (ordered logistic model), the estimates support that of the probit model, suggesting that older male coloured (as well as Indian and White) individuals were more likely to fall within the more privileged groups. The chronically non-poor individuals were found to be more educated on average and generally resided in the urban areas in Free State, North West, Gauteng and Limpopo. As with the probit model, those with higher employment frequency were more likely to be chronically non-poor. The results also suggested that coming from households headed by employed white males increased the odds of falling within the more privileged groups.

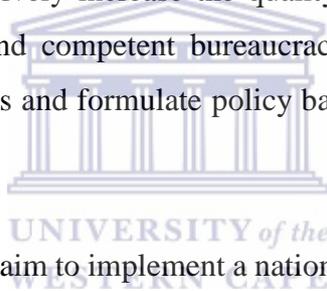
Finally, the results of the random-effects probit regression consolidated those of the probit and ordered logistic models, indicating that older male coloured (as well as Indian and White) individuals with higher educational attainment enjoyed lower poverty likelihood. In terms of area type, the findings suggested that these individuals were once more likely to reside in urban areas. At the provincial level, living in the North West and Gauteng decreased the likelihood of poverty. Also, individuals coming from households headed by employed white males, with more number of employed members were found to have a lower likelihood of poverty. Lastly, the receipt of labour market income was significantly associated with lower probabilities of poverty.

### 5.3 Conclusion

This is the first local empirical study answering the “*who?*” question comprehensively by examining the profile of the chronically poor, transitory poor and chronically non-poor, using all four available waves of the NIDS data. This study complements the study by Finn & Leibbrandt (2017) which focuses more on the “*why?*” question (i.e. poverty triggers). With reference to the recommended poverty reduction policies, the identified chronically poor individuals were found to experience poverty more severely than others. Poverty reduction policies should therefore specifically be targeted at increasing the welfare level of these

individuals. Drawing on the empirical analysis of this study as well as the existing research on poverty in South Africa, higher educational attainment, increased employment likelihood and labour market income as well as the receipt of social grant income remain the three main drivers of poverty exit.

Education is an important long-term solution for the alleviation of poverty in South Africa (May, 2010). However, despite the consistently high levels of enrolment in primary schools, the quality of education in South Africa has come under dispute. The simplistic approach of allocating a greater share of government spending to the education system therefore fails to provide a solution for underperforming schools who are well-resourced (Van der Berg, 2002). In fact, certain schools are found to perform exceptionally regardless of budgetary constraints. As opposed to focusing on the allocation of resources, the government should increase the managerial, administrative and technical capacity of the national and provincial bureaucracies (Spaull, 2013). In order to effectively increase the quality of education at all levels of the educational system, a capable and competent bureaucracy would be required in order to identify the constraints to progress and formulate policy based on scientific evidence and not intuition.



Secondly, the government should aim to implement a nation-wide system of diagnostic testing and training (Spaull, 2013). The implementation of this policy will develop capacity within the teaching proficiency, thereby attracting and retaining the best teachers (Van der Berg *et al.*, 2011). Teachers who do not possess the basic level of coursework proficiency required to teach their respective subjects should be obligated to enter the required training within a specified time frame and pass the test on basic level course work proficiency or face being removed from the teaching programme.

Lastly, increase the accountability at all levels of the educational system (Spaull, 2013). Van der Berg *et al.* (2011) emphasises that South African schools require an educational assessment framework that monitors child performance, informs teachers of the most appropriate assessment method that highlights key areas of educational development and helps policy-makers to monitor the degree of improvement in different areas of the educational structure. Therefore, without a clear chain of accountability, individuals who are responsible for pupil learning cannot effectively be held accountable and face the consequences as a result of underperformance. Greater fiscal allocation in combination with policies aimed at improving

the quality of education in South Africa perhaps provides a better solution for the wellbeing of the poor.

From a policy perspective, the job market prospects of the populace rely heavily on the ability of the economy to grow (Altman, 2003). The government should actively look to policies aimed at productivity enhancements for the sole purpose of achieving high rates of output and income growth (Highfill, 2002). These productivity enhancements make reference to increased labour productivity achieved through effective workforce training systems in combination with technological advancement, which ultimately results in increased employment opportunities and labour market income. Effective labour market training would allow the labour force to keep up with the growing demand of technology, which is vital for efficacy of businesses and serves as an important channel for growth (Highfill, 2002). This is particularly significant for poor households, since skills development enhances an individual's level of human capital and productivity, which makes them more attractive to employers and subject to better earnings potential (Barker, 2007).

Emphasised empirically by Ebrahim *et al.* (2013), securing employment enables access to housing and allows individuals to support a family through increasing the likelihood of becoming the household head. Differently said, the labour market income received because employment allows these individuals to set up households while subsequently decreasing the probability of seeking financial support from persons they previously lived with.

Another key area of job creation relates to the spatial distribution of the population. This is particularly worrying for the poor, since the spatial disconnection between where jobs are and where the majority of the unemployed live prohibits search behaviour (Bhorat, 2012). In other words, spatial isolation prevents those who are in dire need of work and labour market income from finding employment. Evidently, the cost associated with finding employment is too expensive for these individuals. The reason is that many of the households receiving government support are located in rural areas (Ebrahim *et al.*, 2013). As a result, the employment prospects of these individuals are reduced because the financial burden of the job search moves the unemployed further from the labour market. For this reason, Bhorat (2012) advocates the need for a policy that aims to subsidise the transportation costs of young unemployed individuals who seek to look for work in high-employment density areas. A

transportation subsidy will ultimately benefit the poor (often residing in rural areas) by removing the spatial barrier between employment nodes and the unemployed.

The final policy suggestion advocates the need for social policy. Social policy allows the poor to benefit from income-based welfare through the subsidisation of expenses such as housing, education and amenities, thereby reducing the cost of living (Jacobs *et al.*, 2010). Arguments for the social wage suggest that the resultant decrease in the cost of labour encourages the active participation of the poor in the labour market, in turn increasing economic efficiency and positively impacting growth. Also, the provision of utility subsidies (sometimes referred to as in-kind social transfers) would allow the poor – generally associated with having inferior non-income welfare – to focus their expenditure on other necessities (Jacobs *et al.*, 2010).

According to Woolard *et al.* (2010), social grants directly focus on improving the livelihoods of the poor and function as a significant pro-poor public spending instrument. Distinctively, social grants not only aid the wellbeing of the poor through the provision of income but also allow households to educate their children and provide them with social security. The use of social security in South Africa is seen as an effective poverty reduction policy given the limitations on resources. However, the decision-making structure in households impinges the efficacy of resource allocation aimed at achieving lower levels of poverty. Differently said, it influences the likely impact of cash transfers to the poor via government grants. Therefore, although social grant income plays an important role in the alleviation of poverty, it cannot be the only source of poverty reduction. As a result, South Africa's poverty reduction strategy should be inclusive of economic growth and job creation (Van der Berg *et al.*, 2010: 54).

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## APPENDIX

Table A.1: Simple poverty transition matrix – comparing wave 1 and wave 2 (row total)

		Wave 2	
		Non-poor	Poor
Wave 1	Non-poor	68.70	31.30
	Poor	19.46	80.54

Table A.2: Simple poverty transition matrix – comparing wave 2 and wave 3 (row total)

		Wave 3	
		Non-poor	Poor
Wave 2	Non-poor	76.74	23.26
	Poor	24.45	75.55

Table A.3: Simple poverty transition matrix – comparing wave 3 and wave 4 (row total)

		Wave 4	
		Non-poor	Poor
Wave 3	Non-poor	80.24	19.76
	Poor	34.37	15.63

Table A.4: Detailed poverty transition matrix – comparing wave 1 and wave 2 (row total)

		<b>Wave 2</b>			
		<b>0-0.5 PL</b>	<b>0.5-1 PL</b>	<b>1-2 PL</b>	<b>2+ PL</b>
<b>Wave 1</b>	<b>0-0.5 PL</b>	60.59	28.68	6.66	4.07
	<b>0.5-1 PL</b>	31.48	42.04	17.50	8.98
	<b>1-2 PL</b>	18.90	32.51	30.82	17.77
	<b>2+ PL</b>	5.90	10.50	19.86	63.74

Table A.5: Detailed poverty transition matrix – comparing wave 2 and wave 3 (row total)

		<b>Wave 3</b>			
		<b>0-0.5 PL</b>	<b>0.5-1 PL</b>	<b>1-2 PL</b>	<b>2+ PL</b>
<b>Wave 2</b>	<b>0-0.5 PL</b>	52.51	31.25	11.94	4.30
	<b>0.5-1 PL</b>	29.13	38.10	22.29	10.48
	<b>1-2 PL</b>	12.02	24.23	37.84	25.92
	<b>2+ PL</b>	4.94	8.63	14.82	71.61

Table A.6: Detailed poverty transition matrix – comparing wave 3 and wave 4 (row total)

		<b>Wave 4</b>			
		<b>0-0.5 PL</b>	<b>0.5-1 PL</b>	<b>1-2 PL</b>	<b>2+ PL</b>
<b>Wave 3</b>	<b>0-0.5 PL</b>	41.16	36.15	13.40	9.30
	<b>0.5-1 PL</b>	18.20	35.56	29.88	16.36
	<b>1-2 PL</b>	9.49	26.77	35.97	27.77
	<b>2+ PL</b>	1.64	5.47	16.44	76.44

Table A.7: Poverty status category breakdown by method

	<b>Method (1)</b>		<b>Method (2)</b>		<b>Method (3)</b>	
	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>
Chronic poor	11 391 928	33.34	8 570 494	25.08	13 605 185	39.81
Transitory poor	10 276 283	30.07	16 887 516	49.42	11 852 825	34.68
Chronic Non-poor	12 505 305	36.59	8 715 506	25.50	8 715 506	25.50
	34 173 516	100.00	34 173 516	100.00	34 173 516	100.00

Table A.8: Characteristics of the three groups of poor using method (2)

	Group I	Group II	Group III
<b>Dependency ratio at the wave 1</b>			
0	2.47	12.84	34.48
(0; 0.5)	12.45	17.13	14.60
0.5	6.62	10.65	16.35
(0.5;1)	20.76	16.94	5.19
1	16.02	18.65	16.98
(1; 2)	19.91	11.10	4.81
[2;+∞)	21.29	12.00	4.99
Undefined	0.46	0.68	2.61
<i>Mean</i>	<i>1.29</i>	<i>0.89</i>	<i>0.53</i>
<b>Dependency ratio at wave 4</b>			
0	4.31	21.39	35.90
(0; 0.5)	17.09	18.86	15.42
0.5	8.68	12.18	13.30
(0.5;1)	20.81	12.63	9.00
1	14.83	15.54	14.10
(1; 2)	20.25	8.21	3.66
[2;+∞)	13.46	10.14	4.66
Undefined	0.56	1.07	3.95
<i>Mean</i>	<i>1.06</i>	<i>0.75</i>	<i>0.49</i>
<b>Number of employed in the household at wave 1</b>			
None	41.25	33.91	14.58
One person	35.73	39.17	47.12
Two persons	13.11	17.83	29.30
More than two persons	9.91	9.07	9.01
<i>Mean</i>	<i>1.00</i>	<i>1.06</i>	<i>1.34</i>
<b>Number of employed in the household at wave 4</b>			
None	40.49	26.56	17.44
One person	32.65	40.82	40.79
Two persons	15.39	21.57	30.61
More than two persons	11.46	11.06	11.16
<i>Mean</i>	<i>1.05</i>	<i>1.21</i>	<i>1.37</i>
<b>Gender of household head at wave 1</b>			
Male	36.92	45.33	69.94
Female	63.08	54.67	30.06
<b>Gender of household head at wave 4</b>			
Male	28.02	40.98	59.99
Female	71.98	59.02	40.01
<b>Race of household head at wave 1</b>			
African	90.51	85.57	55.83
White	0.00	0.41	21.95
Coloured or Indian	9.49	14.02	22.22
<b>Race of household head at wave 4</b>			
African	95.44	88.96	57.17
White	0.00	0.48	22.74
Coloured or Indian	4.56	10.56	20.09

Table A.8: Continued

	Group I	Group II	Group III
<b>Employment status of household head at wave 1</b>			
Employed	31.27	42.26	70.20
Not employed	68.73	57.74	29.80
<b>Employment status of household head at wave 4</b>			
Employed	28.57	47.00	64.09
Not employed	71.43	53.00	35.91
<b>Coming from a household receiving income from labour market activities at wave 1</b>			
Yes	41.00	55.38	80.62
No	58.95	44.60	19.03
Unspecified	0.05	0.02	0.35
<b>Coming from a household receiving income from labour market activities at wave 4</b>			
Yes	39.54	61.18	75.43
No	60.46	38.80	24.52
Unspecified	0.00	0.02	0.05
<b>Coming from a household receiving income from social grants at wave 1</b>			
Yes	89.43	72.54	23.21
No	10.36	27.01	76.23
Unspecified	0.21	0.45	0.56
<b>Coming from a household receiving income from social grants at wave 4</b>			
Yes	85.41	68.35	33.68
No	14.56	31.46	65.93
Unspecified	0.03	0.19	0.39
<b>Household size at wave 1</b>			
1 person	0.18	3.31	13.77
2 persons	1.52	8.09	16.06
3 persons	5.36	11.99	21.34
4 persons	10.80	16.59	21.69
5 persons	13.26	16.15	16.08
6-10 persons	50.46	35.97	10.56
More than 10 persons	18.41	7.89	0.50
<i>Mean</i>	7.66	5.65	3.51
<b>Household size at wave 4</b>			
1 person	0.43	9.57	16.14
2 persons	2.30	9.72	18.04
3 persons	6.35	13.45	20.76
4 persons	10.82	15.52	16.92
5 persons	12.97	13.47	14.56
6-10 persons	47.00	33.42	13.48
More than 10 persons	20.13	4.84	0.10
<i>Mean</i>	7.71	5.04	3.49

Source: Own calculations from the first four waves of NIDS.

Table A.9: Household characteristics of the five groups of poor using method (3)

	<b>Chronic poor (always)</b>	<b>Chronic poor (usually)</b>	<b>Transitory poor (churning)</b>	<b>Transitory poor (occasionally)</b>	<b>Chronic non-poor</b>
<b>Dependency ratio at wave 1</b>					
0	2.47	7.10	7.83	16.38	34.48
(0; 0.5)	12.45	13.02	15.93	19.33	14.60
0.5	6.62	9.95	11.36	10.89	16.35
(0.5;1)	20.76	22.02	12.16	15.18	5.19
1	16.02	15.34	23.36	19.56	16.98
(1; 2)	19.91	15.13	14.06	8.70	4.81
[2;+∞)	21.29	16.89	14.04	9.33	4.99
Undefined	0.46	0.58	1.27	0.64	2.61
<i>Mean</i>	<i>1.29</i>	<i>1.07</i>	<i>1.01</i>	<i>0.79</i>	<i>0.53</i>
<b>Dependency ratio at wave 4</b>					
0	4.31	12.85	19.18	25.88	35.90
(0; 0.5)	17.09	19.95	14.79	18.92	15.42
0.5	8.68	11.36	14.83	12.18	13.30
(0.5;1)	20.81	16.14	10.25	11.24	9.00
1	14.83	16.27	15.79	15.15	14.10
(1; 2)	20.25	10.72	9.97	6.74	3.66
[2;+∞)	13.46	12.18	14.07	8.51	4.66
Undefined	0.56	0.54	1.12	1.33	3.95
<i>Mean</i>	<i>1.06</i>	<i>0.89</i>	<i>0.84</i>	<i>0.66</i>	<i>0.49</i>
<b>Number of employed in the household at wave 1</b>					
None	41.25	37.30	44.86	30.63	14.58
One person	35.73	36.96	34.33	40.97	47.12
Two persons	13.11	16.39	15.31	18.92	29.30
More than two persons	9.91	9.34	5.51	9.48	9.01
<i>Mean</i>	<i>1.00</i>	<i>1.01</i>	<i>0.83</i>	<i>1.12</i>	<i>1.34</i>
<b>Number of employed in the household at wave 4</b>					
None	40.49	33.09	31.92	22.58	17.44
One person	32.65	37.78	37.83	42.74	40.79
Two persons	15.39	18.97	20.85	22.94	30.61
More than two persons	11.46	10.16	9.40	11.74	11.16
<i>Mean</i>	<i>1.05</i>	<i>1.10</i>	<i>1.08</i>	<i>1.28</i>	<i>1.37</i>
<b>Gender of household head at wave 1</b>					
Male	36.92	43.29	37.46	47.49	69.94
Female	63.08	56.71	62.54	52.51	30.06
<b>Gender of household head at wave 4</b>					
Male	28.02	35.49	34.05	44.69	59.99
Female	71.98	64.51	65.95	55.31	40.01
<b>Race of household head at wave 1</b>					
African	90.51	87.53	88.08	84.24	55.83
White	0.00	0.00	0.00	0.68	21.95
Coloured or Indian	9.45	12.47	11.92	15.08	22.22
<b>Race of household head at wave 4</b>					
African	95.44	91.79	93.51	86.89	57.17
White	0.00	0.00	0.00	0.78	22.74
Coloured or Indian	4.56	8.21	6.49	12.33	20.09

Table A.9: Continued

	<b>Chronic poor (always)</b>	<b>Chronic poor (usually)</b>	<b>Transitory poor (churning)</b>	<b>Transitory poor (occasionally)</b>	<b>Chronic non-poor</b>
<b>Employment status of household head at wave 1</b>					
Employed	13.45	18.11	15.43	25.97	46.75
Not employed	86.55	81.89	84.57	74.03	53.25
<b>Employment status of household head at wave 4</b>					
Employed	17.58	24.85	27.90	38.57	50.93
Not employed	82.42	75.15	72.10	61.43	49.07
<b>Coming from a household receiving income from labour market activities at wave 1</b>					
Yes	41.00	43.75	51.36	61.66	80.62
No	58.95	56.19	48.64	38.34	19.03
Unspecified	0.05	0.06	0.00	0.00	0.35
<b>Coming from a household receiving income from labour market activities at wave 4</b>					
Yes	39.54	53.13	57.22	65.71	75.43
No	60.46	46.85	42.78	34.28	24.52
Unspecified	0.00	0.29	0.00	0.01	0.05
<b>Coming from a household receiving income from social grants at wave 1</b>					
Yes	89.43	83.66	83.05	65.55	23.21
No	10.36	15.94	15.67	34.10	76.23
Unspecified	0.21	0.40	1.28	0.35	0.56
<b>Coming from a household receiving income from social grants at wave 4</b>					
Yes	85.41	78.54	77.26	62.05	33.68
No	14.56	21.41	22.65	37.69	65.93
Unspecified	0.03	0.05	0.09	0.26	0.39
<b>Household size at wave 1</b>					
1 person	0.18	0.99	1.00	4.78	13.77
2 persons	1.52	4.48	5.79	10.19	16.06
3 persons	5.36	9.97	13.39	12.77	21.34
4 persons	10.80	14.06	15.72	17.95	21.69
5 persons	13.26	15.81	19.26	15.85	16.08
6-10 persons	50.46	41.74	39.51	32.65	10.56
More than 10 persons	18.41	12.98	5.34	5.78	0.50
<i>Mean</i>	7.66	6.52	5.63	5.23	3.51
<b>Household size at wave 4</b>					
1 person	0.43	3.83	7.28	12.71	16.14
2 persons	2.30	6.32	11.57	11.10	18.04
3 persons	6.35	11.29	16.28	14.07	20.76
4 persons	10.82	12.48	15.25	17.04	16.92
5 persons	12.97	14.66	15.06	12.64	14.56
6-10 persons	47.00	43.48	30.55	28.96	13.48
More than 10 persons	20.13	7.95	4.00	3.47	0.10
<i>Mean</i>	7.71	5.96	4.81	4.63	3.49

Source: Own calculations from the first four waves of NIDS.

Table A.10: Non-income welfare characteristics of the five groups of poor using method (3)

	<b>Chronic poor (always)</b>	<b>Chronic poor (usually)</b>	<b>Transitory poor (churning)</b>	<b>Transitory poor (occasionally)</b>	<b>Chronic non-poor</b>
<b>Dwelling type at wave 1</b>					
Formal	54.28	64.96	70.78	73.24	89.18
Informal	10.62	10.87	12.16	11.98	5.28
Traditional	33.48	21.54	15.73	11.88	1.26
Other	0.25	0.47	0.07	0.91	1.46
Unspecified	1.38	2.14	1.24	1.98	2.83
<b>Dwelling type at wave 4</b>					
Formal	67.61	77.25	78.30	80.54	91.80
Informal	10.86	10.38	14.65	11.35	4.78
Traditional	20.94	11.29	6.67	6.31	1.94
Other	0.60	1.07	0.39	1.72	1.48
Unspecified	0.00	0.00	0.00	0.08	0.00
<b>Dwelling ownership status at wave 1</b>					
Owned + fully paid off	88.99	84.09	86.12	75.38	47.88
Owned + not fully paid off	1.67	4.52	2.49	6.10	23.92
Not owned + rent free	6.33	7.54	5.69	9.08	4.76
Not owned + pay rent	3.01	3.85	5.70	9.43	23.44
<b>Dwelling ownership status at wave 4</b>					
Owned + fully paid off	89.53	83.88	82.19	73.19	52.91
Owned + not fully paid off	0.85	0.36	0.59	3.94	19.04
Not owned + rent free	7.01	10.63	11.55	10.69	7.63
Not owned + pay rent	2.61	5.14	5.67	12.18	20.42
<b>Water source at wave 1</b>					
Piped water in dwelling	16.79	24.40	29.27	37.19	75.61
Piped water in site	28.25	27.86	32.61	32.79	17.21
Public	32.21	29.58	29.14	19.35	4.65
Other	22.29	18.13	8.88	10.48	2.30
Unspecified	0.48	0.03	0.11	0.19	0.24
<b>Water source at wave 4</b>					
Piped water in dwelling	20.99	31.93	36.74	47.42	79.19
Piped water in site	34.07	33.51	36.59	34.34	15.25
Public	24.13	19.22	19.62	11.62	2.91
Other	20.80	15.33	7.03	6.58	2.61
Unspecified	0.00	0.00	0.00	0.02	0.02

Table A.10: Continued

	<b>Chronic poor (always)</b>	<b>Chronic poor (usually)</b>	<b>Transitory poor (churning)</b>	<b>Transitory poor (occasionally)</b>	<b>Chronic non-poor</b>
<b>Sanitation facility at wave 1</b>					
Flush/Chemical toilet	21.32	32.43	42.61	51.42	86.37
Pit latrine with ventilation pipe	20.50	16.80	12.74	10.26	3.17
Pit latrine without ventilation pipe	40.31	36.37	30.58	27.96	8.15
Other	5.45	4.38	6.76	4.27	0.69
None	12.16	9.85	7.15	5.75	0.93
Unspecified	0.25	0.16	0.16	0.35	0.69
<b>Sanitation facility at wave 4</b>					
Flush/Chemical toilet	27.78	40.66	53.69	62.99	90.68
Pit latrine with ventilation pipe	28.81	19.82	12.17	13.33	2.98
Pit latrine without ventilation pipe	34.37	29.47	26.98	18.96	5.36
Other	4.20	6.45	5.79	3.20	0.67
None	4.85	3.60	1.37	1.53	0.31
Unspecified	0.00	0.00	0.00	0.00	0.00
<b>Fuel source for cooking at wave 1</b>					
Electricity/Solar	45.26	50.29	59.29	70.24	88.96
Gas	0.39	2.62	1.23	2.83	5.28
Paraffin/Coal	15.70	19.14	19.49	13.12	3.63
Other	37.51	27.34	19.78	13.24	1.70
None	0.01	0.00	0.01	0.00	0.04
Unspecified	1.13	0.61	0.21	0.57	0.38
<b>Fuel source for cooking at wave 4</b>					
Electricity/Solar	61.27	72.00	76.05	86.14	93.42
Gas	1.39	2.62	0.46	2.87	4.30
Paraffin/Coal	6.27	5.09	8.52	5.08	1.17
Other	31.01	20.04	14.91	5.86	1.05
None	0.05	0.26	0.06	0.04	0.00
Unspecified	0.00	0.01	0.00	0.00	0.05
<b>Refuse removal once a week at wave 1</b>					
Yes	25.07	32.54	38.62	50.71	80.28
No	73.63	67.11	61.00	47.89	18.78
Unspecified	1.30	0.35	0.38	1.40	0.94
<b>Refuse removal once a week at wave 4</b>					
Yes	30.31	38.45	48.66	60.78	81.30
No	69.64	61.32	51.34	39.14	18.65
Unspecified	0.05	0.23	0.00	0.08	0.05
<b>Ownership of landline telephone at wave 1</b>					
Yes – In working condition	1.92	3.56	4.25	6.23	29.99
Yes – Not in working condition	3.15	4.22	4.59	6.66	6.36
No	94.82	92.18	91.15	87.11	63.24
Unspecified	0.11	0.04	0.01	0.00	0.41
<b>Ownership of landline telephone at wave 4</b>					
Yes – In working condition	2.20	1.70	2.38	5.51	22.96
Yes – Not in working condition	0.34	0.48	0.51	1.40	2.68
No	97.25	97.77	97.11	93.04	74.35
Unspecified	0.21	0.05	0.00	0.05	0.01

Table A.10: Continued

	<b>Chronic poor (always)</b>	<b>Chronic poor (usually)</b>	<b>Transitory poor (churning)</b>	<b>Transitory poor (occasionally)</b>	<b>Chronic non-poor</b>
<b>Ownership of cellular telephone at wave 1</b>					
Yes	85.15	86.22	85.31	88.79	91.41
No	14.14	13.49	12.30	10.83	8.30
Unspecified	0.71	0.29	2.39	0.38	0.29
<b>Ownership of cellular telephone at wave 4</b>					
Yes	79.63	82.41	84.88	85.26	88.07
No	20.33	17.59	15.12	14.74	11.86
Unspecified	0.04	0.00	0.00	0.00	0.07
<b>Ownership of television at wave 1</b>					
Yes	52.42	64.77	63.06	74.59	85.48
No	47.52	35.21	35.69	25.37	14.25
Unspecified	0.06	0.02	1.25	0.04	0.27
<b>Ownership of television at wave 4</b>					
Yes	71.77	77.67	82.13	86.24	92.42
No	28.23	22.29	17.87	13.65	7.56
Unspecified	0.00	0.04	0.00	0.11	0.02
<b>Ownership of computer at wave 1</b>					
Yes	0.29	1.94	0.85	4.27	33.39
No	99.28	98.04	94.32	95.05	66.25
Unspecified	0.43	0.02	4.83	0.68	0.36
<b>Ownership of computer at wave 4</b>					
Yes	4.24	9.89	3.90	17.18	48.52
No	95.76	89.84	96.10	82.52	51.47
Unspecified	0.00	0.27	0.00	0.30	0.01
<b>Ownership of fridge at wave 1</b>					
Yes	39.48	54.45	53.71	63.94	82.87
No	60.51	45.52	45.04	35.91	17.07
Unspecified	0.01	0.03	1.25	0.15	0.06
<b>Ownership of fridge at wave 4</b>					
Yes	66.61	74.83	78.75	82.94	93.05
No	33.39	25.17	21.25	17.01	6.95
Unspecified	0.00	0.00	0.00	0.05	0.00
<b>Ownership of washing machine at wave 1</b>					
Yes	4.52	8.25	8.32	19.43	56.99
No	94.82	91.72	90.22	80.37	42.72
Unspecified	0.66	0.03	1.46	0.20	0.29
<b>Ownership of washing machine at wave 4</b>					
Yes	12.66	24.58	29.96	38.59	71.24
No	87.34	75.42	70.03	61.29	28.76
Unspecified	0.00	0.00	0.01	0.12	0.00

Source: Own calculations from the first four waves of NIDS.

Table A.11: Ordered logistic regression using method (2)

Independent variable	Coefficient	Std Error	Odds ratio
<b>Gender</b>			
Male	0.1902***	0.0489	1.2094
<b>Population group</b>			
Coloured	1.1702***	0.1122	3.2228
Indian	4.2609***	0.2590	70.8705
White	1.9702***	0.5387	7.1718
<b>Age in years</b>			
Age	-0.0319***	0.0060	0.9686
Age squared	0.0005***	0.0001	1.0005
<b>Education</b>			
Incomplete primary	0.3624***	0.0686	1.4367
Incomplete secondary	0.6338***	0.0807	1.8849
Matric	1.2209***	0.1135	3.3901
Matric + Certificate/Diploma	2.2236***	0.1759	9.2404
Degree	2.3035***	0.3535	10.0092
<b>Geo-type</b>			
Urban	1.0667***	0.0642	2.9059
Farms	-0.3094**	0.1339	0.7339
Moved	0.6149***	0.0703	1.8495
<b>Province</b>			
Western Cape	-0.1215	0.1284	0.8856
Northern Cape	-0.0194	0.1071	0.9808
Free State	0.4038***	0.1121	1.4975
KwaZulu-Natal	-0.5015***	0.0751	0.6056
North West	0.4584***	0.0962	1.5815
Gauteng	0.6020***	0.1077	1.8258
Mpumalanga	0.1256	0.0974	1.1339
Limpopo	0.3588***	0.0904	1.4316
Moved	0.7178***	0.1088	2.0498
<b>Employment frequency</b>			
Number of waves the person is employed	0.2371***	0.0257	1.2675
<b>Household-level variable</b>			
Head of household: employed	0.6664***	0.0506	1.9472
Head of household: male	0.3536***	0.0503	1.4242
Head of household: white	2.1838***	0.4901	8.8800
<b>Summary statistics</b>			
Number of observations	17235		
Probability > chi-squared	0.0000		
Pseudo R-squared	0.2503		

Source: Own calculations using the NIDS data.

Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Base categories: gender – female; race – African; education – none or unspecified; geotype – traditional; province – Eastern Cape.