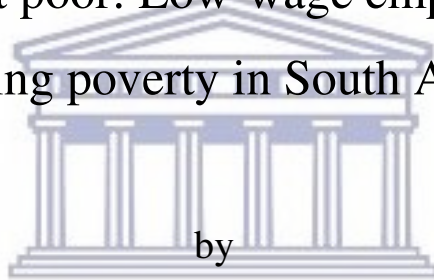




UNIVERSITY OF THE WESTERN CAPE  
DEPARTMENT OF ECONOMICS

Employed yet poor: Low-wage employment and  
working poverty in South Africa



by

UNIVERSITY of the  
WESTERN CAPE

Jade Kimlyn Feder

(3328474)

A thesis submitted in fulfilment of the requirement for the degree of Master of Commerce in  
the Department of Economics,  
University of the Western Cape.

Supervisor: Prof. Derek Yu

March 2019

## DECLARATION

I declare that “*Employed yet poor: Low-wage employment and working poverty in South Africa*” 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.

**Jade Kimlyn Feder**

Signature:



Date:

5 March 2019



UNIVERSITY *of the*  
WESTERN CAPE

## ACKNOWLEDGEMENTS

I owe heartfelt gratitude to my God. Absolutely nothing would be possible without Him, His mercy and endless support. I am thankful for the continuous love and support of my family, friends and colleagues through this journey. I extend my thanks and appreciation to my supervisor, Prof Derek Yu, who has diligently supported me through my work and has gone above and beyond that which is expected of him. I extend my gratitude to all the academic and administrative staff members of the Economics Department at the University of the Western Cape who devote an immense amount of time and energy in assisting and developing students both academically and socially.



UNIVERSITY *of the*  
WESTERN CAPE

## TABLE OF CONTENTS

DECLARATION .....	ii
ACKNOWLEDGEMENTS .....	iii
TABLE OF CONTENTS .....	iv
LIST OF ABBREVIATIONS .....	vi
LIST OF TABLES .....	vii
LIST OF FIGURES .....	ix
CHAPTER ONE: INTRODUCTION .....	1
<b>1.1 Background and problem statement</b> .....	<b>1</b>
<b>1.2 Objectives of the study</b> .....	<b>2</b>
<b>1.3 Relevance of the study</b> .....	<b>3</b>
<b>1.4 Outline of the study</b> .....	<b>3</b>
CHAPTER TWO: LITERATURE REVIEW .....	4
<b>2.1 Introduction</b> .....	<b>4</b>
<b>2.2 Definition of important terms</b> .....	<b>4</b>
2.2.1 Employment .....	4
2.2.2 Poverty .....	5
2.2.3 Low-wage .....	6
2.2.4 Working poor .....	7
<b>2.3 Theoretical framework</b> .....	<b>8</b>
2.3.1 Theory of the dual labour market .....	8
2.3.2 Theory of the household and allocation of time .....	10
<b>2.4 Empirical framework</b> .....	<b>13</b>
2.4.1 Money-metric poverty .....	13
2.4.2 Low-wage employment .....	16
2.4.3 Employed poverty .....	21
2.4.3.1 Local employed poverty studies .....	21
2.4.3.2 International employed poverty studies .....	24
<b>2.5 Conclusion</b> .....	<b>28</b>
CHAPTER THREE: METHODOLOGY AND DATA .....	29
<b>3.1 Introduction</b> .....	<b>29</b>
<b>3.2 Empirical model</b> .....	<b>29</b>

3.2.1	Classification of employed.....	29
3.2.2	Low-wage employment.....	31
3.2.3	Employed poverty.....	33
3.2.4	Bivariate probit analysis of low-wage employment and working poverty .....	34
3.2.5	Low-wage earners in poverty .....	35
3.2.6	The dynamics of low-wage employment and working poverty .....	36
3.2.7	Regression analysis summary.....	37
<b>3.3</b>	<b>Data .....</b>	<b>38</b>
<b>3.4</b>	<b>Conclusion.....</b>	<b>39</b>
CHAPTER FOUR: EMPIRICAL FINDINGS .....		40
<b>4.1</b>	<b>Introduction .....</b>	<b>40</b>
<b>4.2</b>	<b>Descriptive statistics.....</b>	<b>40</b>
4.2.1	Aggregate statistics .....	40
4.2.2	Profile of different group of workers.....	44
4.2.2.1	Low-wage employed .....	44
4.2.2.2	Employed poor.....	47
4.2.2.3	Low-wage poor .....	50
<b>4.3</b>	<b>Econometric analysis .....</b>	<b>53</b>
4.3.1	Low-wage likelihood of employed.....	53
4.3.2	Poverty likelihood of employed .....	61
4.3.3	Low-wage poverty likelihood of employed .....	69
<b>4.4</b>	<b>Further analysis .....</b>	<b>72</b>
<b>4.5</b>	<b>Conclusion.....</b>	<b>80</b>
CHAPTER FIVE: CONCLUSION.....		81
<b>5.1</b>	<b>Introduction .....</b>	<b>81</b>
<b>5.2</b>	<b>Review of findings.....</b>	<b>81</b>
<b>5.3</b>	<b>Conclusion.....</b>	<b>82</b>
REFERENCES .....		84
APPENDIX .....		92

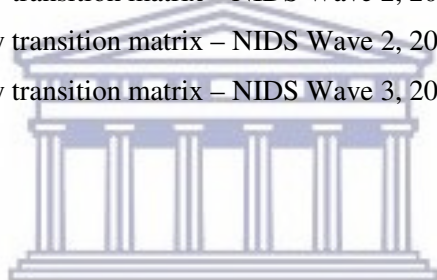
## LIST OF ABBREVIATIONS

CPI	Consumer price index
CSP	Community, social and personal
DPRU	Development Policy Research Unit
FGT	Foster Greer Thorbecke
HPL	Henderson Poverty Line
IES	Income and Expenditure Survey
ILO	International Labour Organisation/Office
LFP	Labour force participation
LFS	Labour Force Survey
LWE	Low-wage employment
LWP	Low-wage poverty
LWT	Low-wage threshold
NIDS	National Income Dynamics Study
NMW	National minimum wage
OECD	Organisation for Economic Co-operation and Development
OHS	October Household Survey
PSLSD	Project for Statistics on Living Standards and Development
QLFS	Quarterly Labour Force Survey
SALDRU	Southern Africa Labour and Development Research Unit
TSC	Transport, storage and communication
UIF	Unemployment Insurance Fund
USA/US	United States of America
VAT	Value-added tax
WAP	Working-age population

## LIST OF TABLES

Table 3.1: The number of employed with specified monthly earnings and hourly wage.....	31
Table 3.2: Summary of employed population groups.....	37
Table 4.1: Number of employed persons.....	41
Table 4.2: Low-wage employed persons as a percentage of the total employed population.....	42
Table 4.3: Employed poor persons as a percentage of the total employed population.....	43
Table 4.4: Low-wage poor persons as a percentage of the total employed population.....	43
Table 4.5: Low-wage employment in 2008 and 2014.....	45
Table 4.6: Employed poverty in 2008 and 2014.....	48
Table 4.7: Low-wage poverty in 2008 and 2014.....	51
Table 4.8: Probits on low-wage employment likelihood, reporting marginal effects.....	55
Table 4.9: Probits on low-wage employment likelihood, reporting coefficients.....	59
Table 4.10: Probits on employed poverty likelihood, reporting marginal effects.....	63
Table 4.11: Probits on employed poverty likelihood, reporting coefficients.....	67
Table 4.12: Probits on low-wage poverty likelihood.....	70
Table 4.13: Frequency of different groups of low-wage, employed poor and low-wage poor workers, in the balanced panel.....	73
Table 4.14: Profile of different groups of low-wage, employed poor and low-wage poor workers, in the balanced panel.....	75
Table 4.15: Low-wage employment transition matrix – Wave 1, 2008 vs. Wave 4, 2014.....	78
Table 4.16: Employed poverty transition matrix – Wave 1, 2008 vs. Wave 4, 2014.....	79
Table 4.17: Low-wage poverty transition matrix – Wave 1, 2008 vs. Wave 4, 2014.....	79
Table A1: Number of low-wage workers in the four approaches, 1995-2016.....	92
Table A2: Low-wage employment versus poverty, NIDS 2008.....	93
Table A3: Low-wage employment versus poverty, NIDS 2010.....	93
Table A4: Low-wage employment versus poverty, NIDS 2012.....	93
Table A5: Low-wage employment versus poverty, NIDS 2014.....	93
Table A6: Probit regressions on labour force participation likelihood.....	94
Table A7: Heckprobit regressions on employment likelihood, conditional on labour force participation.....	95
Table A8: Low-wage employment transition matrix – NIDS Wave 1, 2008 vs. Wave 2, 2010.....	96
Table A9: Low-wage employment transition matrix – NIDS Wave 1, 2008 vs. Wave 3, 2012.....	96

Table A10: Low-wage employment transition matrix – NIDS Wave 2, 2010 vs. Wave 3, 2012	96
Table A11: Low-wage employment transition matrix – NIDS Wave 2, 2010 vs. Wave 4, 2014	96
Table A12: Low-wage employment transition matrix – NIDS Wave 3, 2012 vs. Wave 4, 2014	96
Table A13: Employed poverty transition matrix – NIDS Wave 1, 2008 vs. Wave 2, 2010	97
Table A14: Employed poverty transition matrix – NIDS Wave 1, 2008 vs. Wave 3, 2012	97
Table A15: Employed poverty transition matrix – NIDS Wave 2, 2010 vs. Wave 3, 2012	97
Table A16: Employed poverty transition matrix – NIDS Wave 2, 2010 vs. Wave 4, 2014	97
Table A17: Employed poverty transition matrix – NIDS Wave 3, 2012 vs. Wave 4, 2014	97
Table A18: Low-wage poverty transition matrix – NIDS Wave 1, 2008 vs. Wave 2, 2010	98
Table A19: Low-wage poverty transition matrix – NIDS Wave 1, 2008 vs. Wave 3, 2012	98
Table A20: Low-wage poverty transition matrix – NIDS Wave 2, 2010 vs. Wave 3, 2012	98
Table A21: Low-wage poverty transition matrix – NIDS Wave 2, 2010 vs. Wave 4, 2014	98
Table A22: Low-wage poverty transition matrix – NIDS Wave 3, 2012 vs. Wave 4, 2014	98



UNIVERSITY *of the*  
WESTERN CAPE



## LIST OF FIGURES

Figure 2.1: Primary (high-skilled) labour market.....	9
Figure 2.2: Secondary (low-skilled) labour market.....	10
Figure 2.3: The labour-leisure choice when no one is employed.....	12
Figure 2.4: The labour-leisure choice of one member when at least one other member is wage employed.....	13
Figure 3.1: Formal-informal sector worker categorisation.....	30
Figure 4.1: Low-wage employment using the fourth low-wage threshold.....	41



UNIVERSITY *of the*  
WESTERN CAPE

## CHAPTER ONE: INTRODUCTION

### 1.1 Background and problem statement

Whilst paid employment has generally been considered as the predominant means of avoiding poor living standards, the past two decades has seen a rise in the complex phenomenon of employed poverty worldwide (Eardley, 1998; Nolan and Marx, 1999; Nolan *et al.*, 2010; Cheung and Chou, 2015). Over time, low-wage employment has increased in both number and severity, resulting in or contributing significantly to household poverty (Nolan and Marx, 1999). While individuals are employed in paid work, salaries are too low for households to maintain “a reasonable standard of living” (Cheung and Chou, 2015 p. 318).

Internationally, employed poverty has been a serious and well-researched problem in the United States of America (USA or US). More than 11% of the USA “population resided in poor households with at least one employed person” (Brady *et al.*, 2010 p. 560). In Hong Kong, approximately 53.5% of the population living in poverty were working poor in 2012 (Government of the Hong Kong Special Administrative Region, 2013). Closer to home, Sub-Saharan Africa’s working poor rate for 2016 was estimated at 33.1% for workers earning less than US \$1.90 per day and 30% for those earning between US \$1.90 and \$3.10 per day (International Labour Organisation, 2016).

The apartheid regime sets South Africa apart from other countries. The discriminatory regime prevented and hindered the attainment of quality education and labour opportunities for the vast majority of South Africans, namely Black (African, Coloured and Indian/Asian) individuals. This resulted in significant levels of poverty and unemployment among the Black population. For this reason, South Africa remains one of the highest-ranked countries in income inequality in the world (United Nations Development Programme, 2014 p. 170; Zizzamia *et al.*, 2016), “resulting in persistently high levels of poverty” despite the lapse of over 20 years since the dawn of democracy (Lilenstein *et al.*, 2016 p. 1). Since the election of the democratic government in 1994, priority has been placed on the eradication of the high levels of poverty and unemployment through the creation of jobs. Consequently, less emphasis has been placed on the issue of low-wage employment and poverty among workers. Approximately 20% of employed workers in South Africa are poor or reside in a poor household, of which, Africans are the majority (Vermaak, 2010; Finn, 2015; Rogan and Reynolds, 2015; Lilenstein *et al.*, 2016). Moreover, the incidence of low-wage employment grows more and more concerning

with the increasing informalisation of employment (Valodia *et al.*, 2006). Not only are more than 30% of South African workers (the majority of which are African) paid wages below the amount necessary to maintain a reasonable living standard (Valodia *et al.*, 2006; Oosthuizen, 2012), but legally employees are not entitled to health or retirement benefits (Lilenstein *et al.*, 2016). Furthermore, low-wage employment is generally associated with poor working conditions and job insecurity (Barker, 2007). These conditions may include working environments detrimental to employee health and safety, discrimination by employers, long or too few working hours, insufficient opportunities for skills development and a lack of surety or legal protection regarding continued employment (Sverke *et al.*, 2006; Alli, 2008; Bryson and Freeman, 2013).

While wage employment is generally expected to reduce poverty likelihood, some employees remain poor because their wages are too low to assist them and their families to escape poverty. This may seem to be the most intuitive cause of working poverty, but the relationship between low-wage employment and working poverty is not as straightforward as one may believe. Multiple studies actually reveal a weak relationship between the two factors, while still emphasising that low-wage employment plays a significant role in the evaluation of working poverty and may well be a contributing factor (Nolan and Marx, 2000; Crettaz and Bonoli, 2010; Halleröd *et al.*, 2015). The relationship between low earnings and working poverty remain inexplicit. The presence of a high number of dependent household members, low labour force participation (LFP), low work intensity and large households may also be determinants increasing the incidence and likelihood of employed poverty (Crettaz and Bonoli, 2010; Cheung and Chou, 2015; Lilenstein *et al.*, 2016; Kenworthy and Marx, 2017).

While a plethora of studies on poverty and wage inequality and a few studies dealing with low-wage employment in South Africa exist in literature, there are hardly local studies that empirically analyse the relationship between employment, wage income and poverty likelihood. The following questions thus arise: who are the low-wage employed, who are the working poor, what is the likelihood of being low-wage employed or working poor, and who are chronically, transitorily and never low-wage employed or working poor?

## **1.2 Objectives of the study**

This study aims to empirically analyse the relationship between low-wage employment and poverty in South Africa. More specifically, this study aims to:

1. Identify the demographic, education, work and household characteristics of the South African low-wage and working poor individually;
2. Review 2008, 2010/2011, 2012 and 2014/2015 data from the first to fourth waves of the National Income Dynamics Study (NIDS) to determine the likelihood of being low-wage employed and working poor individually; and
3. Analyse low-wage employment and working poverty over time by determining who are chronically, transitorily (temporarily) and never low-wage employed and working poor.

### **1.3 Relevance of the study**

This study is aimed at policy makers and legislators. It is important that labour market and socio-economic policy in South Africa take into account the prevalence of low-wage employment and employed poverty in South Africa. Understanding the nature and severity of low-wage employment and employed poverty is critical in designing appropriate policies to reduce the incidence of low-wage and poor workers in South Africa (Valodia *et al.*, 2006).

### **1.4 Outline of the study**

This study consists of five chapters. Chapter One provides an introductory overview of the study. Chapter Two presents a literature review in which the definition of key concepts, the theoretical framework and empirical framework are included. Both local and international studies are reviewed. Chapter Three details the methodology followed and data used for this study. In particular, descriptive statistics on the low-wage employed and working poor are presented. Moreover, this study makes use of probit regressions to determine the likelihood of being low-wage employed or working poor. This study also determines the characteristics of workers who are chronically, transitorily and never low-wage employed and working poor. This paper utilises 2008, 2010/2011, 2012 and 2014/2015 data from the first to fourth waves of NIDS in order to express, if any, changes that have occurred over a decade. Chapter Four presents the findings of the empirical analysis. Chapter Five concludes the study by providing a summary of the key findings and some policy suggestions.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1 Introduction

This literature review defines key concepts used consistently throughout the study. It further analyses the demand and supply framework in a dual labour market, and the theory of the household and allocation of time. Moreover, this review examines both local and international recent empirical studies which deal with low-wage employment and employed poverty.

### 2.2 Definition of important terms

For the purpose of this study, a number of terms frequently used throughout the paper are defined in this section.

#### 2.2.1 Employment

The October Household Survey (OHS) defines *employed* persons as “those who performed work for pay, profit or family gain in the seven days prior to the household survey interview, or who were absent from work during these seven days, but had some form of paid work to which they would return” (Statistics South Africa, 1999). The definition of *employed* was later amended in the 2004 September Labour Force Survey (LFS) and again in the 2008 Quarterly Labour Force Survey (QLFS) to include those who performed work for “at least one hour in the last seven days” (Statistics South Africa, 2004 and 2008). This distinction is particularly important since it now unambiguously captures part-time, casual, informal and self-employed workers, which constitutes a large portion of low-paid workers (Grimshaw, 2011; Yu, 2012 p. 107).

This definition is in line with the international definition of employment adopted by the 13th International Conference of Labour Statisticians (Husmanns, 2007 p. 8) as well as numerous studies (Majid, 2001; Berger and Harasty, 2002; Kapsos, 2004; Altman, 2007). On the other hand, multiple authors restrict the definition to full-time work only, or specify a particular number of hours/weeks. Nolan and Marx (1999 and 2010) restrict the employment definition to working 44 weeks or more per year. Fleury and Fortin (2006) define persons as *employed* if they worked at least 26 weeks per year or 35 hours per week. Similarly, Brady *et al.* (2010) limit their *employed* sample to persons working at least 30 hours per week.

### 2.2.2 Poverty

The notion of *poverty* is one of great complexity. Poverty has many different meanings and can be measured using a vast range of methods. Nolan and Marx (1999) define poverty as “exclusion from the ordinary life of the community due to lack of resources”, whereas Fleury and Fortin (2006) distinguish the poor as those with low income. These definitions point to a “welfarist approach” (Haughton and Khandker, 2009) or a money-metric approach, making use of “monetary dimensions” as indicators of well-being (Coudouel *et al.*, 2002). These dimensions usually include income, consumption and/or expenditure. In measuring poverty with this approach, a poverty line is set in terms of a chosen dimension (income, consumption or expenditure). A person or household is then considered poor if their income, consumption or expenditure falls below the set poverty line. Stemming from this discussion is the matter of absolute versus relative poverty.

Absolute poverty “establishes a minimum socially acceptable standard for a predetermined welfare indicator to separate the poor from the non-poor” (Statistics South Africa, 2015 p. 3). An example of an absolute poverty line is the *dollar-a-day* poverty line developed by the United Nations and the World Bank (United Nations, 2009). Any individual who earns an income below US \$1 per day is considered poor. On the other hand, the relative poverty approach is defined relative to “the overall distribution of income or consumption in a country” (Coudouel *et al.*, 2002 p. 33) and “treat[s] poverty as a proportion ... of the median per capita income for any year” (United Nations, 2009 p. 45). This approach incorporates the factor of inequality into the definition of poverty (United Nations, 2009 p. 45). An example of a relative approach to measuring poverty is setting a poverty line at 50% of the median household income in the base year. Thus, any individual or household who earns an income below the specified threshold is considered poor.

Multiple authors argue that relying solely on monetary indicators to measure poverty is limiting and that a multidimensional approach which includes the measurement of non-money metrics should be applied (Chambers, 1988; Haughton and Khandker, 2009; United Nations, 2009; Nolan *et al.*, 2010). This approach includes social and psychological factors when measuring poverty. These factors include (but are not limited to) health, education, access to water and shelter, life expectancy and self-esteem (Chamber, 1988; Coudouel *et al.*, 2002; Haughton and Khandker, 2009; Yu, 2012).

Two general approaches to measuring poverty using non-money-metric indicators exist. The first approach identifies a specific need as an indicator of welfare – for example, having access to healthcare services (Yu, 2012). An individual is considered poor if s/he “is deprived in this dimension” (Yu, 2012 p. 190). This approach however, has limitations since it only takes into account one dimension at a time and “fails to estimate tradeoffs among the dimensions” (Yu, 2012 p. 190). The second approach remedies the inefficiency in the former approach by creating a composite welfare index which takes into account multiple non-money-metric factors simultaneously. The welfare index is established in number form, following a statistical procedure that allocates equal or varying weights to each indicator (Yu, 2012 p. 191).

It is important to note that “poverty is not a static condition” (Yu, 2012 p. 190), but it rather encompasses an element of time. Consequently, it is necessary to differentiate between chronic and transient/transitory poverty, particularly since different policy interventions are required to alleviate each type of poverty (Thorbecke, 2004). Chronic poverty is experienced when an individual (or individuals) “are continuously poor” (Yu, 2012 p. 190). The Chronic Poverty Research Centre (2004) provides a more detailed definition by specifying that someone is chronically poor if s/he remains poor after five years. Transitory poverty, on the other hand, can be defined as temporary poverty. That is, transitory poor persons “are those who are poor from time to time” (Haughton and Khandker, 2009 p. 214).

### 2.2.3 Low-wage

Two common definitions of *low-wage* exist in literature. First is an absolute definition, which is “based on an estimation of what a household requires to earn above the income poverty threshold” (Grimshaw, 2011 p. 3). The use of an absolute low-wage threshold is useful when analysing the relationship between low-wage employment and poverty since the threshold is linked to the poverty line (Altman, 2007; Grimshaw, 2011; Visser and Meléndez, 2015). For example, Oosthuizen (2012) sets an absolute low-wage threshold at an US \$2 per day poverty line.

The second definition sets the low-wage threshold “based on a percentage of the median or average wage for the economy” (Grimshaw, 2011 p. 3). The most standardised relative measure of low-wage employment, endorsed by the Organisation for Economic Co-operation and Development (OECD), is a benchmark of two-thirds of the median wage in the base year for all workers in the market (Eardley, 1988; OECD, 1996; Cuesta and Salverda, 2009; Grimshaw,

2011; Oosthuizen, 2012; Schmitt, 2012; OECD, 2015; Schnabel, 2016). Other percentages may however be used, such as one half (50%) of the median wage. A relative measure is particularly useful when making comparisons between different countries (Grimshaw, 2011; Oosthuizen, 2012) and analysing changes over time (Branch and Hanley, 2014).

#### 2.2.4 Working poor

Under the International Labour Office (ILO) definition, the term *working poor* (or *employed poverty*) refer to those who work and reside in poor households (see Majid, 2001; Strengmann-Kuhn, 2004; Gunatilaka, 2010). This definition implies further inspection into who is deemed a 'worker' and what constitutes 'poverty' (Fleury and Fortin, 2006 p. 10). Mosisa (2003 p. 13) only considers "individuals who spend at least 27 weeks" either working or looking for work in his working poor definition. Altman's (2007) working poor definition includes only persons defined as 'employed' in terms of the LFS and who earn less than R2500 per month.

Emphasis should also be placed on whether the working poor are analysed in terms of individuals or households. To account for these differences, Strengmann-Kuhn (2004) suggests four different working poor definitions: (1) all workers living in a poor household; (2) all full-time workers living in a poor household; (3) all people living in a poor household with at least one working household member (working poor household); and (4) all people living in a poor household with at least one full-time working household member (full-time working poor household). Definition (2) and (4) specify workers as 'full-time' workers only, while (1) and (3) provides a wider definition of workers, possibly including part-time and informal workers. Moreover, while definitions (1) and (2) analyse working poverty in terms of individuals, (3) and (4) considers the entire household. Thus, in terms of definitions (3) and (4), even if a certain household member does not work, s/he is still considered working poor if s/he lives in a poor household with at least one working member.

Overall, it is important to adopt a working poor definition that is not only based on poverty data, but also takes into account a country's labour market characteristics "such as the size of the working-age population, the labour force participation rate and the unemployment rate" (Kapsos, 2004 p. 2). Moreover, by examining labour market characteristics and poverty data simultaneously, working poverty estimates that provide "a clearer picture of the relationship between poverty and employment" can be obtained (Kapsos, 2004 p. 2).



## 2.3 Theoretical framework

### 2.3.1 Theory of the dual labour market

The theoretical basis for this study stems directly from the theory of the dual labour market, originally developed by American economists Peter Doeringer and Michael Piore in the late 1960s. The dual labour market, also known as the segmented market, comprises of “two distinct non-competing markets”, namely the primary labour market and the secondary labour market (Barker, 2007 p. 61).

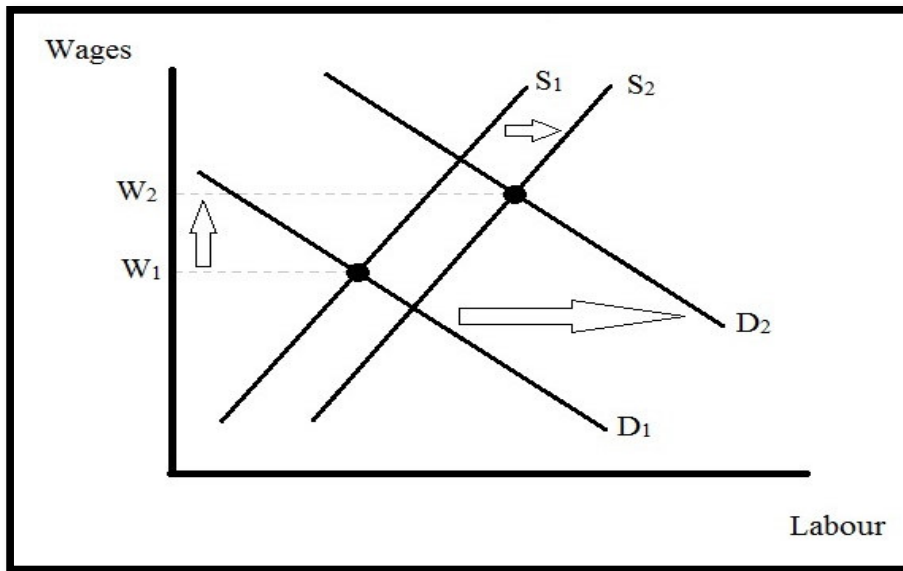
According to this theory, the primary market is characterised by high-skilled workers, pleasant working conditions, job security and high wages. Moreover, access to this market is limited due to the fact that vacancies are often filled internally. Some primary segment occupations include lawyers and medical doctors. The secondary market, on the other hand, is characterised by low-skilled and low-pay employment, as well as poor working conditions and job insecurity. Domestic work and other types of cleaning jobs are examples of secondary segment employment. Hence, it is expected that the likelihood of being low-wage employed and working poor is greater in the secondary market.

Figure 2.1 below represents the primary labour market or the labour market for high-skilled workers. Initially, the wage level for high-skilled workers is at level  $W_1$ . In South Africa, the labour market supply of highly skilled workers is relatively low (Burger and Woolard, 2005 p. 148-149; Oosthuizen, 2006 p. 14 and 23), graphically represented by a small rightward shift of the supply curve from  $S_1$  to  $S_2$ . However, the market demand for high-skilled workers is high, shown by an extensive rightward shift of the demand curve from  $D_1$  to  $D_2$ . Consequently, the wage level increases to  $W_2$ , representing the characteristic of high earnings in the primary segment of the labour market discussed above.<sup>1</sup> Higher earnings may greatly assist workers and their households in escaping and/or avoiding poverty.

---

<sup>1</sup> It is typical in the primary labour market, particularly in South Africa, that when a minimum wage is imposed above the market clearing wage level (although not shown in the graph,  $W_{\min}$  lies above  $W_2$ ), those who are retrenched or struggle to find work in the primary segment of the market then seek work in the secondary segment of the labour market, resulting in an increase in the supply of labour in the latter segment.

Figure 2.1: Primary (high-skilled) labour market

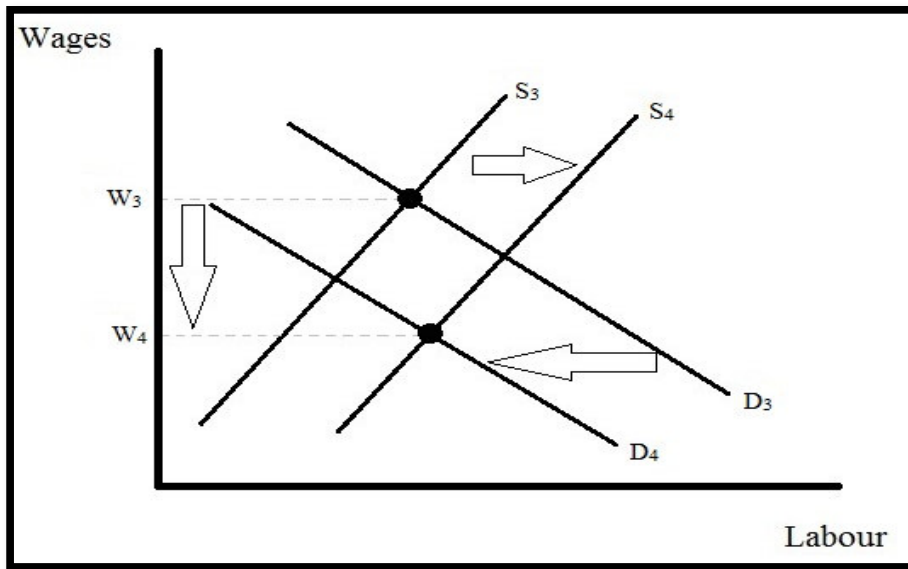


Source: Adapted from Barker, 2007 p. 33 and 55.

The secondary segment is depicted in Figure 2.2 and represents the low-skilled segment of the labour market. The wage level for this segment is initially at  $W_3$ . There is a relatively large supply of workers with low skills, illustrated by a rightward shift of the supply curve from  $S_3$  to  $S_4$ . This may be attributed to the apartheid regime and past unfair labour market practices which prevented the majority (non-White) of the South African population from accessing quality education, skills development and work opportunities. Consequently, when the apartheid regime was abolished and Black individuals were afforded the same rights as White people, the labour market saw a surge in low-skilled Black labour participants (Bhorat and Oosthuizen, 2005; Oosthuizen, 2006).

However, there is a decrease in demand for low-skilled workers, possibly due to structural changes in the economy such that high-skilled workers are now in greater demand in the primary labour segment (Oosthuizen, 2006 p. 24), as shown by a leftward shift of the demand curve from  $D_3$  to  $D_4$ . As a result, the wage level in the secondary segment of the labour market decreases to  $W_4$ , representing the characteristic of low earnings for secondary segment workers. Wage  $W_4$  may be too low of an earnings level for employees to meet their basic needs. Thus, although employed, workers may still be susceptible to employed poverty because they earn a low wage ( $W_4$  in the figure).

Figure 2.2: Secondary (low-skilled) labour market



Source: Adapted from Barker, 2007 p. 33 and 55.

From a Marxist perspective, as highlighted by Rank *et al.* (2003), being burdened with poverty may not be attributed to the workers' "personal traits and characteristics", but rather the "vulnerabilities inherent in the secondary segment of the dual labour market system" (Davis and Sanchez-Martinez, 2014 p. 44-45). In other words, workers become and/or remain poor due to the unfavourable characteristics within the secondary market (low pay, poor prospects for employment and skills growth, and detrimental working environments) rather than personal worker traits.

### 2.3.2 Theory of the household and allocation of time

Theory of the household as a decision-making unit, particularly the unitary model, was introduced by economists such as Samuelson (1956) and Becker (1965). The unitary household model presupposes that a household of members, each of whom have different tastes and preferences, essentially come to a "family consensus" to allocate household income in a manner which maximises "their joint welfare" (Samuelson, 1956 p. 9-10). Thus, "a set of well-behaved indifference" (Samuelson. 1956 p. 21) curves are derived for the entire household and

the household is considered to be “a single utility-maximising entity” (Lekezwa, 2011 p. 23). Consequently, standard consumer (and producer<sup>2</sup>) theory can be applied:

[T]he household acts as a utility-maximising individual whose indifference curves and utility are homothetic and identical for all members of the household. Members of the household decide how much time to allocate to market and non-economic goods, as well as how much of each is purchased (Lekezwa, 2011 p. 23).

Focus is placed particularly on the theory of time allocation or labour-leisure choice theory to explain the division of labour in a household as well as the decision of household members to participate in the labour market or not. Becker (1965 p. 512) explains that, like household income is allocated between members, time is also allocated between all household members. The division of labour in a multi-person household depends on the efficiency of each member. Members who are more efficient at market activities will allocate more time to market activities but less time to consumption activities (vice versa for those who are less efficient at market activities). Overall, “the allocation of the time of any member is greatly influenced by the opportunities open to other members” (Becker, 1965 p. 512) since an increase in market efficiency of one member would cause other members to reallocate their time to consumption activities. This may explain the decision of one member not to participate in the labour market when another member (who is perhaps more educated and skilled) already participates in the market.

Similarly, if household income is allocated to members in a manner which maximises their welfare jointly, such income may be seen as non-labour income for a household member who does not work. This in turn may affect the unemployed worker’s decision to enter the labour market.

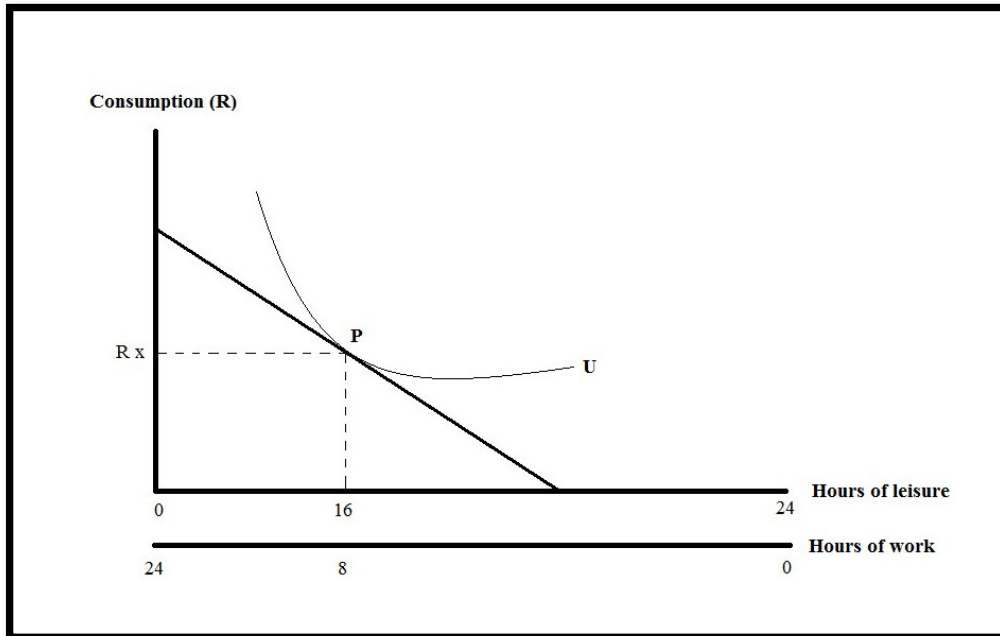
Consider the graphical illustrations below. Figure 2.3 illustrates the labour-leisure choice for one household member (say, member Y) when no one in the household is wage-employed. Consequently, income (assuming zero non-labour income such as social grants and rents) and consumption are both R0. Since member Y and the rest of the household cannot survive without

---

<sup>2</sup> Becker highlights that “households are both producing units and utility maximisers” (1965 p. 495). A household is essentially a “small factory” since “it combines capital goods, raw materials and labour to clean, feed, procreate and otherwise produce useful commodities” (Becker, 1965 p. 496).

any income, member Y will decide to enter the labour market and work 8 hours per day (leisure 16 hours per day). Utility is maximised at the interior solution point P and consumption is  $R_x$ .

Figure 2.3: The labour-leisure choice when no one is employed

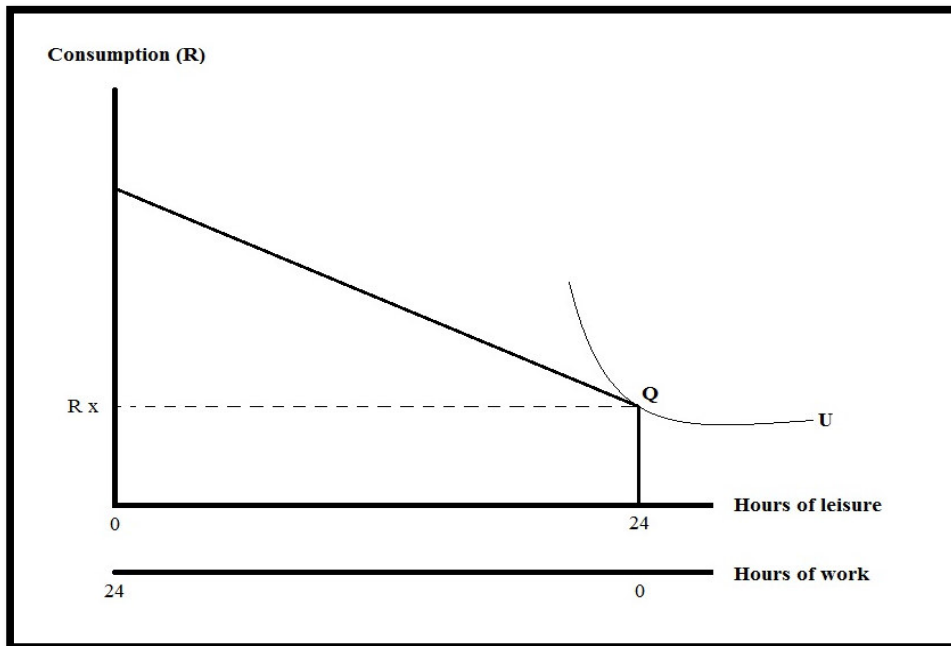


Source: Adapted from Laing, 2011 p. 125; Borjas, 2013 p. 41.

On the other hand, Figure 2.4 illustrates the labour-leisure choice model for one member (say member Z) when at least one other member is already wage employed. In accordance with household theory, total household income is allocated in a manner which maximises joint utility. That said, the income portion that member Z receives may be considered non-labour income ( $R_x$  on the graph). If the reservation wage (the minimum wage required for the member to work) is equal to or exceeds the market wage (the wage member Z will receive if he enters the labour market), member Z will opt not to work and continue to survive off his total household income allocation<sup>3</sup> (Borjas, 2013 p. 41). Utility is thus maximised at the corner solution point Q where member Z works 0 hours and receives income (or consumption) to the value of  $R_x$ .

<sup>3</sup> If non-labour income increases, the reservation wage would also increase. Thus, a higher market wage is required to persuade the household member to work (Borjas, 2013 p. 41-42).

Figure 2.4: The labour-leisure choice of one member when at least one other member is wage employed



Source: Adapted from Laing, 2011 p. 125; Borjas, 2013 p. 41.

Employment alone may thus prove insufficient to escape and remain out of poverty. Since household income is allocated in a manner that maximises joint-member welfare, certain members may be disincentivised from entering the labour market. Consequently, a single source of income in a household with many dependent members may result in the household income being spread too thin and thus preventing members from evading poverty.

## 2.4 Empirical framework

### 2.4.1 Money-metric poverty

Copious amounts of studies on poverty, both local and international, exist in literature. For the purpose of this study, the primary focus is placed on recent empirical studies investigating money-metric poverty in South Africa. That is, the measurement of poverty based on money-metric dimensions such as income, consumption and expenditure.

Van der Berg *et al.* (2006, 2008) utilise data from the All Media and Products Survey to analyse post-transition poverty trends. The authors employ the Foster-Greer-Thorbecke (FGT) poverty measures (1984). Results reveal that poverty headcount rates increased during the mid-1990s,

stabilised and then reduced considerably after 2001. Similar results for poverty depth and severity are estimated. Van der Berg *et al.* (2006 and 2008) highlight that the considerable increase in social grant spending (approximately R22 billion in 2000 prices) may have had the most significant impact on reducing poverty rates. This is so because social grants were targeted, by use of the means test, at poor households specifically, resulting in additional income of approximately R1 000 per poor person, per year. Furthermore, income distribution, for the Black population in particular, was clustered close to the poverty line. Thus, any small change in income distribution could have a significant effect on poverty.

Leibbrandt and Woolard (1999), Borat and Van der Westhuizen (2009) as well as Borat *et al.* (2014) utilise data from the Income and Expenditure Survey (IES) in their analysis of poverty in post-apartheid South Africa. The authors find that poverty decreased between 1995 and 2005 and, while the African population cohort experience the greatest decline in poverty, they still have the highest levels of poverty compared to all other race groups (Bhorat and Van der Westhuizen, 2009; Borat *et al.*, 2014). Similarly, households headed by females reveal higher poverty rates than their male household-headed counterparts. Furthermore, the number of social grant recipients increased significantly by 2005, contributing considerably to the total household income of the poorest households. Leibbrandt and Woolard (1999) find that female-headed households, Africans, households with no or few working members and households with low educated members are more likely to be poor.

Woolard and Leibbrandt (1999) provide a poverty profile of South Africa making use of the 1993 Project for Statistics on Living Standards and Development (PSLSD) Survey in addition to the 1995 OHS and accompanying IES. Findings indicate that poverty incidence is prominent amongst rural area residents, Africans, Coloureds, female-headed households<sup>4</sup> and individuals with no to low levels of educational attainment. Furthermore, findings show that the unemployment rate is 52% for poor households (while the national unemployment rate is 29%) and LFP in poor households is lower than that of non-poor households. Poor households also rely considerably more on state transfers (26%) and remittances (17%) as income compared to non-poor households (3% and 2% for state transfers and remittances respectively).

---

<sup>4</sup> This may be due to the fact that female-headed households are more likely situated in rural areas, have fewer members of working age, females have higher unemployment rates and the wage gap between female and male earnings continue to exist (Woolard and Leibbrandt, 1999 p. 31).

A study conducted by Leibbrandt *et al.* (2010a) measures money-metric poverty in South Africa using data from the 1993 PSLSD survey and the first wave (2008) of NIDS. Results indicate that poverty decreased over the period concerned. Of the total decrease in poverty incidence, the African population constitute the majority (more specifically, African males). Findings show that households with two or more adults or households with children experience a greater share of poverty compared to households with one adult and no children respectively. In terms of employment, the number of households with no workers increased from 21% in 1993 to 31% in 2008. However, the poverty incidence for these households, although significantly high, decreased over the study period (89% in 1993 to 81% in 2008). Leibbrandt *et al.* (2010b) analyse an additional year using data from the 2000 LFS and IES. While demographic and labour market findings remain identical, Leibbrandt *et al.* (2010b) highlight that poverty decreased from 1993, but results prove uncertain as to whether poverty decreased or increased from 2000.

Zizzamia *et al.* (2016) seek to define the middle class in South Africa, utilising a *vulnerability-to-poverty* approach “based on the notion that members of the middle class should be at reasonably low risk of falling into a situation in which they are incapable of meeting basic needs” (Zizzamia *et al.*, p. 1). The authors use data from the 1993 PSLSD survey and the first (2008) and fourth (2014/2015) waves of NIDS to predict the likelihood of remaining in or transitioning into poverty over a period of six years. Findings reveal that about 25% of South Africans who were non-poor in 2008, fell into poverty by 2014/2015, while 19% of those who were poor in 2008, transitioned out of poverty by 2014/2015. 81% of those who were poor in 2008, remained poor by 2014/2015 (chronic poverty). 39% of vulnerable<sup>5</sup> South Africans were poor by 2014/2015, while 91% of the middle class were poor by 2014/2015. Moreover, Africans, members of large households and members of female-headed households have a greater likelihood of being poor.

Finn and Leibbrandt (2016) utilise data from four waves of NIDS (2008, 2010/2011, 2012 and 2014/2015)<sup>6</sup> to explore poverty dynamics and transitions in South Africa. The authors find that of those who are poor in Wave 1, 73% are poor in Wave 4 too. Moreover, while 27% of the

---

<sup>5</sup> Individuals who live just above the poverty line and are thus still highly susceptible to falling into poverty (Zizzamia, *et al.*, 2016 p. 12).

<sup>6</sup> This study is an extension of Finn and Leibbrandt (2013) which used the first three waves of NIDS data to investigate the dynamics and transitions of poverty.



sample exit poverty (they were poor in Wave 1 and non-poor in Wave 4), 21% enter poverty by Wave 4. Again, Africans and females are found to be more likely to transition into poverty. In terms of household composition, having employed members in the household lowers the probability of entering poverty, while adding additional members to the household increases the likelihood of entering poverty.

The central theme that is apparent from literature is that money-metric poverty in South Africa increased in the mid-1990s and then decreased considerably from 2000. Literature suggests that such a decrease in poverty rates is largely as a result of the rapid expansion in government spending on the social grant system. However, the legacy of apartheid remains evident in that previously disadvantaged groups, such as Africans and females, still experience the greatest burden and risk of poverty.

#### 2.4.2 Low-wage employment

Although South African literature has given less attention to the issue of low-wage employment (largely due to the research focus being on unemployment and informal employment), studies on low-wage employment contribute indirectly to the working poor discussion (since this factor may be the cause of or contribute to in-work poverty) and thus deserves investigation.

Valodia *et al.* (2006) outline the extent and incidence of low-wage employment in South Africa. The authors utilise data from the March 2000 and 2004 Labour Force Surveys (LFSs). Two monthly low-wage thresholds are used, namely R1 000 and R2 500, both in current prices. Any worker receiving monthly earnings below these thresholds are considered low-wage employed. Since the authors analyse low-wage employment in terms of different employment types, it is assumed that the analysis includes all workers as persons who are employed. This includes formal sector, informal sector, agricultural sector, domestic, permanent, fixed contract, temporary, casual and seasonal workers. Furthermore, the authors also analyse low-wage employment by employer, including persons who are self-employed.

The results for the year 2000 reveal that, of total wage workers, 78% are low-wage employed when the R2 500 threshold is employed and 53% are low-wage employed when the R1 000 benchmark is used. By 2004, the results show a decrease in the incidence of low-wage employment, to 65% and 39% for the R2 500 and R1 000 benchmarks respectively. To account for inflationary effects, the authors adjust the R1 000 and R2 500 low-wage thresholds to the

“closest possible inflation adjusted incomes benchmarks for 2004”, namely R1 500 and R3 500 (now in constant 2004 prices) respectively (Valodia *et al.*, 2006 p. 92). The results, however inexact, still reveal a decrease in low-wage employment by 2004. However, the extent of the decrease is significantly smaller as compared to the figures presented before the low-wage benchmarks are adjusted for inflationary effects.

The authors further determine the demographic and work characteristics of South Africa’s low-wage employed using the R1 000 and R2 500 low-wage thresholds. The overwhelming majority of the low-wage workforce comprise of African workers (above 80%). As for gender, the distribution of low-wage workers between males and females is relatively equal. Low-wage employment is significantly more prevalent among workers with a pre-matric<sup>7</sup> level of education and workers in the agriculture and private household economic sectors. Persons working in skilled agriculture or fishery occupations, followed by domestic workers reveal the highest incidence of low-wage employment. The overwhelming majority of the total low-wage employed population is employed in the private sector, followed by persons who are self-employed.

Oosthuizen (2012) examines low-pay among wage-employed workers (self-employed and unpaid workers are excluded) in South Africa for the period 2001 to 2007 by using the September editions of the 2001 to 2007 LFSs. Oosthuizen makes use of a real low-pay threshold which calculates the low-wage threshold at two-thirds of the 2007 median hourly wage, “retrospectively deflated by the Consumer Price Index (CPI) for the preceding years” (Oosthuizen, 2012 p. 176). This yields an hourly low-wage threshold of R6.14 and R8.33 for 2001 and 2007 respectively, both in constant 2007 prices.

Results for 2001 show that 38% of total wage employment consist of low-pay employees. By 2007 however, this proportion drops to 32%. Moreover, for the entire period under study, African, female, lowly educated and domestic workers reveal the highest incidence of low-wage employment, although the proportions had decreased for each category by 2007.

Oosthuizen (2012) goes one step further to estimate the probability of being in low-wage employment in South Africa. The author uses the Heckman two-step approach to avoid the

---

<sup>7</sup> Individuals with some educational attainment, but without a matric-level educational attainment.

issue of sample selection bias. Oosthuizen estimates two separate low-pay probit models for men and women given the differences in low-pay risk between the two. The results indicate that White workers are approximately 20% less likely to be in low-wage employment as compared to African workers and males are roughly 4% less likely to be in low-wage employment as compared to female workers. Moreover, workers in the agriculture, forestry and fishing industry are 38% more likely to be in low-wage employment than workers in the manufacturing industry. These results are statistically significant at the 1% level. Oosthuizen does not investigate employed poverty in the study.

To the best of the author's knowledge, Valodia *et al.* (2006) and Oosthuizen (2012) are the only two local empirical studies on low-wage employment. However, a significant amount of international empirical research has been done on this topic, a few of which are reviewed next.

In their research on low-wage employment in the recessionary era in the US, Visser and Meléndez (2015) express that prior research findings show that females, race minorities and young workers had a greater likelihood of being employed in low-wage work before the recession. The authors' findings show that these trends continued during the recession era. Female and young workers show the highest probability of low-wage employment. Furthermore, the Black population group show the highest likelihood of being in low-wage work. Low-wage employment probability decreases as educational attainment increases. However, despite having a Doctorate level of education, low-wage probability still remains relatively high, ranging from 13% for White males to 54% for Black females. Overall, Visser and Meléndez show that the pre-recession trends in low-wage employment became worse by the post-recession period.

Lee and Sobeck (2012) observe that despite the economic growth during the twenty years before the worldwide economic crisis (thus including the pre-1994 apartheid era in South Africa), wage inequality has increased resulting in "increasing numbers of low-paid workers" (Lee and Sobeck, 2012 p. 141). This increase in low-wage employment is particularly important since it affects vulnerable workers<sup>8</sup>. The authors use both an absolute low-pay

---

<sup>8</sup> Vulnerable workers include, but are not limited to, lowly educated, low skilled, female, disabled, Black, young and temporary workers.

threshold and a relative threshold of two-thirds of the median hourly wage. The employee sample includes full-time workers, part-time workers and the self-employed.

Findings reveal an upward trend in low-pay employment incidence in 21 countries and a downward trend in 19 countries, South Africa being part of the group experiencing a downward trend. Developing countries such as Panama, Honduras and South Africa show the highest incidence of low-wage employment, while developed countries such as Finland, Denmark and Belgium reveal the lowest incidence. Notably, countries with high inequality experience declining low-pay trends (South Africa and Brazil included). Again, the incidence of low-wage employment is higher for females.

Overall, low-pay trends vary considerably globally. While trends worsen in the USA, they reveal to have improved in South Africa (despite still being significantly high). However, low-wage employment in different countries display similar characteristics. That is, low-pay incidence and likelihood is higher for female, Black, low educated, young and private household workers. Nevertheless, the incidence of low-wage employment is not the most important issue, but rather whether it is temporary or permanent (Lee and Sobeck, 2012). In other words, low-wage employment may be “a stepping-stone to a better job” or it may lead to continuous low-pay work or unemployment. We thus turn to Stewart (2007) and Schnabel (2016) to investigate this issue further.

Stewart (2007) investigates the relationship between unemployment and low-wage employment, particularly the extent of the impact that low-wage jobs may have on future job prospects, unemployment and continuous unemployment (utilising the British Household Panel Survey). Findings reveal that an individual is approximately twice as likely to be unemployed in the future if they have been previously unemployed. More importantly, low-wage employment too, has a significantly negative impact on future employment prospects. In fact, being low-wage employed is almost as bad as being unemployed in terms of its impact on an individual’s future employment probability. Moreover, low-paying jobs are found to be “the main conduit for repeat unemployment” (Stewart, 2007 p. 529).

Similarly, Schnabel (2016) discusses the nature of low-wage employment (whether it is temporary or continuous) in OECD countries, drawing on data and findings from multiple sources and other studies. The author highlights that workers can get “trapped” in low-wage

employment, particularly because education and skills development opportunities are limited in low-paying jobs (Schnabel, 2016 p. 3). Furthermore, like Stewart (2007), Schnabel explains that low-wage employment can lead to a ‘low-pay no-pay’ cycle, a situation in which low-pay employment leads to “repeated spells of unemployment” (Schnabel, 2016 p. 3). However, the author also highlights that being low-wage employed may be better than being unemployed.

Since low-wage employment may negatively impact workers’ future employment prospects, we analyse a study by Cuesta and Salverda (2009) which looks at education and on-the-job training as possible mechanisms which may help workers progress onto better jobs<sup>9</sup>. The authors make use of panel data, namely the European Community Household Panel, and focus its analysis on Denmark, Italy, the Netherlands and Spain. Findings show that low-wage incidence (as a percentage of the total employed population) increased in the Netherlands (19% to 23%) and decreased for the three other countries from 1995 to 2001. For both years (1995 and 2001) and in all four countries, the highest incidence of low-wage employment is experienced by women. Low-wage employment incidence is lowest for workers with tertiary education or on-the-job training, although low-wage employment percentages show to have increased for workers with on-the-job training from 1995 to 2001 (except in Italy).

The authors run a five-variate (or multivariate) probit model to estimate the impact of educational attainment and on-the-job training on the probability of being and escaping low-wage employment. Results show that higher educational attainment or on-the-job training reduces the likelihood of being in low-wage employment (for all four countries). The positive impact of on-the-job training on low-wage employment is greater in Italy and Spain however. On the other hand, the positive impact of educational attainment (specifically tertiary level) on low-wage employment is largest in Denmark and the Netherlands. Finally, workers with tertiary educational attainment or on-the-job training are more likely to transition upward on the earnings distribution, as compared to all other workers. Hence, educational attainment and on-the-job training contributes significantly to a worker’s chances of escaping low-wage employment.

---

<sup>9</sup> Higher wages, better working conditions, further skills development opportunities and so forth.

Evidently, there is a gap in local empirical research on the topic of low-wage employment. However, an abundance of international research exists, some of which make use of panel data in their analysis of low-wage employment.

#### 2.4.3 Employed poverty

While there are relatively more international studies on the issue of employed poverty, there is a lack of local literature in this regard. More specifically, working poverty is given less consideration in developing countries as a result of “data constraints and a research focus on underemployment, informal employment and subsistence agriculture” (Rogan and Reynolds, 2015 p. 3).

##### 2.4.3.1 Local employed poverty studies

One of the rare studies on employed poverty in South Africa, Rogan and Reynolds (2015), takes an international approach by looking at changes in the post-apartheid working poverty trends using household income. The authors analyse data from the 1997 to 1999 October Household Surveys and the 2004 to 2012 General Household Surveys conducted by Statistics South Africa. The authors do not explicitly state who the sample is restricted to. Two poverty lines are specified for this study, namely an upper-bound poverty line of R593 per capita, per month (in 2000 prices) and a lower-bound poverty line of R323 per capita, per month (in 2000 prices).

Rogan and Reynolds’ (2015) findings show that between 2004 and 2012, working poverty rates declined by 26% and 20% for the lower and upper-bound poverty lines respectively (both of which exceeded the decrease in general poverty rates). The authors emphasise that while the results indicate progress in poverty reduction over the years examined, they also reveal that by 2012, more than 20% of the employed population resided in households with an income level that could not meet their minimum basic needs. Similarly, more than 35% of workers resided in households that could just cover their minimum basic living requirements.

The authors go on to analyse the possible reasons why the extent of the decrease in working poverty exceeded (albeit not by much) that of the decrease in overall poverty for the population

as a whole<sup>10</sup>. The findings show that the percentage of households with social grants as their main source of income increased significantly from 13% in 2004 to 18% in 2010. Results show a substantial increase in the percentage of households with at least one social grant, from 19% in 1997 to 63% in 2012. This result “clearly demonstrate[s] the important role of social grants in the households of the working poor” (Rogan and Reynolds, 2015 p. 17). Grant income played a “slightly more important” role in the reduction of poverty amongst workers, its contribution to said reduction increasing from 2% to 3% between 2004 and 2012 (Rogan and Reynolds, 2015 p. 18).

Lilenstein *et al.* (2016) evaluate the extent of in-work poverty in South Africa and investigate which groups of employees are most vulnerable to poverty. The authors make use of 2012 data from the third wave of NIDS and include regular paid, casual and self-employed workers in the analysis. The authors calculate poverty at the household level and classify households as poor if per capita household income falls below R649 per month. Results indicate a poverty rate of 17% among employed individuals and 19% among households with at least one employed member. The authors further evaluate the characteristics of poor employees and find that Africans, females, workers with low educational attainment, and workers residing in traditional areas represent the largest share of the working poor. Evaluating the incidence of low-pay work and its relationship with employed poverty, the authors classify wages as low if they fall below R11.54 per hour<sup>11</sup> and find that Africans, women, workers with low education and workers in traditional areas represent the largest share of low-wage earners in poverty.

The authors highlight that both worker-level characteristics and household composition is important in determining who the working poor are and which employees are most vulnerable to poverty. Further analysis of household composition shows that households with children, three or more adults, and only one low-wage worker constitute 85% of working households in poverty. Employed poverty is most severe when workers are both low paid and reside in vulnerable households<sup>12</sup>. Thus, “both household composition and employment conditions are important markers of poverty” (Lilenstein *et al.*, 2016 p. 21).

---

<sup>10</sup> For the period 2004 to 2012, the total population poverty rates declined by 20% and 13% for the lower and upper bound lines respectively (Rogan and Reynolds, 2015 p. 12).

<sup>11</sup> A relative low-wage threshold is used, namely two-thirds of the median hourly wage.

<sup>12</sup> “Large household size and high employment dependency” (Lilenstein *et al.*, 2016 p. 21).

A particularly interesting study, by Vermaak (2010), highlights that “survey data are frequently incomplete” (Vermaak, 2010 p. 2). Consequently, users of the data analyse smaller datasets which in turn may bias the resulting findings. As a result, Vermaak (2010) analyses coarsened earnings data from the 2000 and 2006 September LFSs. The author uses sequential regression multivariate imputation to impute missing earnings values (due to item non-response) as well as point and interval-censored values in the LFS data to assess the impact of multivariate imputation methodology on working poverty estimates in South Africa.

While studies generally define the working poor as workers who reside in poor households (Eardley, 1998; Brady *et al.*, 2010; Cheung and Chou, 2015; Rogan and Reynolds, 2015; Lilenstein *et al.*, 2016), Vermaak identifies poverty at the person-level. The working poor are thus defined “as those individuals who work but whose earnings are insufficient to lift them above an individually defined poverty line” (Vermaak, 2010 p. 11). Two poverty lines are utilised in this paper, namely R150 per month (lower-bound poverty line) and R500 per month (upper-bound poverty line). Both poverty lines are expressed in 2000 real prices.

Before imputation techniques are applied, only workers who reported positive earnings are considered. The results reveal working poverty rates of 2.9% (R150 per month poverty line) and 15.7% (R500 per month poverty line) for 2006. When imputation methodologies are applied to both interval responses and missing earnings data, poverty rates increase to 3% (lower-bound poverty line) and 16.2% (upper-bound poverty line) for 2006. However, when earnings values for workers who reported zero earnings are imputed, the findings reveal poverty rates of 3% (lower-bound poverty line) and 17.7% (upper-bound poverty line) for 2006. The author highlights that the approach that produces the correct poverty rates depends “on what the researcher believes about the validity of ... earnings values, and what they represent” (Vermaak, 2010 p. 15).

Finn (2015) analyses the relationship between wages and poverty in South Africa and constructs a working poor line to determine the minimum wage required to lift an average poor working household (a poor household with at least one working member) out of poverty. The third wave of NIDS is used for the working poverty analysis section of this study and the sample is restricted to workers who earn a wage from an employer (self-employed excluded) and workers who work at least 35 hours per week.



A poverty line of R1 319 per capita, per month (in April 2015 prices) is employed. Findings show that 88% of no-earner households are poor, illustrating the extent of LFP as a contributor to poverty. Next, the author establishes a working poverty line based on workers who live in poor households (households who fall below the R1 319 poverty line) and the mean wage that they earn. This working poor line is estimated at R4 125 per month (April 2015 prices) and can be interpreted as the minimum wage required for the working poor to escape poverty. Poor workers (workers who fall below the working poverty line) are found to be predominantly African (80.5%), working in the trade industry (20%) and residing in formal urban areas (60%).

#### 2.4.3.2 International employed poverty studies

A number of international studies focusing on working poverty exist in literature. A study by Eardley (1998) aims to establish the links between individual low-pay employment and poverty in Australia from the early 1980s to mid-1990s. Data from the Australian Bureau of Statistics Survey is used for this study and the low-wage threshold is set at two-thirds of the median hourly wage for each period. The findings show that between 1981 and 1996, the percentage of persons in low-pay employment varies between 13% and 14.6%. Higher low-pay employment percentages (as a share of all workers) are estimated for women as compared to men, although the low-pay employment rate increased for men and dropped for women from 1981 to 1996. Furthermore, results show that low pay is more prevalent amongst employees younger than 21 years. However, low-pay rates for this category of workers decreased significantly from 72% in 1981-1982 to 59% in 1995-1996.

In determining the relationship between low-wage employment and poverty, the author makes use of two poverty lines, namely the Henderson Poverty Line (HPL) and the HPL plus 10%. The empirical results for 1981-1982 indicate that more than 10% of low-pay workers fall below the HPL and 14% are relatively close to the HPL. By the mid-1990s, about 20% of low-pay workers live in poverty and over 25% when using the higher poverty threshold. While the results indicate a significant increase in the proportion of low-wage workers living in poverty over the years, the author emphasises that the largest increase in poverty actually took place amongst workers who do not earn a low wage. Thus, low-pay employment does not unequivocally mean poverty. While low-pay employment may contribute significantly to the rising rate of working poverty, it is not the only contributing factor.

Gunatilaka (2010) investigates the factors associated with the likelihood of being employed poor in Sri Lanka. The author makes use of 2006/2007 data from the Household Income and Expenditure Survey and sets the poverty thresholds, in accordance with international standards (US \$1.25 and \$2 per household member, per day), at Rs 51.83 and Rs 82.92 (Sri Lankan rupees) per household member, per day.

The results reveal that the more income a worker receives, the less likely he or she is to be working poor. Moreover, male workers are less likely to be poor as compared to female workers. The more educated the worker, the less likely he or she is to be poor. The author highlights that “better education appears to be the most important factor reducing the likelihood” of being working poor (Gunatilaka, 2010 p. 21). Furthermore, the likelihood of being working poor decreases as the share of employed household members increases. This result “suggests that access to employment and decent earnings are critical for emerging from poverty” (Gunatilaka, 2010 p. 22). Workers residing in rural and plantation areas are more likely to be working poor as compared to workers residing in urban areas. All these results are statistically significant at 1% level.

Brady *et al.* (2010) provide a more comprehensive study on working poverty. The authors utilise data from the 2009 Luxembourg Income Study to analyse working poverty in 18 affluent countries<sup>13</sup> around the year 2000. The explanations for working poverty are also investigated. The poverty threshold is set at 50% of the median household income and someone is considered working poor if he or she lives in a household in which total household income falls below the poverty threshold and at least one household member is employed.

The average working poor rate is calculated at 5.7% across all 18 countries. The working poverty rate is lowest in Belgium (2.2%) but highest in the USA (14.5%). The results provide a strong support for demographic characteristics as an explanation for working poverty. Multiple household earners and a household head with high educational attainment reduce the likelihood of working poverty. In the analysis of economic performance as an explanation for working poverty, findings show that economic growth positively impacts the likelihood of employment and consequently economic performance indirectly impacts working poverty. The

---

<sup>13</sup> These countries include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom and the USA.

findings support the unified theory<sup>14</sup> as an explanation for working poverty since “union density consistently alleviates poverty among the employed” (Brady *et al.*, 2010 p. 573). The results reveal further that more generous welfare states result in lower working poor probabilities, without negatively impacting employment.

Crettaz and Bonoli (2010), like Brady *et al.* (2010), seek to determine the mechanisms of in-work poverty. The authors focus on three main causes of working poverty, namely low earnings, low labour force attachment (working too few hours) and many dependent household members. The authors include four countries (Germany, Spain, Sweden and the USA) in their analysis, each of which represents a different welfare regime. Two poverty lines are used, “namely 50 per cent and 60 per cent of median equivalised disposable income” (Crettaz and Bonoli, 2010 p. 9). The 60% threshold is used predominantly throughout the study and refers to the ‘at-risk-of-poverty line’. The low-wage threshold is set at one half of the median earnings.

For 2000, the USA experiences the highest working poverty rate (6%) and Germany the lowest (2.9%). Similarly, the ‘at-risk-of-poverty’ rate for workers is highest in the USA (10%) and lowest in Germany (5%). Turning to the main focus of the study, namely the causes of working poverty, the authors first analyse low hourly earnings as a mechanism for in-work poverty. The findings show that workers who earn below 50% of median earnings are vastly more prevalent among the working poor as compared to the non-working poor, particularly in Germany. Thus, the authors emphasise that low-wage is an important factor causing working poverty. Next, the mechanism of low labour force attachment is analysed. The results indicate a lower labour force attachment ratio for the working poor population in all countries except Sweden. The final working poverty mechanism, namely many dependent household members, is measured as a child-to-adult ratio. Results show that the mean child-to-adult ratio is higher for the working poor population for all countries except Sweden. Particularly in the USA and Spain, high child dependency is an important cause of working poverty.

An earlier study by Cheung and Chou (2015) seeks to construct a profile of the working poor in Hong Kong for the year 2011 and determine the main mechanisms that lead to such poverty.

---

<sup>14</sup> This theory explains that labour “markets tend to be either efficient or egalitarian”. While efficient labour markets are more flexible, egalitarian labour markets have greater security given the protection from labour market institutions like unions (Brady *et al.*, 2010 p. 562).

The authors utilise cross-sectional data from the 2011 Hong Kong Population Census and a poverty threshold of HK \$6 062 (Hong Kong dollars) per month, per household. Findings indicate that 23% of all households and 7% of the total working population live in poverty. Moreover, a greater proportion of the working poor consist of males (53%) as compared to females (47%). In addition, 95% of the working poor are represented by workers without university-level education and the largest proportion of poor employees consist of those involved in elementary occupations and jobs in the wholesale, retail and import/export trades, restaurant and hotel industries.

In analysing low earnings as a mechanism of working poverty, results show that persons who tend to have lower earnings include the elderly, persons with low educational attainment and single parents. The results indicate that all three of these groups of workers are more likely to live in poverty. The second mechanism looks at the number of earners in a household. The results show that one-earner households run a considerably higher risk of being working poor as compared to households with three or more earners. The third mechanism looks at the number of children or elderly members in the household. The odds ratios for being working poor for households with two or more children and elderly persons are considerably low. These low figures may suggest that high costs related to the care of dependents may not necessarily be a main mechanism contributing significantly to in-work poverty.

Horemans *et al.* (2016) seek to fill a gap in literature by analysing what happened to part-time work (specifically involuntary part-time work) in Europe and the impact it had on in-work poverty as a result of the global financial crises. A poverty threshold of 60% of national median income is adopted. That is, an individual is considered poor if their “equivalent yearly disposable household income is below 60% of the national median level” (Horemans *et al.*, 2016 p. 6).

The results show an increase in the percentage of part-time and involuntary part-time employment from 2007 to 2013 for most of the countries, a number of which increased by more than 10 percentage points for involuntary part-time employment (including Spain, Italy and Hungary). Estimating the likelihood of in-work poverty in 2008 and 2012, results show that part-time workers have a 40% greater likelihood of being poor as compared to full-time workers. In addition, poverty risk increases as the number of children in the household increases. Decomposing part-time work further, findings show that poverty risk is significantly

higher for involuntary part-time workers as compared to voluntary workers. In fact, the poverty risk for involuntary part-time workers closely resembles the poverty risk for the unemployed.

Hick and Lanau (2017) aim to determine the extent of in-work poverty, who experiences in-work poverty, the impact social security and tax credits have on working poverty and the transitions into and out of in-work poverty in the United Kingdom. The authors utilise a combination of data from the 2014/2015 Households Below Average Income Survey, the 2013/2014 wave of the Family Resources Survey, and the second to fifth waves of the Understanding Society Survey. A number of poverty measures are utilised for this study, but the authors focus particularly on a cost poverty threshold which equates to 60% of the median income. Similarly, the low-wage threshold is set at “two-thirds of gross median hourly earnings” (Hick and Lanau, 2017 p. 15).

Findings show that for 2014/2015, 60% of the poor population are living in households with at least one working member. Persons living in households with only one employed member face a greater risk of employed poverty. Moreover, employed poverty risks are greater for households in the private rental sector. The research findings show that working households that receive tax credits have a significantly lower risk of experiencing in-work poverty. Finally, in analysing transitions in and out of in-work poverty, the results reveal that more than 50% of working households, who were working poor in one year, exit working poverty in the following year. However, working households who face employed poverty have a higher probability of transitioning into unemployment.

## **2.5 Conclusion**

It is evident that both low-wage employment and employed poverty are seriously under-researched topics in South Africa. This study seeks to fill the gap in local literature by determining the low-wage and working poor status of South Africans over a period of seven years (2008-2014). Furthermore, this study aims to determine whether an individual’s low-pay and working poverty status is transitory or chronic. This has not been done in South Africa as yet. The determining factors of employed poverty in South Africa are also under-researched. This study will fill this gap by investigating the contribution factors such as low pay, high household dependency, low LFP (particularly employment) and large household size have on employed poverty. Hence, this study will make a significant contribution to existing literature on low-wage employment and in-work poverty.

## CHAPTER THREE: METHODOLOGY AND DATA

### 3.1 Introduction

Chapter Three describes the empirical model and data used for this study. The empirical model aims to estimate the probability of being low-wage employed and working poor, as well as determine the dynamics and transitions in low-wage employment and working poverty over the period 2008 to 2014. This study uses the first four waves of NIDS data to run numerous econometric models in the empirical analysis.

### 3.2 Empirical model

The empirical analysis is divided into the following six parts: (1) classification of the employed; (2) low-wage employment; (3) employed poverty; (4) further investigation of low-wage employment and working poverty; (5) low-wage earners who are poor; and (6) dynamics of low-wage employment and working poverty over time with the aid of the balanced panel data.

#### 3.2.1 Classification of employed

In all forthcoming empirical analysis, only persons aged 15 to 65 years – the working-age population (WAP) – at the time of the survey are included. The *employed* include the WAP who reported having any type of work at the time the interview was conducted. This includes “a primary job, secondary job, self-employment, paid casual work, personal agricultural work” or “assisting others in business activities” (Chinhema *et al.*, 2016 p. 39). Moreover, only workers who received monetary payment for their services are included in the sample for analysis (zero earners are excluded).

NIDS does not distinguish between formal and informal sector workers. Thus, in order to analyse the impact *sector type* has on low-wage employment (LWE) and working poverty incidence and probability, a distinction is established between formal and informal workers based on “enterprise and employment characteristics” (Heintz and Posel, 2008 p. 27). In terms of employment characteristics, NIDS poses questions regarding medical aid, pension and Unemployment Insurance Fund (UIF) deductions. The survey also distinguishes between having a main job, self-employment, casual work, personal farming and helping others with business activities (asking a separate set of questions for each category). With regard to enterprise characteristics, the survey asks whether or not the business of a self-employed

individual is registered for tax and/or value-added tax (VAT). That said, for this study, the following wage workers are considered part of the *formal sector* (Nackerdien & Yu, 2018):

1. Employees who have medical aid *and/or* pension *and/or* UIF salary deductions; and
2. Self-employed persons whose businesses are registered for tax *and/or* VAT.

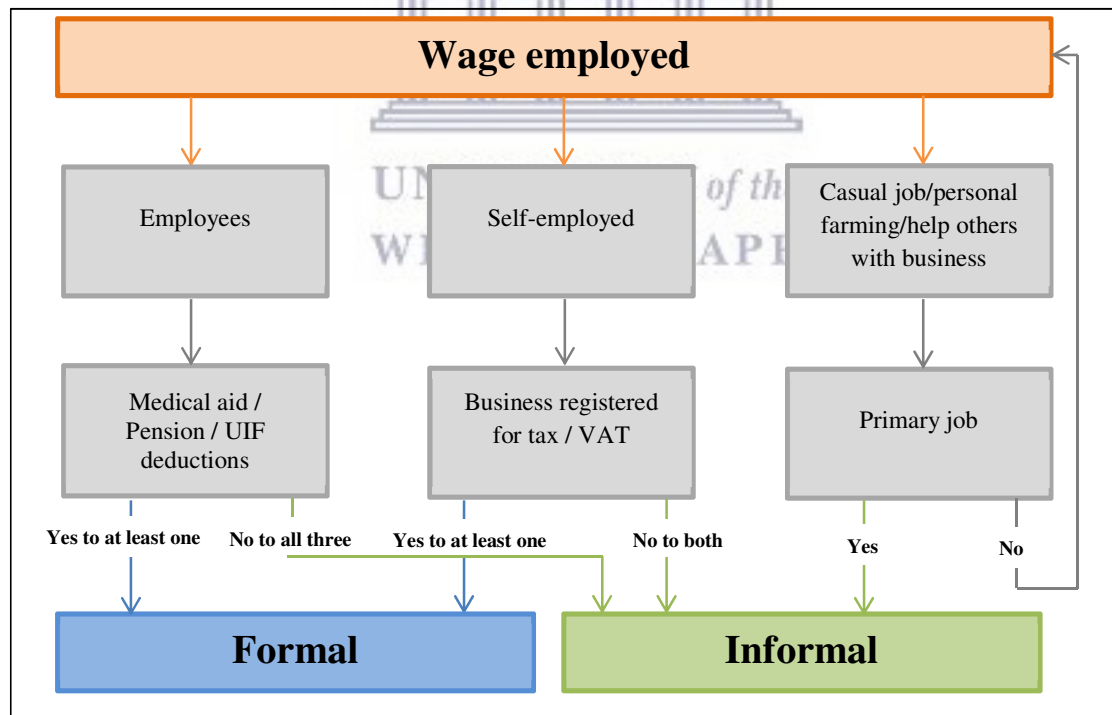
Alternatively, it can be said that these wage workers are considered part of the *informal sector*:

1. Employees who do not have medical aid *and* pension *and* UIF salary deductions;
2. Self-employed persons whose businesses are not registered for tax *and* VAT; and
3. Workers whose primary jobs are casual, personal farming or helping others with business activities.

Workers who do not fall within the scope of formal or informal sector workers are categorised as *unclassified workers* and are not comprehensively analysed in the empirical analysis<sup>15</sup>.

Figure 3.1 summarizes the formal-informal sector categorisation process.

Figure 3.1: Formal-informal sector worker categorisation



Source: Own illustration.

<sup>15</sup> These unclassified workers only account for a negligible proportion of total employed in all four waves of NIDS.

### 3.2.2 Low-wage employment

For the first part of the analysis, some descriptive statistics are presented on the incidence of employment and low-wage workers. Both an absolute and relative approach to measuring LWE is employed. First, an absolute low-wage threshold (LWT) is set in accordance with proposed national minimum wage legislation. That is, the LWT is set at the national minimum wage (NMW) floor of R20 per hour or R3 500 per month in nominal terms (Government Gazette, 2017; Borat and Stanwix, 2018). Next, the LWT is calculated at two-thirds of the median hourly wage in the base year (relative approach). Since literature provides great uncertainty as to which year in the series should be utilised as the base year, this study makes use of three different relative approaches.

One limitation arises with the use of an hourly LWT however. When deriving hourly wage, information on working hours is required. However, some respondents do not specify their total working hours and thus their hourly wage cannot be derived. Consequently, a number of employed persons are lost from the sample due to unspecified hourly wages. This is illustrated in Table 3.1, which highlights the number of employed persons in the sample, the number of employed persons with specified monthly earnings and the number of employed persons with specified hourly wages. More importantly, it reveals that when switching from monthly earnings to hourly wage, there is a significant drop in the number of entries in the sample for all four years of the analysis (over 500 entries). The loss of such a large number of entries may have a substantial impact on the robustness of the research findings. Fortunately, with the use of monthly earnings, all but two people in 2008 have unspecified monthly earnings. Hence, with the use of monthly earnings, the empirical results would be reliable as only two entries in the sample are lost.

Table 3.1: The number of employed with specified monthly earnings and hourly wage

<b>Frequency (n)</b>	<b>2008</b>	<b>2010</b>	<b>2012</b>	<b>2014</b>
Total employed in sample	6 545	5 462	7 125	9 148
Total employed with specified monthly earnings	6 543	5 462	7 125	9 148
Total employed with specified hourly wage	4 754	4 822	5 830	7 995

Source: Own calculations using NIDS 2008, 2010, 2012 and 2014 data.



For this reason, this paper analyses LWE (and working poverty) in terms of monthly earnings. Thus the four low-pay thresholds, all in 2016 December prices, are<sup>16</sup>:

1. LWT [1]: A low-wage threshold set at the proposed NMW which amounts to R3 264.93 per month in real terms<sup>17</sup>;
2. LWT [2]: A low-wage threshold set at two-thirds of the monthly median earnings with the earliest survey year as the base year (2008) which amounts to R1 465.20;
3. LWT [3]: A low-wage threshold set at two-thirds of the monthly median earnings with the latest survey year as the base year (2014) which amounts to R1 798.56; and
4. LWT [4]: A low-wage threshold set at two-thirds of the monthly median earnings for each of the survey years respectively (2008: R1 465.20, 2010: R1 893.94, 2012: R2 040.82 and 2014: R1 798.56).

The fourth LWT is used for all empirical analysis unless explicitly stated otherwise. Also, note that this study will utilise the term “*low-wage*” rather than “*low-earnings*”. Readers should not interpret this to indicate the use of hourly wages in the estimation of LWE. Instead, as expressed above, LWE is estimated using monthly earnings.

Probit models on the likelihood of being a low-wage worker are estimated at person level. First, a simple probit estimating LWE likelihood is employed:

$$Y = \begin{cases} 1 & \text{if } Y^* > 0 \\ 0 & \text{if otherwise} \end{cases} \quad \text{[Equation 1]}$$

$$Y^* = \beta'x + \mu \quad \text{[Equation 2]}$$

If latent variable  $Y^*$  exceeds zero, the worker is observed to be low-wage employed.  $\beta'$  is a vector of unknown parameters,  $x$  is a vector of independent variables and  $\mu$  is the error term. The probit includes the binary *low-wage* dependent variable  $Y$ , which is equal to one if the worker’s earnings fall below the LWT – low-wage ( $Y^* > 0$ ) – and zero if earnings are above

<sup>16</sup> From this point on, all labour income, household income and per capita income amounts are shown in 2016 December prices.

<sup>17</sup> The proposed NMW Bill indicates that the minimum wage must be reviewed each year to, amongst other things, adjust for the impact of inflation. Each new adjusted minimum wage commences on 1 May of the following year.

the LWT (not low-wage) (Guertzgen and Heinze, 2010). Separate regressions are estimated for the first and fourth waves of NIDS.

Next, in order to avoid the issue of sample selection bias, the Heckman two-step approach is used (Bhorat et al., 2001; Oosthuizen, 2006; Oosthuizen, 2012):

- First, the LFP probit is estimated using a full sample of potential labour force participants or WAP. The inverse Mills ratio ( $\lambda$ ) is estimated from these results;
- Next, a wage employment probit model is estimated using a reduced sample of potential labour force participants and includes the  $\lambda$  derived from the LFP probit results. This is done in order to ensure that wage employment is conditional on actual LFP. A second  $\lambda$  is then derived from the results of the wage employment probit;
- Lastly, a LWE probit is estimated from an even more reduced sample and includes the second  $\lambda$  derived from the wage employment probit to have LWE conditional on actual wage employment. The model includes a *low-wage* binary dependent variable which equals zero if wage is above the low-pay threshold (not low-wage) and one if wage falls below the low-pay threshold (low-wage). Separate regressions are estimated for the first and fourth waves of NIDS.

The low-wage probit models include demographic (age, gender, population group and geographic location), education (years of educational attainment), and work (employment type, occupation, industry and sector) explanatory variables to control for the impact that these characteristics may have on low-pay employment probabilities.

### 3.2.3 Employed poverty

The second part of the analysis seeks to estimate the likelihood of being working poor. First, descriptive statistics on the incidence of employed poverty are determined. This study utilises an upper bound poverty line of R779 per capita, per month as the household poverty threshold, derived by Statistics South Africa (2015). This poverty line was calculated using constant 2011 prices. Consequently, to account for inflation, the poverty line is adjusted to reflect constant December 2016 prices. The resultant poverty line is R1 071 per capita, per month. A household (and thus all its members) is considered poor if the monthly per capita household income falls below the adjusted upper bound poverty line.

An individual is considered working poor if he or she is employed *and* resides in a household whose monthly per capita income falls below the poverty threshold (Strengmann-Kuhn, 2004; Rogan and Reynolds, 2015). Thus, the working poor definition incorporates “two statistical units”, namely the individual and household. The individual forms the basis for determining the *working* classification while the household forms the basis for determining the *poor* classification (Majid, 2001 p. 272-273). The advantage of using a household-defined poverty line is that it takes into consideration the possibility of “income-pooling within the household” and enables analysis around the impact of changes in labour market characteristics (employment, wage changes) of individual members on household poverty status (Vermaak, 2010 p. 11).

Next, two simple probit regressions on the likelihood of being employed and poor are estimated<sup>18</sup>, one of which includes LWE as an explanatory variable in order to determine the impact of LWE on working poverty likelihood. The models include a *poor* binary dependent variable which equals zero if monthly per capita household income of the employed is above the poverty line (not poor) and one if this income falls below the poverty line (poor). Separate regressions are estimated for the years 2008 and 2014/2015.

The working poor probit models include demographic (age, gender, population group and geographic location), education (years of educational attainment), work (employment type, occupation, industry and sector) and household (children, elderly, household size, employed household members and unemployed household members) explanatory variables to control for the impact that these characteristics may have on working poor probabilities.

#### 3.2.4 Bivariate probit analysis of low-wage employment and working poverty

It is the author’s view that the two outcomes, *low-wage employed* and *working poor*, are not independent of each other in that an individual may be employed poor because he or she is low-wage employed. Moreover, the severity of his or her employed poor status may increase as his or her low-wage employed status worsens. “In such an instance bivariate probit models would be appropriate as they allow for the interdependence of outcomes” (Chisadza, 2015 p. 12). For this reason, a bivariate probit model is also estimated for 2008 and 2014/2015.

---

<sup>18</sup> See Equations 1 and 2 on simple probits in Section 3.2.2

The bivariate probit model contains two binary dependent variables, namely *low-wage employed* and *employed poor*. Thus two separate equations, each with its own error term, are **jointly** modelled. There may be a correlation between the error terms of the two equations however. That is, both equations may have an unobserved variable (or variables) in common which impact both outcomes (Cotei and Farhat, 2011). For example, work intensity (the number of hours worked) is an unobserved explanatory variable which may impact both LWE and employed poverty. Thus, if the error terms in the two equations are correlated, the bivariate probit model would yield more efficient parameters than when modelling the two dependent variables separately with univariate probit models as outlined in Sections 3.2.2 and 3.2.3 (Meng and Schmidt, 1985; Cotei and Farhat, 2011; Chisadza, 2015; Oyekale, 2015).

Furthermore, the bivariate probit model estimates correlation between the error terms of the two equations, represented by correlation coefficient *rho* (also known as  $\rho$ ). If  $\rho$  is greater than zero, then the error terms of the two equations are correlated and the two outcomes are best modelled jointly (Chisadza, 2015; Oyekale, 2015). It is important to note one shortcoming of the bivariate probit model, namely that it only derives coefficients and not marginal effects, making detailed interpretation challenging. The coefficients only express the direction of the impact the explanatory variable has on the dependent variable, and not the magnitude of the impact (Chisadza, 2015).



The bivariate probit models include demographic (age, gender, population group and geographic location), education (years of educational attainment), work (employment type, occupation, industry and sector) and household (children, elderly, household size, employed household members and unemployed household members) explanatory variables to control for the impact that these characteristics may have on LWE and working poor probabilities.

### 3.2.5 Low-wage earners in poverty

This study further analyses the relationship between LWE and working poverty by estimating the incidence and likelihood of being both low-wage employed and poor, or *low-wage poor*. First, some descriptive statistics on individuals who are low-wage poor are presented. Second, a simple probit model<sup>19</sup> on the likelihood of being low-wage employed **and** poor is estimated

---

<sup>19</sup> See simple probit regressions in Section 3.2.2.

for 2008 and 2014/2015 separately. The model includes a binary dependent variable which equals one if the individual is a low-wage worker *and* poor, and zero if otherwise. The low-wage poor probit models include demographic (age, gender, population group and geographic location), education (years of educational attainment), work (employment type, occupation, industry and sector) and household (children, elderly, household size, employed household members and unemployed household members) explanatory variables to control for the impact that these characteristics may have on low-wage poor probabilities.

### 3.2.6 The dynamics of low-wage employment and working poverty

For the final part of the analysis, the changes in LWE are analysed over time by establishing three different groups of low-wage employed individuals, namely *chronically*, *transitorily* and *never* low-wage employed. Descriptive statistics on the three different categories of low-wage employed individuals are presented. Moreover, a transition matrix is estimated in order to identify the number of workers who transitioned in and out of LWE from 2008 to 2014.

The three categories of low-wage employed persons include:

1. Chronically low-wage employed (those defined as low-wage employed in three to four waves);
2. Transitorily low-wage employed (those who are defined as low-wage employed between one and two waves); and
3. Never low-wage employed (those who are not defined as low-wage employed in all four waves).

Next, the dynamics of the working poor are analysed by establishing three different groups of working poor individuals. Descriptive statistics on the three different categories of employed poor individuals are presented, as well as a transition matrix. The three categories of employed poor persons include:

1. Chronically working poor (those defined as working poor in three to four waves);
2. Transitorily working poor (those who are defined as working poor between one and two waves); and
3. Never working poor (those who are not defined as working poor in all four waves).

Finally, the dynamics of the low-wage poor are analysed by establishing three different groups of low-wage poor individuals. Descriptive statistics on the three different categories of low-wage poor individuals are presented, as well as a transition matrix. The three categories of low-wage poor persons include:

1. Chronically low-wage poor (those defined as low-wage poor in three to four waves);
2. Transitorily low-wage poor (those who are defined as low-wage poor between one and two waves); and
3. Never low-wage poor (those who are not defined as low-wage poor in all four waves).

For this part of the analysis, only the balanced panel component is included. That is, only those who were employed in all four waves are included.

### 3.2.7 Regression analysis summary

This section provides a summary of the four probit models that are estimated in this study. As illustrated below, *A* represents the population that is low-wage employed and poor. *B* represents the population that is low-wage employed but not poor. *C* represents the population that is not low-wage employed but poor. Finally, *D* represents the population that is neither low-wage employed nor poor. The total employed population is denoted by *E* and is made up of the sum of *A*, *B*, *C* and *D* ( $E = A + B + C + D$ ).

Table 3.2: Summary of employed population groups

	Poor	Not poor
Low-wage	A	B
Not low-wage	C	D

The four probit models are summarised as follows:

1. **Low-wage employment probit**  $= \frac{A+B}{E}$

The LWE probit takes into account all workers that are low-wage employed (whether poor or not, as it is not relevant for this regression).

2. **Employed poor probit** 
$$= \frac{A+C}{E}$$

The employed poor probit includes all workers that are poor, regardless of their wage status.

3. **Bivariate probit** 
$$= \frac{A+B}{E} \text{ and } \frac{A+C}{E} \text{ jointly}$$

The bivariate probit estimates probits (1) and (2) jointly in order to achieve more accurate parameters than if they were estimated separately.

4. **Low-wage poor probit** 
$$= \frac{A}{E}$$

The low-wage poor probit takes into account only those workers who are both low-wage employed **and** poor.

### 3.3 Data

2008, 2010/2011, 2012 and 2014/2015 data from the first to fourth waves of NIDS is utilised for the bulk of this study<sup>20</sup>. NIDS is a longitudinal survey and is South Africa's first national panel study, conducted by the Southern Africa Labour and Development Research Unit (SALDRU). The sample size is 28 226, 34 085, 37 397 and 42 337 individuals for waves 1, 2, 3 and 4 respectively (Chinhema *et al.*, 2016)<sup>21</sup>. The first five parts of the empirical analysis utilise the full NIDS samples with post-stratified weights. To address the final objective of this paper, namely the investigation of LWE and working poverty changes over time, the sample is restricted to the balanced panel. That is, only those who took part in all four waves of NIDS are included in the sample for this part of the analysis. In order to correct the balanced panel sample for attrition-bias, panel weights derived by SALDRU are applied. In the final balanced panel sample, there are 8 631 observations (weighted number being 18.77 million).

NIDS data is utilised for this study because it contains information on both person-level labour income (necessary for analysing LWE) and household income (necessary for analysing

<sup>20</sup> Data from the 1995 to 1999 OHSs, 2000 to 2007 LFSs, and 2010 to 2016 QLFSs is used for some introductory low-wage employment descriptive statistics. The 2008 and 2009 QLFSs are excluded because the surveys do not pose questions on labour earnings.

<sup>21</sup> The original sample size for waves 2 and 3 was 34 098 and 37 436 respectively (Brown *et al.*, 2012; De Villiers *et al.*, 2013).

working poverty). The IES only contains data on household income, while the LFS and QLFS only contain data on person-level labour income. Moreover, while the General Household Survey captures both person-level labour income and household expenditure, household expenditure is captured in bands, of which only a few band options are provided. As alluded to above, this study aims to track the changes in an individual's LWE and working poverty status over time. The use of NIDS allows for this since the data is not randomly sampled. Instead, all individuals who resided in households that participated in the first wave are interviewed in all consecutive waves (continuing sample members)<sup>22</sup>.

Finally, NIDS allows for the capture of multiple labour income sources. Thus, total labour income is the sum of income earned from the following sources:

- Primary and secondary jobs;
- Casual work;
- Self-employment;
- 13th cheque;
- Profit share;
- Extra payment on a piece-rate basis;
- Other bonuses from the primary job;
- Other sources; and
- Helping a friend with their business.



### 3.4 Conclusion

Chapter Three describes the empirical model and data used for this paper. First, the employed are clearly categorised. Next, the statistical modelling adopted, together with the relevant minimum thresholds, for LWE and working poverty analysis is outlined. The analysis aims to estimate the probabilities of being low-wage employed, working poor and low-wage poor respectively, with the aid of numerous econometric techniques. The analysis also aims to determine the changes in LWE and working poverty over time. Last, the data used for this study, namely the first to fourth waves of NIDS, is discussed together with a background on NIDS data and the reasons for its use in this paper.

---

<sup>22</sup> Unless they refuse to participate again, are not available to participate, have passed on, moved outside South Africa or are no longer co-residents with any other continuing sample members, in which case SALDRU would replace them with new participants.



## CHAPTER FOUR: EMPIRICAL FINDINGS

### 4.1 Introduction

This chapter presents the empirical findings for this study. First, descriptive statistics on LWE, working poverty and low-wage poverty (LWP) are presented. Second, the findings of the main econometric analysis are discussed. Finally, the results of the extended analysis around the dynamics and transitions of LWE, working poverty and LWP are discussed. Again, unless explicitly stated otherwise, the fourth LWT is used for all empirical analysis related to LWE.

### 4.2 Descriptive statistics

#### 4.2.1 Aggregate statistics

Figure 4.1 below illustrates long-term trends in LWE. Statistics South Africa's OHS, LFS and QLFS datasets are compared to the four waves of NIDS. Findings reveal a gradual decrease in LWE from 1995 to 1998 before a great upward surge from 1998 to 2000. From the year 2000, LWE gradually decreases until around 2003 before increasing again. Data is missing for years 2008 and 2009 since the 2008 and 2009 QLFSs do not include data on labour earnings.

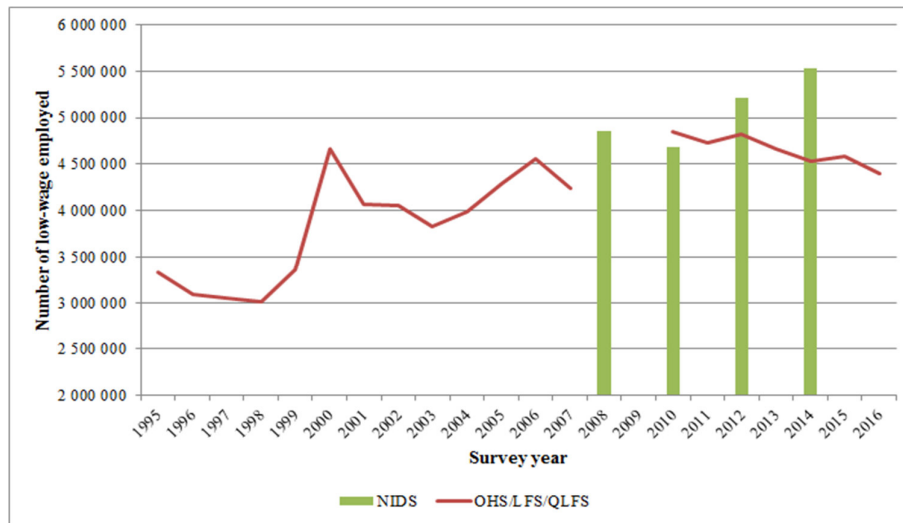
LWE stabilises between four and five million (but shows a very gradual decrease) from 2010 to 2016 for the QLFS. NIDS data on the other hand, shows a steady increase in LWE from 2010 to 2014, of which the 2012 and 2014 LWE totals exceed that of the corresponding QLFS periods.<sup>23</sup>

Table 4.1 below highlights employment in South Africa from 2008 to 2014. The number of employed persons decreases from 2008 to 2010 (possibly due to the global economic recession). From 2010 onward however, employment increases. Overall, the number of employed persons grew by approximately 3.7 million from 2008 to 2014.

---

<sup>23</sup> From this point on, the empirical analysis focuses on NIDS data only.

Figure 4.1: Low-wage employment using the fourth low-wage threshold



Source: Own calculations using OHS 1995-1999, LFS 2000-2007, QLFS 2010-2016 and NIDS 2008-2014.

Table 4.1: Number of employed persons

Year	Employed
2008	13 468 666
2010	12 910 294
2012	14 822 749
2014	17 175 750

Source: Own calculations using NIDS 2008, 2010, 2012 and 2014 data.

Table 4.2 analyses LWE as a portion of total employment in South Africa. All four LWTs are employed for each survey year. Findings reveal a decrease in LWE frequency from 2008 to 2010, followed by an increase from 2010 to 2012 and 2012 to 2014 when utilising all four thresholds. For all four years, LWE is the highest when using LWT [1]. That is, 61%, 53%, 55% and 56% of the employed population are low-wage workers in 2008, 2010, 2012 and 2014 respectively. These estimates are, on average, 20 percentage points higher than those estimated when using the other three LWTs<sup>24</sup>. While the frequency column may indicate otherwise, the percentage column illustrates an overall decrease in LWE from 2008 to 2014 for all four thresholds. A similar decreasing trend in LWE is estimated for South Africa by Valodia *et al.*

<sup>24</sup> This is expected given that LWT [1] is considerably higher than the remaining three thresholds.

(2006) for the period 2000 to 2004, Oosthuizen (2012) for the period 2001 to 2007, and Lee and Sobeck (2012) for the period 1995 to 2009.

Table 4.2: Low-wage employed persons as a percentage of the total employed population

Year	Low-wage employed		Not low-wage employed		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
<b>LWT [1] – Proposed NMW</b>						
2008	8 219 824	61.03	5 248 842	38.97	13 468 666	100.00
2010	6 810 736	52.75	6 099 558	47.25	12 910 294	100.00
2012	8 102 641	54.66	6 720 108	45.34	14 822 749	100.00
2014	9 622 123	56.02	7 553 627	43.98	17 175 750	100.00
<b>LWT [2] - 2008 as base year</b>						
2008	4 851 897	36.02	8 616 769	63.98	13 468 666	100.00
2010	3 567 527	27.63	9 342 767	72.37	12 910 294	100.00
2012	3 750 278	25.30	11 072 471	74.70	14 822 749	100.00
2014	4 657 893	27.12	12 517 857	72.88	17 175 750	100.00
<b>LWT [3] - 2014 as base year</b>						
2008	5 812 252	43.15	7 656 414	56.85	13 468 666	100.00
2010	4 508 009	34.92	8 402 285	65.08	12 910 294	100.00
2012	4 615 618	31.14	10 207 131	68.86	14 822 749	100.00
2014	5 532 252	32.21	11 643 498	67.79	17 175 750	100.00
<b>LWT [4] - each survey year respectively as base year</b>						
2008	4 851 897	36.02	8 616 769	63.98	13 468 666	100.00
2010	4 679 736	36.25	8 230 558	63.75	12 910 294	100.00
2012	5 220 466	35.22	9 602 283	64.78	14 822 749	100.00
2014	5 532 252	32.21	11 643 498	67.79	17 175 750	100.00

Source: Own calculations using NIDS 2008, 2010, 2012 and 2014 data.

Table 4.3 below outlines working poverty incidence from 2008 to 2014. Just over 4.75 million individuals are estimated to be working poor in 2008. This frequency decreases dramatically from 2008 to 2010 (4.09 million)<sup>25</sup>. However, the decrease in working poverty incidence is short lived as the number of employed poor people increases from 2010 to 2012 (4.15 million), and again from 2012 to 2014 (4.42 million). On the other hand, as a percentage of the total employed population, working poverty rates show a consistent decrease from 2008 (35%) to 2014 (26%)<sup>26</sup>. This coincides with the general downward trend in poverty incidence

<sup>25</sup> This decrease in working poverty numbers could be due to the global economic recession which resulted in millions of job losses. Similarly, the decrease could also be attributed to the general decline in poverty rates in South Africa.

<sup>26</sup> These findings correspond with Rogan and Reynolds (2015) who also estimate a decrease in working poverty rates from 2004 to 2012.

highlighted by South African literature (refer to Section 2.4.1). While working poverty rates show a downward trend over the years in question, it still remains significantly high. That is, more than one quarter of all working persons are poor.

Table 4.3: Employed poor persons as a percentage of the total employed population

Year	Employed poor		Employed non-poor		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
2008	4 756 157	35.31	8 712 509	64.69	13 468 666	100.00
2010	4 093 196	31.70	8 817 098	68.30	12 910 294	100.00
2012	4 157 821	28.05	10 664 928	71.95	14 822 749	100.00
2014	4 422 073	25.75	12 753 677	74.25	17 175 750	100.00

Source: Own calculations using NIDS 2008, 2010, 2012 and 2014 data.

Persons who are both low-wage employed and poor are presented in Table 4.4 below. A similar trend to that estimated in Table 4.3 is present amongst the low-wage poor. The frequency of low-wage poor persons decreased from approximately 3.48 million in 2008 to 2.97 million in 2010. The number then increases from 2010 to 2012 (3.12 million), and again from 2012 to 2014 (3.23 million). However, as a proportion of total employment, the low-wage poor rate drops consistently by approximately 2 percentage points each year, from 26% in 2008 to 19% in 2014.

Table 4.4: Low-wage poor persons as a percentage of the total employed population

Year	Low-wage poor		Other		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
2008	3 481 067	25.85	9 987 599	74.15	13 468 666	100.00
2010	2 971 734	23.02	9 938 560	76.98	12 910 294	100.00
2012	3 124 069	21.08	11 698 680	78.92	14 822 749	100.00
2014	3 235 326	18.84	13 940 424	81.16	17 175 750	100.00

Source: Own calculations using NIDS 2008, 2010, 2012 and 2014 data.

Tables A2 to A5 in the Appendix illustrate the relationship between LWE and poverty in a 2x2 matrix format (cells should be read row-by-column or row x column). Cell 3x4 indicates all persons who are low-wage employed. LWE rates decrease from 36% in 2008 to 32% in 2014. These rates are still significantly high however. Persons who are employed and poor are found in the 4x3 cell. Working poverty rates decrease continuously from 35% in 2008 to 26% in 2014. Thus, approximately one in every four workers is poor. Finally, persons who are both

low-wage employed and poor (most vulnerable group) are highlighted in the 3x3 cell. Fortunately, low-wage poor trends show a downward trend from 2008 (26%) to 2014 (19%).

#### 4.2.2 Profile of different group of workers

##### 4.2.2.1 Low-wage employed

LWE in 2008 and 2014 is analysed in Table 4.5 in terms of demographic, education, labour market and household characteristics. Of the total low-wage population, more than half are female. Moreover, low-wage proportions between men and women made no significant progress from 2008 to 2014. In fact, by 2014, the female proportion of the low-wage population only decreased by one percentage point to 54%. African workers comprised the overwhelming majority of low-wage employed persons (86% in 2008 and 83.5% in 2014). This could be partially due to the fact that African persons make up over 70% of the South African working population.

In terms of age, the 25 to 34 and 35 to 44 years age cohorts show the highest percentage of LWE (29% and 25% respectively). The majority of low-wage workers reside in urban areas, with this proportion increasing significantly from 51% to 62% by 2014. Similarly, most low-wage workers reside in the KwaZulu-Natal and Gauteng provinces.

As expected, persons with lower educational attainment make up the highest proportion of low-wage workers in both periods. More specifically, a low-wage worker has, on average, approximately 7.4 (2008) to 8.8 (2014) years of educational attainment<sup>27</sup>. This is equivalent to an incomplete secondary school education. In terms of labour market characteristics, the largest proportion of low-wage employed persons are full-time employees (45% in 2008 and 49% in 2014). The majority of low-wage earners work in the informal sector (60% in 2008 and 72% in 2014) and in elementary occupations (32% in 2008 and 40% in 2014). By 2014, workers in the private household, community, social and personal (CSP) services and wholesale and retail industries comprise the majority of the low-wage employed population.

---

<sup>27</sup> The average years of education attained by low-wage employed persons increased over the years as more people gain access to education.

Table 4.5: Low-wage employment in 2008 and 2014

	2008			2014		
	Low-wage (%)	Not low-wage (%)	Total (%)	Low-wage (%)	Not low-wage (%)	Total (%)
<b>Gender*</b>						
Female	55.26	35.58	42.67	53.99	37.81	43.02
Male	44.74	64.42	57.33	45.87	62.19	56.93
Total	100.00	100.00	100.00	99.86	100.00	99.95
<b>Race</b>						
African	86.27	63.72	71.84	83.50	70.92	74.97
Coloured	8.87	10.79	10.10	11.25	10.66	10.85
Asian/Indian	2.02	4.51	3.61	0.80	3.72	2.78
White	2.84	20.99	14.45	4.45	14.69	11.39
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Age cohort</b>						
Age 15 to 24 years	19.42	10.19	13.51	15.28	10.45	12.01
Age 25 to 34 years	29.14	34.41	32.51	29.12	35.11	33.18
Age 35 to 44 years	24.96	29.56	27.90	25.49	29.07	27.92
Age 45 to 54 years	17.03	18.35	17.88	20.95	17.05	18.30
Age 55 to 65 years	9.45	7.49	8.20	9.15	8.32	8.59
Total	100.00	100.00	100.00	100.00	100.00	100.00
Mean age in years	37.48	37.52	37.50	38.10	37.67	37.81
<b>Education</b>						
None	12.17	2.08	5.72	5.04	1.34	2.53
Incomplete primary	20.17	6.54	11.45	15.48	4.34	7.93
Incomplete secondary	50.35	34.40	40.15	56.82	37.26	43.56
Matric	13.62	29.02	23.47	14.68	21.90	19.58
Matric + Cert. / Dip.	3.13	18.80	13.15	7.46	25.51	19.70
Degree	0.24	8.79	5.71	0.48	9.41	6.53
Other/unspecified	0.33	0.37	0.36	0.03	0.24	0.17
Total	100.00	100.00	100.00	100.00	100.00	100.00
Mean years of education	7.44	10.93	9.64	8.83	11.36	10.53
<b>Area type</b>						
Traditional	34.44	11.89	20.01	32.45	13.79	19.80
Urban	51.36	79.60	69.43	61.93	81.20	74.99
Farms	14.20	8.51	10.56	5.62	5.01	5.20
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Province</b>						
Western Cape	9.98	15.21	13.32	12.32	14.92	14.08
Eastern Cape	9.87	7.27	8.21	13.90	6.52	8.90
Northern Cape	2.82	2.21	2.43	2.30	2.80	2.64
Free State	6.36	4.62	5.25	6.34	4.85	5.33
KwaZulu-Natal	29.31	12.38	18.48	18.30	14.81	15.93
North West	6.86	6.96	6.93	3.82	5.24	4.79
Gauteng	18.95	36.99	30.49	24.72	36.54	32.73
Mpumalanga	7.39	7.52	7.48	7.82	8.66	8.39
Limpopo	8.46	6.84	7.42	10.48	5.66	7.21
Total	100.00	100.00	100.00	100.00	100.00	100.00

Table 4.5: Continued

	2008			2014		
	Low-wage (%)	Not low-wage (%)	Total (%)	Low-wage (%)	Not low-wage (%)	Total (%)
<b>Employment type</b>						
Employee	44.49	87.20	71.81	48.83	89.78	76.59
Self-employed	21.94	8.48	13.33	22.10	7.02	11.88
Casual worker	15.78	4.01	8.25	22.66	3.12	9.41
Unclassified	17.79	0.31	6.61	6.41	0.08	2.12
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Occupation</b>						
Managers	1.04	6.67	4.65	0.98	7.46	5.37
Professionals	1.79	14.53	9.94	2.87	13.77	10.26
Technicians	0.81	5.70	3.94	1.69	6.87	5.20
Clerks	2.58	10.35	7.55	1.46	8.18	6.02
Services workers	6.77	13.75	11.23	24.05	16.94	19.23
Skilled agriculture	8.15	1.67	4.00	0.51	0.57	0.55
Traders	9.43	16.92	14.22	15.46	15.81	15.70
Operators	4.67	9.81	7.96	6.06	12.43	10.38
Elementary occupation	32.27	12.70	19.75	39.53	16.14	23.67
Other/unspecified	32.49	7.91	16.77	7.40	1.84	3.63
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Industry</b>						
Agriculture	9.01	3.10	5.23	7.68	4.50	5.53
Mining	0.72	5.23	3.61	0.39	5.05	3.55
Manufacturing	5.56	12.96	10.30	7.91	11.38	10.26
Utilities	0.06	1.02	0.67	0.87	1.66	1.41
Construction	3.54	4.05	3.86	10.81	8.58	9.30
Wholesale and retail	5.55	11.97	9.65	17.27	19.38	18.70
TSC	1.16	4.24	3.13	4.05	6.95	6.01
Finance	2.47	11.00	7.93	3.18	13.66	10.28
CSP services	4.15	21.53	15.27	17.64	23.70	21.75
Private household	9.70	3.75	5.90	23.00	4.45	10.43
Other/unspecified	58.08	21.15	34.46	7.20	0.69	2.79
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Sector</b>						
Informal	59.53	25.06	37.48	72.44	23.03	38.95
Formal	22.67	74.64	55.92	21.15	76.89	58.93
Unclassified	17.79	0.31	6.61	6.41	0.08	2.12
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Household variables</b>						
Mean household size	4.85	3.57	4.04	4.32	3.61	3.84
Mean no. of children	1.62	0.92	1.18	1.37	0.97	1.10
Mean no. of elderly	0.27	0.14	0.19	0.22	0.19	0.20
Mean no. of employed	1.89	1.69	1.76	1.75	1.71	1.72
Mean no. of unemployed	0.43	0.29	0.34	0.26	0.17	0.20

Source: Own calculations using NIDS 2008 and 2014 data.

\* The LWE totals for gender do not add up to 100% because some persons did not specify their gender.

With regard to household composition, the average number of household members, children and elderly persons is higher for low-wage employed persons compared to those who are not low-wage employed. Overall, LWE findings for this study correspond with those estimated by Valodia *et al.* (2006) and Oosthuizen (2012), all of whom estimate that LWE incidence is higher amongst women, African workers, workers with low educational attainment and workers employed in the private household industry.

#### 4.2.2.2 Employed poor

Table 4.6 outlines employed poverty in terms of demographic, education, labour market and household characteristics in 2008 and 2014. A greater proportion of the working poor population consists of females (51% in 2008). This proportion increased slightly to 53% by 2014. The overwhelming majority of all employed poor persons in 2008 are African (90%), followed by Coloured persons (8.5%). By 2014, the African proportion of the working poor decreased marginally to 86% while the Coloured working poor population increased to 10%.

The working poor are largely comprised of persons aged 25 to 44 years, the mean age being approximately 37 years. Just over 50% of poor workers reside in urban areas in 2008. This percentage increased by 7 percentage points by 2014, possibly as a result of urbanisation in which people move to the urban city areas in order to find employment. Also, a large proportion of poor workers reside in KwaZulu-Natal and Gauteng.

Approximately 80% of the working poor have educational attainment below Matric level in both years. Furthermore, the working poor comprise mostly of persons who are employees (full-time or regular paid workers), informal sector workers, traders, service workers, persons in elementary occupations, and persons who work in the wholesale and retail, private household and CSP services industries.



Table 4.6: Employed poverty in 2008 and 2014

	2008			2014		
	Employed poor (%)	Not employed poor (%)	Total (%)	Employed poor (%)	Not employed poor (%)	Total (%)
<b>Gender*</b>						
Female	51.05	38.09	42.67	52.90	39.60	43.02
Male	48.95	61.91	57.33	47.10	60.34	56.93
Total	100.00	100.00	100.00	100.00	99.94	99.95
<b>Race</b>						
African	90.05	61.9	71.84	86.37	71.02	74.97
Coloured	8.53	10.95	10.1	10.14	11.10	10.85
Asian/Indian	0.37	5.38	3.61	0.78	3.48	2.78
White	1.06	21.76	14.45	2.71	14.40	11.39
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Age cohort</b>						
Age 15 to 24 years	18.01	11.06	13.51	14.29	11.21	12.01
Age 25 to 34 years	29.23	34.30	32.51	31.71	33.69	33.18
Age 35 to 44 years	25.01	29.48	27.90	27.33	28.12	27.92
Age 45 to 54 years	19.23	17.14	17.88	19.29	17.96	18.30
Age 55 to 65 years	8.52	8.02	8.20	7.37	9.01	8.59
Total	100.00	100.00	100.00	100.00	100.00	100.00
Mean age in years	37.42	37.55	37.5	37.29	37.99	37.81
<b>Education</b>						
None	10.34	3.19	5.72	5.09	1.64	2.53
Incomplete primary	20.82	6.33	11.45	14.25	5.73	7.93
Incomplete secondary	51.13	34.15	40.15	58.22	38.48	43.56
Matric	13.99	28.65	23.47	15.37	21.04	19.58
Matric + Cert. / Dip.	3.15	18.61	13.15	6.93	24.12	19.70
Degree	0.03	8.81	5.71	0.08	8.77	6.53
Other/unspecified	0.55	0.25	0.36	0.07	0.21	0.17
Total	100.00	100.00	100.00	100.00	100.00	100.00
Mean years of education	7.59	10.78	9.64	8.88	11.12	10.53
<b>Area type</b>						
Traditional	38.33	10.02	20.01	37.85	13.55	19.80
Urban	50.09	79.98	69.43	56.72	81.33	74.99
Farms	11.58	10.01	10.56	5.43	5.12	5.20
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Province</b>						
Western Cape	9.96	15.16	13.32	10.87	15.19	14.08
Eastern Cape	10.90	6.74	8.21	14.76	6.86	8.90
Northern Cape	2.59	2.34	2.43	2.11	2.82	2.64
Free State	6.28	4.69	5.25	6.63	4.88	5.33
KwaZulu-Natal	29.92	12.23	18.48	20.29	14.42	15.93
North West	6.05	7.41	6.93	3.87	5.10	4.79
Gauteng	18.71	36.92	30.49	20.70	36.90	32.73
Mpumalanga	7.91	7.24	7.48	9.46	8.02	8.39
Limpopo	7.67	7.28	7.42	11.31	5.79	7.21
Total	100.00	100.00	100.00	100.00	100.00	100.00

Table 4.6: Continued

	2008			2014		
	Employed poor (%)	Not employed poor (%)	Total (%)	Employed poor (%)	Not employed poor (%)	Total (%)
<b>Employment type</b>						
Employee	53.22	81.96	71.81	58.25	82.95	76.59
Self-employed	18.51	10.50	13.33	17.97	9.76	11.88
Casual worker	14.13	5.04	8.25	18.67	6.20	9.41
Unclassified	14.14	2.50	6.61	5.11	1.08	2.12
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Occupation</b>						
Managers	1.06	6.60	4.65	1.32	6.78	5.37
Professionals	2.35	14.08	9.94	2.89	12.81	10.26
Technicians	1.60	5.22	3.94	1.69	6.42	5.20
Clerks	3.21	9.92	7.55	1.90	7.44	6.02
Services workers	9.26	12.31	11.23	22.88	17.97	19.23
Skilled agriculture	5.62	3.12	4.00	0.43	0.59	0.55
Traders	12.25	15.30	14.22	15.76	15.67	15.70
Operators	6.95	8.51	7.96	7.57	11.35	10.38
Elementary occupation	31.20	13.50	19.75	39.25	18.27	23.67
Other/unspecified	26.52	11.44	16.77	6.32	2.69	3.63
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Industry</b>						
Agriculture	7.24	4.13	5.23	7.93	4.69	5.53
Mining	0.91	5.08	3.61	0.92	4.46	3.55
Manufacturing	7.36	11.90	10.30	8.67	10.82	10.26
Utilities	0.21	0.92	0.67	0.85	1.60	1.41
Construction	4.49	3.52	3.86	10.70	8.81	9.30
Wholesale and retail	8.28	10.40	9.65	19.91	18.28	18.70
TSC	1.81	3.85	3.13	3.61	6.85	6.01
Finance	3.26	10.47	7.93	4.68	12.22	10.28
CSP services	6.53	20.04	15.27	17.94	23.07	21.75
Private household	9.29	4.04	5.90	18.72	7.55	10.43
Other/unspecified	50.61	25.64	34.46	6.07	1.65	2.79
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Sector</b>						
Informal	54.89	27.97	37.48	62.80	30.68	38.95
Formal	30.97	69.53	55.92	32.09	68.24	58.93
Unclassified	14.14	2.50	6.61	5.11	1.08	2.12
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Household variables</b>						
Mean household size	5.67	3.14	4.04	5.68	3.20	3.84
Mean no. of children	2.07	0.68	1.18	2.10	0.76	1.10
Mean no. of elderly	0.26	0.15	0.19	0.23	0.19	0.20
Mean no. employed	1.84	1.72	1.76	1.76	1.71	1.72
Mean no. unemployed	0.62	0.19	0.34	0.42	0.13	0.20

Source: Own calculations using NIDS 2008 and 2014 data.

\* The LWE totals for gender do not add up to 100% because some persons did not specify their gender.

The average household composition for a working poor individual consists of six household members (roughly two more members than non-working poor persons) and two children (approximately one for non-working poor individuals). This could possibly imply that large household size and many dependent members are mechanisms contributing to working poverty in South Africa<sup>28</sup>. Surprisingly, the mean number of working household members is more or less the same for both working poor and non-working poor persons. This implies that low LFP<sup>29</sup> is not a significant contributor to working poverty in South Africa.

#### 4.2.2.3 Low-wage poor

Table 4.7 highlights the characteristics of the most vulnerable population of workers in this study, the low-wage poor population. Again, the largest proportion of low-wage poor workers consists of females, Africans, persons aged 25 to 44 years, workers with below Matric-level education, workers living in traditional and urban areas, as well as those residing in the KwaZulu-Natal and Gauteng provinces.

Furthermore, the low-wage poor comprise largely of full-time employees (followed by the self-employed), informal sector workers, service workers and those with elementary occupations. Persons working in the private household industry (such as domestic workers) also make up over 20% of the low-wage poor population by 2014. Finally, on average, a low-wage poor individual resides in a household with six members, two children and about two employed members, whereas a non-low-wage poor person resides in a household with (on average) four members, one child and two employed members. These results suggest again that many household members and many dependents may be contributing to higher LWP incidence.

---

<sup>28</sup> Lilenstein *et al.* (2016) also estimate that working poverty rates are worse for workers who reside in large households with many dependent members.

<sup>29</sup> Specifically looking at the number of household members that are employed, rather than including those who are unemployed but actively looking for work as implied by the traditional definition of LFP.

Table 4.7: Low-wage poverty in 2008 and 2014

	2008			2014		
	Low-wage poor (%)	Not low-wage poor (%)	Total (%)	Low-wage poor (%)	Not low-wage poor (%)	Total (%)
<b>Gender*</b>						
Female	56.77	37.75	42.67	56.03	40.00	43.02
Male	43.23	62.25	57.33	43.97	59.94	56.93
Total	100.00	100.00	100.00	100.00	99.94	99.95
<b>Race</b>						
African	91.02	65.16	71.84	87.14	72.15	74.97
Coloured	7.84	10.88	10.10	9.16	11.24	10.85
Asian/Indian	0.28	4.77	3.61	0.68	3.27	2.78
White	0.87	19.18	14.45	3.02	13.34	11.39
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Age cohort</b>						
Age 15 to 24 years	19.29	11.50	13.51	14.18	11.50	12.01
Age 25 to 34 years	27.97	34.09	32.51	28.17	34.35	33.18
Age 35 to 44 years	24.87	28.96	27.90	27.70	27.97	27.92
Age 45 to 54 years	18.73	17.58	17.88	21.66	17.52	18.30
Age 55 to 65 years	9.13	7.87	8.20	8.28	8.66	8.59
Total	100.00	100.00	100.00	100.00	100.00	100.00
Mean age in years	37.62	37.46	37.50	38.16	37.73	37.81
<b>Education</b>						
None	12.90	3.21	5.72	5.86	1.76	2.53
Incomplete primary	23.32	7.31	11.45	16.94	5.83	7.93
Incomplete secondary	49.26	36.97	40.15	57.84	40.25	43.56
Matric	11.80	27.54	23.47	13.10	21.08	19.58
Matric + Cert. / Dip.	2.37	16.91	13.15	6.23	22.82	19.70
Degree	0.01	7.70	5.71	0.01	8.05	6.53
Other/unspecified	0.33	0.36	0.36	0.02	0.21	0.17
Total	100.00	100.00	100.00	100.00	100.00	100.00
Mean years of education	7.07	10.57	9.64	8.51	11.01	10.53
<b>Area type</b>						
Traditional	41.61	12.49	20.01	40.81	14.93	19.80
Urban	46.19	77.52	69.43	54.17	79.82	74.99
Farms	12.20	9.99	10.56	5.01	5.25	5.20
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Province</b>						
Western Cape	8.86	14.88	13.32	9.13	15.23	14.08
Eastern Cape	10.94	7.26	8.21	17.34	6.94	8.90
Northern Cape	2.67	2.34	2.43	2.10	2.76	2.64
Free State	6.61	4.78	5.25	6.92	4.96	5.33
KwaZulu-Natal	32.39	13.63	18.48	19.03	15.21	15.93
North West	5.73	7.34	6.93	3.50	5.09	4.79
Gauteng	16.49	35.37	30.49	20.27	35.62	32.73
Mpumalanga	8.04	7.28	7.48	9.14	8.22	8.39
Limpopo	8.26	7.13	7.42	12.57	5.97	7.21
Total	100.00	100.00	100.00	100.00	100.00	100.00

Table 4.7: Continued

	2008			2014		
	Low-wage poor (%)	Not low-wage poor (%)	Total (%)	Low-wage poor (%)	Not low-wage poor (%)	Total (%)
<b>Employment type</b>						
Employee	41.73	82.30	71.81	48.04	83.22	76.59
Self-employed	22.26	10.22	13.33	22.11	9.50	11.88
Casual worker	16.75	5.29	8.25	22.88	6.29	9.41
Unclassified	19.27	2.20	6.61	6.96	0.99	2.12
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Occupation</b>						
Managers	0.96	5.93	4.65	0.73	6.45	5.37
Professionals	1.60	12.84	9.94	2.93	11.96	10.26
Technicians	0.90	5.00	3.94	1.33	6.10	5.20
Clerks	2.32	9.37	7.55	0.92	7.20	6.02
Services workers	5.93	13.08	11.23	22.75	18.41	19.23
Skilled agriculture	6.62	3.09	4.00	0.53	0.56	0.55
Traders	8.46	16.23	14.22	15.01	15.85	15.70
Operators	4.72	9.08	7.96	6.10	11.37	10.38
Elementary occupation	34.70	14.54	19.75	41.54	19.52	23.67
Other/unspecified	33.80	10.83	16.77	8.15	2.58	3.63
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Industry</b>						
Agriculture	7.85	4.32	5.23	8.18	4.91	5.53
Mining	0.17	4.81	3.61	0.52	4.25	3.55
Manufacturing	4.60	12.28	10.30	8.45	10.68	10.26
Utilities	0.09	0.88	0.67	0.97	1.51	1.41
Construction	3.15	4.11	3.86	10.38	9.05	9.30
Wholesale and retail	5.40	11.14	9.65	16.69	19.16	18.70
TSC	1.36	3.75	3.13	3.28	6.65	6.01
Finance	1.87	10.04	7.93	2.40	12.11	10.28
CSP services	4.43	19.05	15.27	18.61	22.48	21.75
Private household	10.02	4.46	5.90	22.43	7.64	10.43
Other/unspecified	61.07	25.18	34.46	8.10	1.56	2.79
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Sector</b>						
Informal	61.09	29.25	37.48	72.76	31.10	38.95
Formal	19.64	68.56	55.92	20.28	67.91	58.93
Unclassified	19.27	2.20	6.61	6.96	0.99	2.12
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Household variables</b>						
Mean household size	5.50	3.52	4.04	5.16	3.53	3.84
Mean no. of children	2.00	0.88	1.18	1.88	0.92	1.10
Mean no. of elderly	0.28	0.16	0.19	0.23	0.19	0.20
Mean no. employed	1.89	1.72	1.76	1.71	1.73	1.72
Mean no. unemployed	0.54	0.27	0.34	0.36	0.17	0.20

Source: Own calculations using NIDS 2008 and 2014 data.

\* The LWE totals for gender do not add up to 100% because some persons did not specify their gender.

### 4.3 Econometric analysis

This section presents the findings for LWE, employed poverty and LWP likelihood amongst workers in the years 2008 and 2014. Analysis of LWE likelihood utilises three different types of probit models, namely a simple probit, a Heckprobit<sup>30</sup> and a bivariate probit regression<sup>31</sup>. For working poverty likelihood, two simple probits – one of which includes LWE as an explanatory variable – and a bivariate probit model is employed. Finally, one simple probit model is used in the analysis of low-wage poor probability. Regressions are estimated for both 2008 and 2014. All regressions include a number of demographic, education, labour market and household explanatory variables.

#### 4.3.1 Low-wage likelihood of employed

Table 4.8 presents the marginal effects for the 2008 and 2014 simple probit and Heckprobit regressions. Findings for the probit and Heckprobit models are considerably alike, except for gender, race, age, province and education variables. Simple probit findings reveal that females are 20% significantly more likely than males to be low-wage employed in 2008. By 2014, this probability decreases to 13% more likely than males. The Heckprobit estimates that females are 8% more likely to be in LWE in 2008. This probability increases to 9.5% by 2014. While the probit results show an improved position and the Heckprobit reveals a weakened position for women from 2008 to 2014, results for both regressions illustrate the wage inequality that continues to exist between men and women in the workplace, wherein men earn more than women on average.

In 2008, the simple probit estimates that White workers are 18% significantly less likely to be low-wage employed compared to African workers, followed by Indian workers at 15% less likelihood and Coloured workers with 7% less likelihood. For the 2008 Heckprobit, White workers are 14% less likely to be low-wage employed in 2008<sup>32</sup>. The 2014 findings are statistically insignificant for both models. These findings reveal the post-apartheid impact of discriminatory legislation which prevented persons of colour from accessing quality education and work opportunities which could afford them higher salaries. Moreover, these findings may illustrate continued wage discrimination between workers of different racial groups.

---

<sup>30</sup> Simple probit and Heckprobit models are estimated reporting both marginal effects and coefficients separately.

<sup>31</sup> Bivariate probit models are estimated reporting coefficients only.

<sup>32</sup> These results coincide with the Heckprobit marginal effects estimated by Oosthuizen (2012). Although for a different period, the author also finds that White and male workers are less likely to be low-wage employed compared to African and female workers respectively.

All age groups are less likely to be low-wage employed compared to workers aged 15 to 24 years for the simple probit, the two oldest age groups having the lowest likelihood of LWE<sup>33</sup>. This may be due to the fact that younger workers have less experience and are usually employed in entry level jobs, thus earning less money than their older colleagues. These findings coincide with that of Lee and Sobeck (2012) who also find that LWE likelihood is higher for female, Black and young workers.

According to the simple probit, workers residing in urban areas stand a significantly lower chance of being low-wage employed compared to those in rural (traditional and farm) areas, increasing from 6% less likelihood in 2008 to 12.5% less likelihood in 2014 in absolute terms. Like the simple probit, the Heckprobit estimates that workers in urban areas are significantly less likely to be in LWE. However, the likelihood only improves from 7% less likelihood in 2008 to 9% less likelihood in 2014 (also in absolute terms), compared to the more than doubled improvement estimated by the simple probit. Moreover, in 2014, workers residing in the Northern Cape and KwaZulu-Natal regions are more likely to be low-wage employed compared to workers residing in the Eastern Cape. These results may indicate that more job opportunities, particularly higher paying job opportunities, are found in urban areas, while fewer high-paying jobs are available in the Northern Cape and KwaZulu-Natal provinces.

A concave relationship between educational attainment and LWE likelihood is found. More specifically, as indicated by the marginal effect for the *years of education-squared* variable, as years of education attained increases, LWE probability decreases at an increasing rate for both 2008 and 2014. These results are in line with the theory of the dual labour market in which highly-skilled workers in the primary segment of the labour market earn higher wages. Moreover, this finding also coincides with that of Cuesta and Salverda (2009), who estimate that higher educational attainment reduces the likelihood of LWE.

---

<sup>33</sup> All Heckprobit findings for the age categories are statistically insignificant.

Table 4.8: Probits on low-wage employment likelihood, reporting marginal effects

	2008		2014	
	Probit	Heckprobit	Probit	Heckprobit
	Marginal effects		Marginal effects	
Female	0.1990***	0.0775*	0.1301***	0.0951***
Coloured	-0.0710*	-0.0534	0.0321	0.0057
Indian	-0.1521**	-0.0847	0.0389	0.0453
White	-0.1828***	-0.1440***	-0.1057	-0.0775
Age 25 to 34 years	-0.1189***	-0.0150	-0.0798***	-0.0264
Age 35 to 44 years	-0.1669***	-0.0013	-0.0900***	-0.0110
Age 45 to 54 years	-0.2065***	-0.0516	-0.0762***	0.0124
Age 55 to 65 years	-0.1864***	0.0077	-0.1527***	-0.0751
Urban	-0.0620**	-0.0724***	-0.1256***	-0.0938***
Western Cape	-0.0176	0.0668	N/A †	N/A †
Northern Cape	0.0543	0.1034**	0.1308***	0.1163***
Free State	0.0997**	0.1138**	0.0330	0.0241
KwaZulu-Natal	0.0703*	0.1120***	0.1035***	0.1254***
North West	0.0231	0.0208	0.0735***	0.0857***
Gauteng	-0.1012***	-0.0418	-0.0450	-0.0257
Mpumalanga	-0.0257	0.0149	0.0270	0.0350
Limpopo	-0.0683	-0.0330	-0.0210	-0.0112
Years of education	0.0123	-0.0121	0.0217**	0.0056
Years of education-squared	-0.0035***	-0.0014*	-0.0034***	-0.0023***
Occupation: Professionals	-0.0141	-0.0093	0.0456	0.0458
Occupation: Technicians	-0.0621	-0.0501	0.0724	0.0732
Occupation: Clerks	-0.0067	0.0014	0.0327	0.0350
Occupation: Service workers	0.0335	0.0341	0.2013***	0.2020***
Occupation: Skilled agricultural workers	0.3362***	0.3345***	0.1455	0.1451
Occupation: Traders	0.0161	0.0175	0.1339*	0.1338*
Occupation: Operators	-0.0090	-0.0063	0.2138**	0.2141**
Occupation: Elementary occupations	0.1595**	0.1571**	0.3225***	0.3211***
Occupation: Other	0.1888*	0.1794**	0.0984	0.0950



Table 4.8: Continued

	2008		2014	
	Probit	Heckprobit	Probit	Heckprobit
	Marginal effects		Marginal effects	
Industry: Agriculture	0.2256**	0.2261**	0.2640***	0.2641***
Industry: Manufacturing	0.1479*	0.1442*	0.3468***	0.3466***
Industry: Utilities	-0.1297	-0.1278	0.1461	0.1476
Industry: Construction	0.2602**	0.2514**	0.3157***	0.3142***
Industry: Wholesale and retail	0.1615*	0.1551*	0.3296***	0.3286***
Industry: Transport, storage and communication	0.0807	0.0709	0.2425***	0.2422**
Industry: Finance	0.1259	0.1210	0.2458**	0.2470**
Industry: Community, social and personal services	0.0487	0.0398	0.3773***	0.3770***
Industry: Private household	0.1391	0.1388	0.3075***	0.3083***
Industry: Other	0.1028	0.0980	0.3356**	0.3324**
Informal	0.1704***	0.1748***	0.2457***	0.2480***
Self-employed	0.3311***	0.3387***	0.2961***	0.2956***
Casual worker	0.3015***	0.2994***	0.3619***	0.3618***
Unclassified employed	0.7002***	0.6989***	0.7772***	0.7747***
Lambda		0.4493***		0.2489**
Number of observations	6518	6518	9124	9124
Prob > Chi-squared	0.0000	0.0000	0.0000	0.0000
Pseudo R-squared	0.4460	0.4495	0.3961	0.3970

Source: Own calculations using NIDS 2008 and 2014 data.

\*\*\* Significant at 1%      \*\* Significant at 5%      \* Significant at 10%

† Omitted due to collinearity

In terms of labour market characteristics, occupations most susceptible to LWE in 2014 (compared to managers) include service workers (20% more likely) and workers in elementary jobs (32% more likely). Workers in all industries (except utilities – results are insignificant) experience a more than 20% greater chance of earning a low wage compared to workers in the mining industry. Furthermore, informal sector workers, the self-employed, casual workers and unclassified employees are all significantly more at risk of being low-wage employed.

Again, these findings concur with the theory of the dual labour market. Workers in the secondary segment of the market, which is characterised by low-skilled workers (such as workers in elementary occupations), poor working conditions (such as jobs in the agriculture, manufacturing and private household industries) and low job security (such as informal sector jobs, casual work and self-employment), receive low wages.

Table 4.9 presents the probit results, reporting coefficients rather than marginal effects, for 2008 and 2014. The simple probit and Heckprobit coefficients are included in the table for purposes of appropriate comparisons<sup>34</sup>, but the author is specifically interested in the bivariate probit results. As highlighted in Section 3.2.4, LWE and working poverty are not independent of each other and may thus provide more accurate results if modelled jointly with a bivariate probit regression. This view is evidenced by the correlation coefficient (*rho*) that is greater than zero, namely 0.69 in 2008 and 0.65 in 2014. While the bivariate results are perhaps more reliable, this model derives coefficients only rather than marginal effects. Consequently, it is challenging to provide a detailed interpretation of the results. Instead, only the direction of the relationship between LWE likelihood and each explanatory variable is discussed.

---

<sup>34</sup> The coefficients for the simple probit and Heckprobit regressions mirror the marginal effects for these two models presented in Table 4.8 with regard to the direction of the relationship of the explanatory variable relative to low-wage employment likelihood and statistical significance. For this reason, the probit and Heckprobit coefficients do not require further evaluation.

Findings reveal that women are more likely than men to be low-wage employed in both 2008 and 2014. Coloured, Indian and White workers are all less likely to be in LWE compared to African workers in 2008. Corresponding 2014 findings are statistically insignificant. Like the simple probit reporting marginal effects, the bivariate probit's findings for age cohorts reveal that the 15 to 24 year old age category is most vulnerable to LWE. Another recurring finding is that of urban area workers, who are found to be less likely to be low-wage employed compared to rural area workers.

By 2014, workers in the Northern Cape, KwaZulu-Natal and North West provinces are more probable to be low-wage employed. On the other hand, workers in the Gauteng region are less probable to be low-wage employed. Again, as a worker's years of educational attainment increases, his or her chances of being LWE are increasingly lowered.

By 2014, positive and statistically significant coefficients are estimated for service workers, traders, operators and persons with elementary jobs<sup>35</sup>. Thus, workers in these occupation categories are more likely to be low-wage employed than managers. This emphasises the dual labour market theory even more. Common secondary segment occupations include service, trading, operator and elementary jobs, all of which earn lower wages according to the theory and, in terms of the bivariate probit findings, stand a greater chance of being low-wage employed. Similar to the marginal effects estimated by the probit and Heckprobit regressions, findings for the bivariate probit show that workers in all industries<sup>36</sup> are more likely to be low-wage employed than those in the mining industry in 2014. Moreover, informal workers, the self-employed, casual workers and unclassified employed workers are all more vulnerable to LWE than formal sector and full-time employees respectively.

---

<sup>35</sup> The remaining occupation categories are all statistically insignificant.

<sup>36</sup> The 2014 bivariate probit finding for workers in the utilities industry is statistically insignificant.

Table 4-9: Probits on low-wage employment likelihood, reporting coefficients

	2008			2014		
	Probit	Heckprobit	Bivariate probit	Probit	Heckprobit	Bivariate probit
	Coefficient			Coefficient		
Female	0.5829***	0.2255*	0.5685***	0.4136***	0.3017***	0.3961***
Coloured	-0.2232*	-0.1627	-0.2302**	0.1058	0.0185	0.1238
Indian	-0.5415**	-0.2687	-0.5419**	0.1217	0.1401	0.1492
White	-0.6401***	-0.4723***	-0.6683***	-0.3979	-0.2752	-0.2986
Age 25 to 34 years	-0.3686***	-0.0441	-0.3311**	-0.2669***	-0.0856	-0.2657***
Age 35 to 44 years	-0.5385***	-0.0038	-0.4962***	-0.3062***	-0.0355	-0.3113***
Age 45 to 54 years	-0.7274***	-0.1557	-0.6921***	-0.2625***	0.0395	-0.2658***
Age 55 to 65 years	-0.6847***	0.0224	-0.7174***	-0.6102***	-0.2622	-0.5962***
Urban	-0.1806**	-0.2078**	-0.1545**	-0.3821***	-0.2877***	-0.3664***
Western Cape	-0.0528	0.1890	-0.0979	N/A†	N/A†	N/A†
Northern Cape	0.1549	0.2842**	0.1291	0.3840***	0.3426***	0.3826***
Free State	0.2782**	0.3125**	0.2218	0.1030	0.0755	0.0895
KwaZulu-Natal	0.2019*	0.3131***	0.1409	0.3069***	0.3652***	0.3114***
North West	0.0675	0.0601	0.0417	0.2258***	0.2601***	0.2079***
Gauteng	-0.3127***	-0.1242	-0.3355***	-0.1532	-0.0848	-0.1771*
Mpumalanga	-0.0778	0.0431	-0.1008	0.0863	0.1108	0.0934
Limpopo	-0.2151	-0.0992	-0.2334	-0.0692	-0.0362	-0.0607
Years of education	0.0366	-0.0354	0.0349	0.0701**	0.0181	0.0666**
Years of education-squared	-0.0105***	-0.0041*	-0.0106***	-0.0110***	-0.0073***	-0.0107***
Occupation: Professionals	-0.0423	-0.0274	-0.0364	0.1418	0.1418	0.1091
Occupation: Technicians	-0.1952	-0.1533	-0.1706	0.2193	0.2207	0.2199
Occupation: Clerks	-0.0201	0.0040	-0.0388	0.1024	0.1088	0.0862
Occupation: Service workers	0.0973	0.0980	0.1298	0.5870***	0.5866***	0.5882***
Occupation: Skilled agricultural workers	0.8830***	0.8753***	0.8707***	0.4167	0.4142	0.4278
Occupation: Traders	0.0473	0.0507	0.0664	0.3977*	0.3959*	0.3870*
Occupation: Operators	-0.0268	-0.0184	-0.0143	0.6062**	0.6049**	0.5725**
Occupation: Elementary occupations	0.4448**	0.4343**	0.4615**	0.9275***	0.9204***	0.9091***
Occupation: Other	0.5196**	0.4906**	0.5155**	0.2919	0.2811	0.2552

Table 4.9: Continued

	2008			2014		
	Probit	Heckprobit	Bivariate probit	Probit	Heckprobit	Bivariate probit
	Coefficient			Coefficient		
Industry: Agriculture	0.6020**	0.5994**	0.5449**	0.7272**	0.7252**	0.8396***
Industry: Manufacturing	0.4074*	0.3941*	0.3238	0.9503***	0.9473***	1.0430***
Industry: Utilities	-0.4509	-0.4332	-0.6273	0.4191	0.4214	0.5040
Industry: Construction	0.6879**	0.6619**	0.6504**	0.8670***	0.8609***	0.9723***
Industry: Wholesale and retail	0.4421*	0.4221*	0.3524	0.9296***	0.9240***	1.0154***
Industry: Transport, storage and communication	0.2269	0.1984	0.1592	0.6732	0.6704**	0.7752***
Industry: Finance	0.3484	0.3324	0.2763	0.6892**	0.6901**	0.8046***
Industry: Community, social and personal services	0.1408	0.1142	0.0496	1.0696***	1.0656***	1.1610***
Industry: Private household	0.3819	0.3777	0.2871	0.8487***	0.8484***	0.9586***
Industry: Other	0.2984	0.2813	0.2201	0.9036**	0.8936**	1.0014**
Informal	0.4928***	0.4995***	0.5162***	0.7612***	0.7643***	0.7596***
Self-employed	0.8843***	0.8997***	0.9061***	0.8226***	0.8190***	0.8138***
Casual worker	0.7989***	0.7895***	0.7917***	0.9874***	0.9847***	0.9821***
Unclassified employed	2.2275***	2.2488***	2.3080***	3.3122***	3.3054***	3.3248***
Children			0.0730*			0.0062
Elderly			0.1636**			-0.0012
Household size			-0.0350			0.0194
Employed household members			0.0843*			-0.0659
Unemployed household members			0.0432			0.0348
Lambda		1.3168***			0.7993**	
Constant	-0.3129	-1.2539	-0.3786	-1.8290***	-2.1553***	-1.9165***
Number of observations	6518	6518	6518	9124	9124	9124
Prob > Chi-squared	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R-squared	0.4460	0.4495		0.3961	0.3970	
Rho			0.6870			0.6502

Source: Own calculations using NIDS 2008 and 2014 data.

\*\*\* Significant at 1%

\*\* Significant at 5%

\* Significant at 10%

† Omitted due to collinearity

#### 4.3.2 Poverty likelihood of employed

Table 4.10 presents the marginal effects for probits on employed poverty likelihood. First, a simple probit model is estimated. Next, another simple probit on working poverty likelihood is estimated with the inclusion of a *low-wage employment* explanatory variable. This is done in order to determine the impact LWE has on the probability of being working poor. Finally, results for the bivariate probit (reporting coefficients), modelled on LWE and employed poverty jointly, are presented in Table 4.11.

Findings for the two simple probits are similar (with the exception of a few variables such as gender, sector and employment type). The 2008 probit excluding the LWE dummy variable reveals that females are 6% significantly more likely to be working poor as compared to males. By 2014, this probability halves to 3%. Gender findings for the probit including LWE show that women are less likely than men to be working poor. These marginal effects are statistically insignificant however. Higher working poor likelihood for women can be due to a number of factors. As mentioned previously, women may be earning less than men in the workplace due to discrimination. Moreover, some women may be single breadwinners, with a number of dependent members. All these factors may contribute to increased working poverty likelihood.

Population group findings for both probits are strikingly similar. Both models show that Coloured, Indian and White workers are all significantly less likely than African workers to be employed poor in 2008<sup>37</sup>, Indian and White workers having the lowest working poverty risk. These findings highlight the continued socio-economic imbalance between race groups caused by apartheid, with African persons still having the most inferior position. Although findings differ slightly between the two simple probits (particularly for the 2008 45 to 54 years and 55 to 65 years age categories), both models show that all age groups are significantly<sup>38</sup> less likely to be working poor than workers aged 15 to 24 years, the oldest age category (55 to 65 years) having the lowest working poverty likelihood by 2014. This may be due to the fact that older workers are more qualified and have significantly more years of work experience, earning them higher paying jobs. Older workers may also have significantly more money and assets which they have accumulated over the years, while simultaneously having less or no dependents such

---

<sup>37</sup> 2014 results for both probits are statistically insignificant.

<sup>38</sup> 2014 results for the age cohorts 25 to 34 years and 35 to 44 years are statistically insignificant for the probit including LWE.

as children. All these factors may render older workers less likely to fall victim to working poverty.

Workers in urban areas are found to be significantly less likely to be working poor in both 2008 and 2014 (for both simple probits) compared to workers in rural areas. Moreover, in 2008, workers in the North West, Gauteng, Mpumalanga and Limpopo provinces are all less at risk of being employed poor than workers in the Eastern Cape. By 2014 however, only workers in Gauteng are found to be less likely to be working poor than those in the Eastern Cape. These probabilities are particularly interesting given that, in 2014, more than 50% of the working poor population resides in urban areas and one fifth of all employed poor persons reside in Gauteng (see Section 4.2.2.2). As for education, working poverty probability increasingly declines with each additional year of educational attainment, illustrating the importance of education for employment and the reduction of poverty. Similar results are found by Gunatilaka (2010), Brady *et al.* (2010) and Cheung and Chou (2015), all of whom estimate that the more educated a worker is, the lower his or her chance of falling victim to working poverty.

By 2014, both simple probits find that workers in all industry categories are significantly more (greater than 10%) susceptible to working poverty than workers in the mining industry. Results for the two simple probits differ most amongst the remaining labour-market variables. While the probit excluding LWE finds workers in elementary occupations to be most vulnerable to working poverty (19% more likely than managers in 2014), the probit including LWE finds that operators stand the highest chance of being in employed poverty (12% more likely than managers in 2014). Informal sector workers are more likely to be working poor compared to formal sector workers. However, the degree of risk as well as the extent of the improvement in working poverty risk for informal sector workers from 2008 to 2014 differs between the two simple probits (14% to 12% greater likelihood for the probit excluding LWE, and 8% to 4% greater likelihood for the probit including LWE).

In 2008, findings for the probit without LWE reveals that the self-employed, casual workers and the unclassified employed are 17%, 16% and 24% more at risk of being working poor respectively, compared to full-time employees. By 2014, this risk improves for self-employed persons to 9% greater risk, but worsens for casual (17%) and unclassified employed (38%) workers.

Table 4.10: Probits on employed poverty likelihood, reporting marginal effects

	2008		2014	
	Probit	Probit (incl. LWE dummy)	Probit	Probit (incl. LWE dummy)
	Marginal effects		Marginal effects	
Female	0.0599***	-0.0015	0.0307**	-0.0044
Coloured	-0.1226***	-0.1167***	0.0397	0.0533
Indian	-0.2726***	-0.2559***	0.0525	0.0736
White	-0.2332***	-0.2153***	-0.0779	-0.0482
Age 25 to 34 years	-0.0909***	-0.0604*	-0.0463**	-0.0275
Age 35 to 44 years	-0.1499***	-0.1073***	-0.0409*	-0.0215
Age 45 to 54 years	-0.1148***	-0.0546	-0.0665***	-0.0518**
Age 55 to 65 years	-0.1423***	-0.0833**	-0.1194***	-0.0932***
Urban	-0.1170***	-0.1122***	-0.1041***	-0.0728***
Western Cape	0.0223	0.0303	N/A <sup>†</sup>	N/A <sup>†</sup>
Northern Cape	-0.0127	-0.0281	0.1185***	0.0773***
Free State	0.0223	-0.0147	-0.0332	-0.0386*
KwaZulu-Natal	0.0795**	0.0631*	0.0863***	0.0568**
North West	-0.0837***	-0.0921**	0.0177	-0.0035
Gauteng	-0.0914**	-0.0701**	-0.0496**	-0.0410*
Mpumalanga	-0.0689*	-0.0728**	0.0031	-0.0079
Limpopo	-0.1397***	-0.1385***	0.0086	0.0110
Years of education	0.0402***	0.0436***	0.0230***	0.0176**
Years of education-squared	-0.0050***	-0.0045***	-0.0030***	-0.0021***
Occupation: Professionals	-0.0014	0.0193	0.0145	-0.0008
Occupation: Technicians	0.1561*	0.2352**	-0.0047	-0.0070
Occupation: Clerks	0.0650	0.0988	-0.0228	-0.0200
Occupation: Service workers	0.1093	0.1312*	0.0971*	0.0489
Occupation: Skilled agricultural workers	0.1592*	0.0596	0.0899	0.0454
Occupation: Traders	0.0976	0.1345*	0.0919	0.0650
Occupation: Operators	0.0758	0.1147	0.1599**	0.1157*
Occupation: Elementary occupations	0.1819***	0.1546**	0.1934***	0.1093**
Occupation: Other	0.1892***	0.1580*	0.0831	0.0606



Table 4.10: Continued

	2008		2014	
	Probit	Probit (incl. LWE dummy)	Probit	Probit (incl. LWE dummy)
	Marginal effects		Marginal effects	
Industry: Agriculture	0.2000***	0.0980	0.2494***	0.2083***
Industry: Manufacturing	0.1827***	0.1294**	0.2937***	0.2410***
Industry: Utilities	0.0446	0.0760	0.2148**	0.2089**
Industry: Construction	0.2897***	0.1971**	0.2623***	0.2294***
Industry: Wholesale and retail	0.2905***	0.2581***	0.3362***	0.2907***
Industry: Transport, storage and communication	0.0984	0.0808	0.1580**	0.1253*
Industry: Finance	0.1309**	0.0911	0.2798***	0.2640***
Industry: Community, social and personal services	0.1221**	0.1085*	0.3017***	0.2344***
Industry: Private household	0.1843***	0.1194*	0.2601***	0.2156***
Industry: Other	0.1471**	0.1174*	0.4114**	0.3616***
Informal	0.1399***	0.0767	0.1166***	0.0356
Self-employed	0.1717***	0.0483	0.0877***	0.0001
Casual worker	0.1565***	0.0233	0.1690***	0.0614
Unclassified employed	0.2365***	-0.0191	0.3777***	0.0472
Children	0.0737***	0.0745	0.0250	0.0259
Elderly	-0.0647***	-0.0998***	-0.0574***	-0.0597***
Household size	0.0642***	0.0718***	0.0616	0.0608
Employed household members	-0.1485***	-0.1653***	-0.1263***	-0.1206***
Unemployed household members	0.0925***	0.0940***	0.0392**	0.0384***
Low-wage employed		0.4413***		0.3365***
Number of observations	6518	6518	9124	9124
Prob > Chi-squared	0.0000	0.0000	0.0000	0.0000
Pseudo R-squared	0.4734	0.5436	0.3932	0.4659

Source: Own calculations using NIDS 2008 and 2014 data.

\*\*\* Significant at 1%

\*\* Significant at 5%

\* Significant at 10%

† Omitted due to collinearity

Irregular working hours (or too few working hours) and great uncertainty around regular labour income are usually associated with informal work, casual work and self-employment, and may thus be factors contributing to the higher working poverty risk faced by workers in these employment categories. Moreover, these findings are in line with that of Horemans *et al.* (2016) who find that part-time workers are more likely to be employed poor.

Notably, for both probits and in both 2008 and 2014, household findings show that employed poverty likelihood increases with each additional child and decreases with each additional elderly person to the household. This may be due to the fact that elderly persons incur less expenditure than children and may in fact contribute to the household's total income in the form of older persons' grants and/or retirement savings. Furthermore, results reveal that larger households face a greater risk of working poverty. That is, employed poverty likelihood rises by approximately 7% for each additional household member.

Working poverty likelihood decreases by over 10% for every wage earner residing in the household, and increases for every unemployed member residing in the household. These findings echo the theory of the household and allocation of time (see discussion in Section 2.3.2). That is, when one household member already works, it may influence another member's decision to not work and become dependent on the working member's income instead. This increases the household's number of unemployed members and essentially increases its number of dependent members, imposing a greater financial burden on the working member and making him or her a lot more susceptible to employed poverty.

Finally, workers who are LWE are estimated to be significantly more at risk of being working poor. More specifically, low-wage employed persons are 44% (2008) and 34% (2014) more likely to be working poor than non-low-wage employed persons. These findings are in line with those of Gunatilaka (2010) and Cheung and Chou (2015), both of whom find that the lower a worker's earnings, the greater his or her likelihood of being working poor.

Table 4.11 reports coefficients for two simple probits and a bivariate probit for 2008 and 2014 individually<sup>39</sup>. As alluded to in Section 4.3.1, the *rho* coefficients for the bivariate probit

---

<sup>39</sup> The coefficients for the two simple probits mirror the marginal effects for the two simple probits (presented in Table 4.10) with regard to the direction of the relationship between the independent variable and the likelihood of

regression are greater than zero (0.69 in 2008 and 0.65 in 2014), and consequently suggests that the bivariate probit results are more accurate and thus more reliable. For this reason, the author focuses on the findings of the 2008 and 2014 bivariate probit regressions. Again, only the direction of the impact of each independent variable on working poverty likelihood is discussed.

Findings express that women, African workers and workers aged 15 to 24 years are most vulnerable to working poverty. 2014 results show that workers who reside in urban areas and in the province of Gauteng are less likely to be working poor. The *years of education-squared* variable reveals yet again that increased levels of educational attainment lowers a worker's chance of being employed poor.

For the year 2014, while all occupation coefficients are positive (except clerks), indicating a greater likelihood of employed poverty than managers, only three categories are statistically significant. These categories include service workers, operators and workers in elementary occupations. On the other hand, all 2014 industry coefficients are positive and significant. In other words, workers in all industry categories are more likely to be working poor than workers employed in the mining industry. Similarly, informal workers, the self-employed, casual workers and the unclassified employed are all more vulnerable to employed poverty compared to formal sector workers and full-time employees.

Turning to household composition, the presence of children in a household increases the likelihood of working poverty for employed members, while elderly persons decrease the likelihood of working poverty. Moreover, the greater the household size, the greater the probability of employed poverty for working household members. Finally, the more wage earners in the household, the lower their risk of being working poor, and conversely, the more unemployed members in the household, the greater the likelihood of working poverty for those members who are wage employed.

---

working poverty, as well as the statistical significance. Consequently, further evaluation of these coefficients is not required for purposes of this study.

Table 4.1.1: Probits on employed poverty likelihood, reporting coefficients

	2008			2014		
	Probit	Probit (incl. LWE dummy)	Bivariate probit	Probit	Probit (incl. LWE dummy)	Bivariate probit
	Coefficient			Coefficient		
Female	0.1884***	-0.0050	0.1960***	0.1290**	-0.0204	0.1180**
Coloured	-0.4471***	-0.4457***	-0.4636***	0.1758	0.2664	0.2534
Indian	-2.3420***	-2.3697***	-2.1832***	0.2056	0.3014	0.2892
White	-1.0037***	-0.9621***	-1.0462***	-0.4082	-0.2576	-0.3694
Age 25 to 34 years	-0.2996***	-0.2045*	-0.2965***	-0.2031**	-0.1306	-0.2094**
Age 35 to 44 years	-0.5196***	-0.3778***	-0.5120***	-0.1807*	-0.1022	-0.1972**
Age 45 to 54 years	-0.4016***	-0.1882	-0.4070***	-0.3130***	-0.2642**	-0.3254***
Age 55 to 65 years	-0.5413***	-0.3039**	-0.5318***	-0.6990***	-0.5718***	-0.7081***
Urban	-0.3556***	-0.3528***	-0.3544***	-0.4004***	-0.3105***	-0.3951***
Western Cape	0.0694	0.0972	0.0556	N/A <sup>†</sup>	N/A <sup>†</sup>	N/A <sup>†</sup>
Northern Cape	-0.0406	-0.0958	-0.0309	0.4268***	0.3134***	0.4048***
Free State	0.0691	-0.0491	0.0552	-0.1517	-0.1997*	-0.1462
KwaZulu-Natal	0.2401**	0.1989*	0.2183**	0.3194***	0.2358**	0.3099***
North West	-0.2916**	-0.3419**	-0.2727*	0.0733	-0.0161	0.0649
Gauteng	-0.3027***	-0.2393**	-0.3251***	-0.2354**	-0.2124*	-0.2319**
Mpumalanga	-0.2352*	-0.2621**	-0.2599**	0.0132	-0.0371	-0.0083
Limpopo	-0.5315***	-0.5591***	-0.5505***	0.0359	0.0497	0.0216
Years of education	0.1275***	0.1435***	0.1313***	0.0973***	0.0818**	0.0940***
Years of education-squared	-0.0157***	-0.0147***	-0.0161***	-0.0125***	-0.0098***	-0.0122***
Occupation: Professionals	-0.0044	0.0622	0.0475	0.0600	-0.0036	0.0124
Occupation: Technicians	0.4421*	0.6574**	0.4876*	-0.0200	-0.0332	0.0182
Occupation: Clerks	0.1956	0.2991	0.2387	-0.1011	-0.0972	-0.0760
Occupation: Service workers	0.3215	0.3921*	0.3630	0.3687*	0.2113	0.3569*
Occupation: Skilled agricultural workers	0.4503*	0.1851	0.5276**	0.3272	0.1905	0.2699
Occupation: Traders	0.2902	0.4037*	0.3436	0.3473	0.2727	0.3352
Occupation: Operators	0.2264	0.3440	0.2762	0.5562***	0.4480*	0.5484**
Occupation: Elementary occupations	0.5279**	0.4660**	0.5819***	0.6948***	0.4480**	0.6855***
Occupation: Other	0.5435***	0.4717*	0.5875**	0.3073	0.2487	0.2778

Table 4.11: Continued

	2008			2014		
	Probit	Probit (incl. LWE dummy)	Bivariate probit	Probit	Probit (incl. LWE dummy)	Bivariate probit
	Coefficient			Coefficient		
Industry: Agriculture	0.5568***	0.2958	0.4965***	0.7944***	0.7189***	0.8147***
Industry: Manufacturing	0.5182***	0.3862**	0.4702***	0.9308***	0.8283***	0.9671***
Industry: Utilities	0.1355	0.2316	0.1070	0.6897**	0.7079**	0.6858**
Industry: Construction	0.7827***	0.5599**	0.7356***	0.8424***	0.7915***	0.9006***
Industry: Wholesale and retail	0.7958***	0.7268***	0.7501***	1.0921***	1.0135***	1.1090***
Industry: Transport, storage and communication	0.2876	0.2463	0.2873	0.5417**	0.4725*	0.5614**
Industry: Finance	0.3783*	0.2775	0.3595*	0.8937***	0.8926**	0.9232***
Industry: Community, social and personal services	0.3594**	0.3312*	0.3250*	1.0123***	0.8616***	1.0330***
Industry: Private household	0.5173**	0.3555*	0.4585**	0.8408***	0.7565***	0.8775***
Industry: Other	0.4480**	0.3722*	0.4120**	1.1997***	1.1119***	1.1999***
Informal	0.4300**	0.2470***	0.4169***	0.4689***	0.1619**	0.4633**
Self-employed	0.4926***	0.1528	0.5158***	0.3294**	0.0005	0.3162**
Casual worker	0.4468***	0.0749	0.4092***	0.5809***	0.2554***	0.5847***
Unclassified employed	0.6522***	-0.0642	0.6458***	1.1104***	0.1981	1.1656***
Children	0.2335***	0.2453***	0.2442	0.1060	0.1203	0.1070
Elderly	-0.2051***	-0.3285***	-0.2306***	-0.2430***	-0.2770***	-0.2473***
Household size	0.2034***	0.2362***	0.1900***	0.2606***	0.2821***	0.2567***
Employed household members	-0.4706***	-0.5441***	-0.4457***	-0.5346***	-0.5590***	-0.5184***
Unemployed household members	0.2932***	0.3094***	0.2908***	0.1659**	0.1781***	0.1652***
Low-wage employed		1.3552***			1.2673***	
Constant	-0.7338**	-1.3316***	-0.7326**	-1.9943***	-2.4040***	-2.0745***
Number of observations	6518	6518	6518	9124	9124	9124
Prob > Chi-squared	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R-squared	0.4734	0.5436		0.3932	0.4659	
Rho			0.6870			0.6502

Source: Own calculations using NIDS 2008 and 2014 data.

\*\*\* Significant at 1%

\*\* Significant at 5%

\* Significant at 10%

† Omitted due to collinearity

#### 4.3.3 Low-wage poverty likelihood of employed

Table 4.12 provides findings on the likelihood of being in the most vulnerable socio-economic state, LWP. Probits reporting both marginal effects and coefficients 2008 and 2014 are presented<sup>40</sup>. Results reveal that women are significantly more likely to be low-wage poor than men, despite a slight improvement for women from 7% in 2008 to 4.5% in 2014. Moreover, Coloured, Indian and White workers are all significantly less likely to be low-wage poor than African workers in 2008 (2014 results are insignificant), Indian and White workers having the lowest low-pay poor risk. These findings highlight the lagging negative effects on economic opportunities for persons previously disadvantaged by the discriminatory apartheid era (women, people of colour, and although not analysed in this study, persons with disabilities).

Findings show that workers aged 15 to 24 years are most vulnerable to LWP and that the likelihood of LWP decreases consistently the older the worker. Workers residing in urban areas are 6% (2008) and 8% (2014) significantly less likely to be low-wage poor compared to workers in rural areas. This is evidently due to the fact that most (well-paying) job opportunities are found in urban areas. Again, this particular finding is peculiar since the author estimates that, of total low-wage poor workers, 54% reside in urban areas (see Section 4.2.2.3). Moreover, by 2014, workers in the Northern Cape and KwaZulu-Natal provinces are significantly more susceptible to LWP (10% and 7% respectively) compared to workers in the Eastern Cape. Educational attainment significantly lowers a worker's likelihood of being low-wage poor and once again indicates the importance of education in relation to secure, well-paying job opportunities.

Compared to managers, service workers, skilled agricultural workers, traders, operators and persons in elementary occupations face a greater chance of being low-wage poor in 2014. Findings show further that workers in all industry categories are considerably more likely to be low-wage poor compared to workers in the mining industry. While most industries experience a substantial decrease in LWP probability by 2014, low-wage poor likelihood for all these workers still remain significantly high. Those most affected include workers in the manufacturing industry (20% greater risk) and workers in the CSP services industry (19% greater risk).

---

<sup>40</sup> The marginal effects and coefficients for each year coincide perfectly in terms of the direction of the relationship and its statistical significance.

Table 4.12: Probits on low-wage poverty likelihood

	Marginal effects		Coefficient	
	2008	2014	2008	2014
Female	0.0707***	0.0455***	0.3261***	0.2723***
Coloured	-0.0587**	0.0014	-0.3240**	0.0087
Indian	-0.1413***	-0.0054	-1.7670***	-0.0335
White	-0.1273***	-0.0444	-0.8683***	-0.3415**
Age 25 to 34 years	-0.0515**	-0.0349**	-0.2568**	-0.2253**
Age 35 to 44 years	-0.0816***	-0.0207	-0.4311***	-0.1322
Age 45 to 54 years	-0.0863***	-0.0323***	-0.4918***	-0.2179**
Age 55 to 65 years	-0.1019***	-0.0697***	-0.6797***	-0.6051***
Urban	-0.0582***	-0.0758***	-0.2607***	-0.4074***
Western Cape	0.0086	N/A†	0.0400	N/A†
Northern Cape	0.0144	0.1024***	0.0659	0.4895***
Free State	0.0472	0.0030	0.2026	0.0185
KwaZulu-Natal	0.0305	0.0697***	0.1376	0.3510***
North West	-0.0474*	0.0111	-0.2557*	0.0663
Gauteng	-0.0625***	-0.0308*	-0.3176***	-0.2164*
Mpumalanga	-0.0203	0.0124	-0.1010	0.0750
Limpopo	-0.0587**	0.0145	-0.3279**	0.0851
Years of education	0.0116**	0.0120**	0.0550**	0.0736**
Years of education-squared	-0.0024***	-0.0017***	-0.0113***	-0.0107***
Occupation: Professionals	-0.0272	0.0633	-0.1371	0.3291
Occupation: Technicians	0.0023	0.0200	0.0108	0.1146
Occupation: Clerks	0.0017	-0.0070	0.0082	-0.0443
Occupation: Service workers	-0.0257	0.1018**	-0.1287	0.5113**
Occupation: Skilled agricultural workers	0.0719	0.1457*	0.2950	0.6216*
Occupation: Traders	-0.0267	0.0882*	-0.1334	0.4456*
Occupation: Operators	-0.0258	0.1666**	-0.1304	0.7252**
Occupation: Elementary occupations	0.0661	0.1829***	0.2853	0.8491***
Occupation: Other	0.0715	0.1065	0.3039	0.4933

Table 4.12: Continued

	Marginal effects		Coefficient	
	2008	2014	2008	2014
Industry: Agriculture	0.2845***	0.1346*	0.9342***	0.5989*
Industry: Manufacturing	0.2310***	0.1991**	0.8096***	0.8307**
Industry: Utilities	0.1069	0.1388*	0.4116	0.6015
Industry: Construction	0.3179***	0.1338*	1.0149***	0.6073*
Industry: Wholesale and retail	0.2911***	0.1647**	0.9738***	0.7553**
Industry: Transport, storage and communication	0.2386***	0.0774	0.8029***	0.3843
Industry: Finance	0.2076***	0.1044	0.7336***	0.5003
Industry: Community, social and personal services	0.2005***	0.1947***	0.7390***	0.8802***
Industry: Private household	0.2624***	0.1272*	0.8784***	0.5870*
Industry: Other	0.2072***	0.3184***	0.8537***	1.1269***
Informal	0.1097***	0.1147***	0.4855***	0.6368***
Self-employed	0.1784***	0.1214***	0.6644***	0.5697***
Casual worker	0.1594***	0.1547***	0.5911***	0.6809***
Unclassified employed	0.3558***	0.3840***	1.1285***	1.2912***
Children	0.0246***	0.0114*	0.1165***	0.0699*
Elderly	0.0031	-0.0173*	0.0149	-0.1066*
Household size	0.0107	0.0180***	0.0506	0.1107***
Employed household members	-0.0303***	-0.0477***	-0.1435***	-0.2932***
Unemployed household members	0.0193*	0.0129	0.0915*	0.0791
Constant			-1.0964***	-2.0952***
Number of observations	6518	9124	6518	9124
Prob > Chi-squared	0.0000	0.0000	0.0000	0.0000
Pseudo R-squared	0.4177	0.3465	0.4177	0.3465

Source: Own calculations using NIDS 2008 and 2014 data.

\*\*\* Significant at 1%

\*\* Significant at 5%

\* Significant at 10%

† Omitted due to collinearity



As for sector characteristics, informal sector workers are 11% (2014) significantly more likely to fall victim to LWP. The same is true for self-employed persons (12% more likely) and casual workers (15% more likely) in comparison to full-time employees in 2014. As for household composition, a worker's LWP likelihood increases with each additional child and household member, and decreases with each additional elderly person and wage employed member (2014).

#### **4.4 Further analysis**

The final part of the empirical analysis investigates the changes in LWE, working poverty and LWP over time. More specifically, this section determines the frequency and characteristics of workers that are never, transitorily or chronically low-wage employed, working poor or low-wage poor; and how many workers enter and exit LWE, working poverty and LWP over the period 2008 (Wave 1) to 2014 (Wave 4). Analysis in this section is restricted to the balanced panel and only includes those individuals who are employed and aged 15 to 65 years in all four waves.

Table 4.13 presents the frequency of different groups (never, transitory or chronic) of low-wage employed, working poor and low-wage poor workers. On a positive note, findings reveal that more than half of all wage employed individuals (who are included in all four waves) are never low-wage employed, working poor or low-wage poor during the period 2008 to 2014. Less than 30% of all workers are transitorily low-wage employed, working poor and low-wage poor. That is, less than 30% of all workers are low-wage and/or poor in one or two of the four waves. Finally, of the total working population, 17%, 18% and 7% are chronically low-wage employed, employed poor and low-wage poor respectively. These proportions may seem insignificant in comparison to the majority of workers who are not affected by low earnings and poverty. However, the actual number of chronically affected individuals amount to over 700 000. That is, more than 700 000 South African workers face persistent LWE and poverty<sup>41</sup>.

---

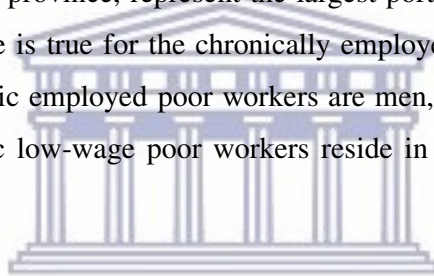
<sup>41</sup> This figure may very well be much higher since the total working population for this section of the analysis only includes workers who took part in the NIDS surveys for all four waves.

Table 4.13: Frequency of different groups of low-wage, employed poor and low-wage poor workers, in the balanced panel

	Low-wage employment		Employed poverty		Low-wage poverty	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
<b>Never</b>	2 404 902	56.47	2 479 543	58.23	2 997 330	70.38
<b>Transitory</b>	1 151 044	27.03	1 031 160	24.21	892 219	20.95
<b>Chronic</b>	702 567	16.50	747 810	17.56	368 964	8.66
<b>Total</b>	4 258 513	100.00	4 258 513	100.00	4 258 513	100.00

Source: Own calculations using NIDS 2008-2014 balanced panel component.

Table 4.14 presents the profile for the three different groups of low-wage employed workers, employed poor workers and low-wage poor workers at the time of Wave 4. Female, African and middle-aged (35 to 44 years and 45 to 54 years) workers, as well as workers who reside in urban areas and the Gauteng province, represent the largest portion of chronically low-wage employed persons. The same is true for the chronically employed poor and low-wage poor, except the majority of chronic employed poor workers are men, rather than women, and the largest proportion of chronic low-wage poor workers reside in KwaZulu-Natal, rather than Gauteng.



In terms of educational attainment, workers who experience chronic LWE, employed poverty or LWP are largely workers without Matric. The majority of those who are transitory or never low-wage employed, employed poor or low-wage poor possess educational attainment ranging from incomplete secondary schooling to Matric with an additional certificate or diploma.

Employees (full-time or regular paid workers) comprise more than 60% of workers in all three categories for LWE, working poverty and LWP populations. This may be attributed to the fact that employees constitute over 70% of the total working population. Of chronic low-wage and/or poor workers, individuals with low-skilled occupations represent the majority. These include elementary, trade and service work occupations. On the other hand, professionals comprise the largest proportion of workers who are never low-wage and/or poor. Similarly, workers in the private household industry<sup>42</sup> dominate the *chronic* category, while workers in the CSP services industry dominate the *never* and *transitory* categories for LWE, working

<sup>42</sup> These workers are also usually low-skilled and include, for example, domestic workers.

poverty and LWP. Sector findings show that transitory LWE, employed poverty and LWP is experienced largely by formal sector workers<sup>43</sup>. However, chronic LWE, working poverty and LWP is experienced mostly amongst informal sector workers.

As for household composition, the mean household size, number of children and number of unemployed household members are lowest for workers who are never low-wage and/or poor, and highest for workers who are chronically low-wage and/or poor. These results may imply that large households and the presence of many dependent members not only contribute to the frequency and probability of in-work poverty (as highlighted by previous findings), but also prolong working poverty for those affected. Surprisingly, the mean number of employed household members is highest in the *chronic* category for employed poverty and LWP. This may suggest that the mere employment of working-age household members is not sufficient to escape working poverty. Their jobs may very well be low-paying and thus contribute to prolonged poverty.



---

<sup>43</sup> Most workers in the *never* population for LWE, working poverty and LWP, are also formal sector workers.

Table 4.14: Profile of different groups of low-wage, employed poor and low-wage poor workers, in the balanced panel

	Low-wage employment frequency		Employed poverty frequency		Low-wage employed poverty frequency	
	Never	Transitory	Never	Chronic	Never	Chronic
<b>Gender</b>						
Female	34.48	36.73	36.21	38.72	35.35	39.45
Male	65.52	63.27	63.79	61.28	64.65	60.55
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Race</b>						
African	65.58	84.13	65.07	85.63	68.25	88.91
Coloured	9.39	10.57	9.10	10.72	10.12	7.71
Asian/Indian	5.19	0.97	5.11	2.22	4.50	1.74
White	19.85	4.33	20.72	1.42	17.14	1.64
Total	100.00	100.00	100.00	100.00	100.00	100.00
<b>Age cohort</b>						
Age 15 to 24 years	0.08	0.84	0.00	1.13	0.07	1.08
Age 25 to 34 years	12.97	21.25	13.83	19.14	14.21	21.18
Age 35 to 44 years	38.34	41.56	39.53	38.96	39.33	38.53
Age 45 to 54 years	33.56	21.86	32.29	26.80	31.52	25.14
Age 55 to 65 years	15.05	14.48	14.34	13.97	14.88	14.08
Total	100.00	100.00	100.00	100.00	100.00	100.00
Mean age in years	44.73	42.40	44.39	42.87	44.33	43.43
<b>Education</b>						
None	0.89	4.36	1.54	3.93	1.55	7.46
Incomplete primary	4.39	10.94	5.51	10.11	5.54	13.44
Incomplete secondary	30.31	47.97	29.25	47.88	33.40	51.46
Matric	17.95	18.75	18.73	17.31	17.85	16.69
Matric + Cert, / Dip,	31.15	15.84	30.69	17.01	28.82	10.07
Degree	15.01	2.13	13.98	3.77	12.60	0.86
Other/unspecified	0.30	0.01	0.29	0.00	0.24	0.02
Total	100.00	100.00	100.00	100.00	100.00	100.00
Mean years of education	11.74	9.89	11.57	9.93	11.39	9.01
<b>Area type*</b>						
Traditional	11.74	20.29	9.56	22.59	11.92	25.60
Urban	84.02	70.91	83.88	69.73	81.70	66.88
Farms	4.24	8.76	6.54	7.69	6.36	7.52
Total	100.00	99.96	99.98	100.00	99.99	100.00

Table 4.14: Continued

Province†	Low-wage employment frequency		Employed poverty frequency		Low-wage employed poverty frequency				
	Never	Transitory	Chronic	Never	Transitory	Chronic			
Western Cape	11.95	12.40	13.82	11.81	13.52	12.72	12.11	10.90	18.14
Eastern Cape	7.23	7.74	10.50	6.18	11.12	9.19	7.21	8.84	11.32
Northern Cape	2.57	2.43	4.33	2.47	3.06	3.68	2.54	2.76	5.28
Free State	5.55	6.63	7.22	6.34	5.29	6.50	6.29	5.09	7.16
KwaZulu-Natal	10.72	11.76	18.25	10.94	11.87	17.08	10.63	14.14	20.82
North West	5.91	5.58	4.52	5.85	6.56	3.40	5.83	4.94	5.23
Gauteng	42.56	33.61	22.39	43.22	27.89	27.86	41.43	29.60	16.76
Mpumalanga	7.40	13.17	8.41	6.51	13.03	12.41	7.24	14.90	10.43
Limpopo	6.11	6.65	10.55	6.66	7.66	7.16	6.70	8.83	4.86
Total	100.00	99.96	100.00	99.98	100.00	100.00	99.99	100.00	100.00
<b>Employment type</b>									
Employee	94.31	86.61	64.82	91.76	84.49	76.76	91.71	83.28	61.97
Self-employed	4.90	10.55	22.51	7.25	10.67	14.39	6.84	11.71	23.84
Casual worker	0.79	2.26	12.04	0.89	4.20	8.62	1.37	4.15	14.02
Unclassified	0.00	0.58	0.63	0.11	0.64	0.23	0.09	0.86	0.17
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
<b>Occupation</b>									
Managers	11.01	5.34	2.10	11.87	1.99	3.50	10.43	1.77	3.41
Professionals	18.68	4.95	0.75	16.61	8.57	1.51	15.80	3.77	1.17
Technicians	9.27	2.58	1.62	8.32	5.02	0.82	7.99	2.77	0.00
Clerks	11.51	4.39	1.12	11.07	4.93	1.34	10.09	3.57	0.24
Services workers	12.58	19.42	22.62	13.46	16.81	23.79	14.36	16.71	28.61
Skilled agriculture	0.34	0.68	1.00	0.43	0.81	0.52	0.54	0.49	0.63
Traders	12.74	17.33	16.01	11.88	17.08	19.75	12.96	19.92	14.16
Operators	14.56	17.54	9.45	14.04	17.17	12.47	15.04	16.60	5.27
Elementary occupation	7.68	26.74	44.13	10.74	26.35	35.38	11.37	33.05	45.28
Other/unspecified	1.62	1.04	1.18	1.59	1.27	0.92	1.43	1.35	1.23
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 4.14: Continued

Industry	Low-wage employment frequency		Employed poverty frequency		Low-wage employed poverty frequency		
	Never	Transitory	Never	Transitory	Never	Transitory	Chronic
Agriculture	2.49	7.99	3.58	8.05	3.89	10.79	11.51
Mining	8.10	2.45	6.88	2.67	6.89	1.94	0.00
Manufacturing	9.94	13.81	9.94	15.00	10.62	13.58	11.19
Utilities	1.56	0.34	1.57	1.30	1.30	1.55	0.46
Construction	5.15	8.80	4.60	7.87	5.48	8.95	7.22
Wholesale and retail	11.57	16.69	11.54	19.13	12.18	18.18	20.43
TSC	7.44	6.51	8.83	3.20	8.00	3.24	4.35
Finance	11.94	9.74	11.85	6.65	11.48	7.67	6.47
CSP services	39.27	23.74	36.99	25.17	35.82	20.32	8.46
Private household	1.40	8.90	3.34	9.53	3.33	12.36	27.71
Other/unspecified	1.14	1.01	0.88	1.44	1.00	1.42	2.20
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
<b>Sector</b>							
Informal	7.49	30.06	11.56	32.14	12.98	37.13	70.57
Formal	92.51	69.36	88.33	67.21	86.93	62.01	29.26
Unclassified	0.00	0.58	0.11	0.64	0.09	0.86	0.17
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
<b>Household-level variables</b>							
Mean household size	3.55	4.04	3.24	3.80	3.49	4.24	5.37
Mean no. of children	0.98	1.21	0.84	1.08	0.96	1.23	1.80
Mean no. of elderly	0.21	0.18	0.19	0.21	0.20	0.17	0.16
Mean no. of employed	1.67	1.75	1.68	1.68	1.69	1.72	1.80
Mean no. of unemployed	0.16	0.23	0.12	0.27	0.16	0.24	0.38

Source: Own calculations using NIDS 2008-2014 balanced panel component.

\* The area type shares do not add up to 100% because some persons did not report their area type.

† The province shares do not add up to 100% because some persons reported residence outside of South Africa.

Tables 4.15, 4.16 and 4.17 present findings for the transitions in LWE, working poverty and LWP respectively, for the period 2008 (Wave 1) to 2014 (Wave 4). 8% of all workers who are not low-wage employed in 2008, enter LWE by the year 2014. Entry into LWE may be due to a number of factors such as a worker receiving a demotion, changing occupations or industries or quitting his or job and becoming self-employed. Exit out of LWE is significantly higher at 55%. That is, 55% of workers who are low-wage employed in 2008, are not low-wage employed by 2014. This may be as a result of increased educational attainment and experience resulting in a higher paying job. Unfortunately, 45% of all workers remain in LWE from 2008 to 2014. As indicated by Stewart (2007) and Schnabel (2016), workers may get trapped in low-paying jobs, which often lead to future unemployment.

Table 4.15: Low-wage employment transition matrix – Wave 1, 2008 vs. Wave 4, 2014

<b>Wave 1, 2008</b>	<b>Wave 4, 2014</b>		<b>Total</b>
	Not low-wage employed	Low-wage employed	
Not low-wage employed	91.85	8.15	100.00
Low-wage employed	55.02	44.98	100.00
<b>Total</b>	<b>83.30</b>	<b>16.70</b>	<b>100.00</b>

Source: Own calculations using NIDS 2008-2014 balanced panel component.

Transitions in employed poverty are similar to that of LWE. 7% of workers enter employed poverty, while 60% exit working poverty by 2014<sup>44</sup>. Entry into working poverty may be owing to an increased number of dependent household members (children and unemployed adults) or lowered income. These events may in turn be as a result of an economic slump, resulting in job loss or demotion, the loss of working household members through illness or death, or unforeseen pregnancies.

41% of workers remain trapped in employed poverty from 2008 to 2014. The limited or lack of access to educational attainment and skills training may be a factor inhibiting workers from progressing to better job opportunities which afford them higher earnings, job security and pleasant working conditions. Furthermore, effective family planning may be another issue preventing exit out of working poverty, particularly amongst young workers. The additional

<sup>44</sup> The working poverty entry rate is significantly lower than the overall poverty entry rate, while the working poverty exit rate is significantly higher than the overall poverty exit rate (see Finn and Leibbrandt, 2016; Zizzamia et al., 2016).

financial burden brought on by children, coupled with low educational attainment and work experience exacerbates working poverty, making it even more difficult to exit. Even worse, as highlighted by Hick and Lanau (2017), working households who face employed poverty face a higher risk of transitioning into unemployment.

Table 4.16: Employed poverty transition matrix – Wave 1, 2008 vs. Wave 4, 2014

Wave 1, 2008	Wave 4, 2014		Total
	Not employed poor	Employed poor	
Not employed poor	92.75	7.25	100.00
Employed poor	59.47	40.53	100.00
<b>Total</b>	<b>83.34</b>	<b>16.66</b>	<b>100.00</b>

Source: Own calculations using NIDS 2008-2014 balanced panel component.

The most vulnerable socio-economic category, LWP, reveals an entry rate of 4% and an exit rate of 62%. 38% of workers who are low-wage poor in 2008, remain low-wage poor by 2014. Entry into and exit out of low wage poverty, as well as being trapped in LWP can be attributed to a combination of the above mentioned circumstances.

Table 4.17: Low-wage poverty transition matrix – Wave 1, 2008 vs. Wave 4, 2014

Wave 1, 2008	Wave 4, 2014		Total
	Not low-wage poor	Low-wage poor	
Not low-wage poor	95.86	4.14	100.00
Low-wage poor	61.72	38.28	100.00
<b>Total</b>	<b>90.32</b>	<b>9.68</b>	<b>100.00</b>

Source: Own calculations using NIDS 2008-2014 balanced panel component.

Over all, while exit rates for LWE, working poverty and LWP are high and significantly outweigh entry rates, the proportion of individuals who remain trapped in these poor socio-economic conditions is considerably high at approximately 40% overall. This warrants public and private sector intervention with regard to the provision of access to quality education and skills training, wage setting at a level adequate to meet the living needs of individuals, increased job opportunities and support for small businesses.



#### **4.5 Conclusion**

This chapter presents the empirical findings for this paper. First, descriptive statistics on LWE, working poverty and LWP are presented. Second, the findings of the various probit regressions on LWE, employed poverty and LWP likelihood (the main econometric analysis) are discussed. Finally, the results of the extended analysis around the dynamics and transitions in LWE, working poverty and LWP are elaborated on. The fourth LWT is used for all empirical analysis, unless specified otherwise. Findings reveal a decrease in LWE, working poverty and LWP in South Africa from 2008 to 2014. However, LWE, employed poverty and LWP rates are still significantly high at over 20% on average.



UNIVERSITY *of the*  
WESTERN CAPE

## CHAPTER FIVE: CONCLUSION

### 5.1 Introduction

The key empirical findings for this study are reviewed in this chapter. Whilst it is not the primary aim of this study to assess existing policy or provide detailed policy proposals, some policy suggestions on how to reduce LWE and working poverty are recommended.

### 5.2 Review of findings

The rate of LWE, working poverty and LWP, as a percentage of total employment, decreased from 2008 to 2014. However, these rates are still significantly high, at 32%, 26% and 19% for LWE, working poverty and LWP respectively. These three socio-economic conditions are largely experienced by female, African, middle-aged and urban-resident workers, as well as informal sector workers and workers who are employed in elementary occupations and in the private household industry. Moreover, findings reveal that, on average, working poor and low-wage poor workers reside in households with a greater number of household members, children, elderly persons and unemployed persons. Surprisingly, working poor persons also reside in households with a greater mean number of employed persons compared to non-working poor individuals.

Female workers, African workers and workers aged 15 to 24 years have the greatest probability of being low-wage and/or poor. While urban and Gauteng-resident workers revealed the highest incidence of LWE, working poverty and LWP, these workers are less likely to fall victim to LWE and poverty compared to rural and Eastern Cape resident-workers. A concave relationship exists between years of educational attainment and all three socio-economic categories. That is, LWE, employed poverty and LWP likelihood decreases as a worker's years of educational attainment increases. In terms of labour market characteristics, informal sector workers, casual workers, the self-employed, and workers in low-skill occupations (elementary workers, operators and service workers) are more at risk of being low-wage employed and/or poor. Results also reveal that workers with a greater risk of employed poverty and LWP are those who reside in large households, with many children and unemployed members. However, the more elderly persons and employed members in the household, the lower a workers chance of being working poor or low-wage poor.

Findings for the extended analysis reveal that approximately 17% of the working population experience transitory and chronic LWE or working poverty. Furthermore, the characteristics of the average chronic low-wage or poor worker include being female, African, middle-aged, of urban residence, low educated, employed in the informal sector, employed in low-skilled occupations, and residing in a large household with many children and unemployed members. Finally, while entry rates into LWE, working poverty and LWP are estimated at 8%, 7% and 4% respectively, exit rates are positively high at 55%, 59% and 62% respectively. However, the rate of workers who remain trapped in LWE, employed poverty and LWP are likewise significantly high at 45%, 41% and 38% respectively.

### **5.3 Conclusion**

It is evident that previously disadvantaged workers (women and African) face a greater risk of earning low wages and being poor. This may be linked to low educational attainment, a factor revealed to also increase the likelihood of LWE and employed poverty. Past discriminatory laws in South Africa limited access to quality education by African and female citizens, and while over 20 years has passed since the abolishment of such laws, the effects of its initial existence are still felt. Poverty has become almost entrenched in African communities. Household heads have low educational attainment and low-paying jobs, making it difficult to afford quality education for the next generation. As a result, households get trapped in a cycle of low education, low-paying jobs and poverty from generation to generation. Government should focus on policy aimed at providing affordable (or free) quality education and skills training to previously disadvantaged communities. Moreover, the education and training programmes should focus on skills and competencies demanded by the labour market (Festus *et al.*, 2015; Lilenstein *et al.*, 2016).

Similarly, LWE and working poverty are highly associated with unstable work environments and security such as those experienced by workers in the informal sector and workers with low-skill occupations (for example, domestic workers and workers in elementary occupations). Policy prescriptions should aim to promote economic growth and infrastructure development within the informal sector (Valodia *et al.*, 2006; Oosthuizen, 2012). The mere creation of employment is not sufficient. Focus should be placed on creating quality jobs and transforming existing unstable, low-paying jobs to more stable work environments that pay workers higher earnings (Rogan and Reynolds, 2015). This may be done by reducing the red tape around small

or informal businesses. Government should provide small business owners with easy access to financial and organisational support. That is, provide business owners with the skills and knowledge of how to successfully manage and grow their businesses in terms of finances, employees, customer service and its responsibility to the community and environment (Jiyane *et al.*, 2013; Policy, Strategy, Information and Research Department, 2016).

Increasing the NMW for all sectors may be somewhat contentious. Households cannot meet their basic needs with the current minimum wage while businesses cannot afford an increased minimum wage without running the risk of having to close their doors. Moreover, the level of the minimum wage does not assist self-employed persons (Lilenstein *et al.*, 2016). In this case, the state may assist businesses with special taxation benefits, wage subsidies and training opportunities for staff members (Levinsohn *et al.*, 2014; Ruzek, 2014; Makgalemele, 2017). This in turn requires consistent monitoring to ensure that businesses are regularly up-skilling their staff and legally taking advantage of tax and wage benefits to assist workers in escaping and preventing LWE and poverty.

While certain demographic, education and labour market characteristics are key markers of LWE and working poverty, the structure or composition of a household also plays a significant role in the increased likelihood of earning low wages and being poor. Results show that larger households with many children not only increase the probability of being low-wage employed or working poor, but it also increases the duration in which these socio-economic conditions are experienced. As previously mentioned, the additional financial responsibility brought on by children, coupled with low educational attainment and work experience exacerbates working poverty, making it even more difficult to exit. Consequently, the public and private sectors, non-profit organisations and community members themselves should set up campaigns which increase awareness around effective family planning and the importance of education, particularly at institutions where many young people are situated, for example, schools, universities, libraries and malls (Program for Appropriate Technology in Health and United Nations Population Fund, 2006; Department of Health, 2012; Longwe *et al.*, 2012).

## REFERENCES

- Alli, B. (2008). *Fundamental principles of occupational health and safety*. 2nd edition. Geneva: International Labour Office.
- Altman, M. (2007). *Low wage work in South Africa*. Pretoria: Human Sciences Research Council.
- Barker, F. (2007). *The South African labour market: Theory and practice*. 5th edition. Pretoria: Van Schaik Publishers.
- Becker, G. (1965). A theory of the allocation of time. *The Economic Journal*. 75(299) p. 493-517.
- Berger, S. & Harasty, C. (2002). *World and regional employment prospects: Halving the world's working poor by 2010*. Employment Strategy Department Employment Paper No. 2002/38. Geneva: International Labour Office.
- Bhorat, H., Leibbrandt, M., Maziya, M., Van der Berg, S. & Woolard, I. (2001). *Fighting poverty: Labour markets and inequality in South Africa*. Lansdowne: UCT Press.
- Bhorat, H. & Oosthuizen, M. (2005). *The post-apartheid South African labour market*. Development Policy Research Unit Working Paper 05/93. Cape Town: Development Policy Research Unit (DPRU), University of Cape Town.
- Bhorat, H. & Stanwix, B. (2018). *Wage setting and labor regulatory challenges in a middle income country setting: The case of South Africa - Background note for the South Africa systematic country diagnostic*. World Bank Group Working Paper 127303. Washington, D. C.: World Bank Group.
- Bhorat, H., Tseng, D. & Stanwix, B. (2014). Pro-poor growth and social protection in South Africa: Exploring the interactions. *Development Southern Africa*. 31(2) p. 219-240.
- Bhorat, H. & Van der Westhuizen, C. (2009). *Economic growth, poverty and inequality in South Africa: The first decade of democracy*. Unpublished study. [Online]. Available: [https://www.researchgate.net/profile/Haroon\\_Bhorat/publication/229053205\\_Economic\\_growth\\_poverty\\_and\\_inequality\\_in\\_South\\_Africa\\_the\\_first\\_decade\\_of\\_democracy/links/00b495244235116e7f000000/Economic-growth-poverty-and-inequality-in-South-Africa-the-first-decade-of-democracy.pdf?origin=publication\\_detail](https://www.researchgate.net/profile/Haroon_Bhorat/publication/229053205_Economic_growth_poverty_and_inequality_in_South_Africa_the_first_decade_of_democracy/links/00b495244235116e7f000000/Economic-growth-poverty-and-inequality-in-South-Africa-the-first-decade-of-democracy.pdf?origin=publication_detail) [Accessed: 1 May 2018].
- Borjas, G. (2013). *Labor economics*. 6th edition. New York: McGraw-Hill.

- Brady, D., Fullerton, A. & Cross, J. (2010). More than just nickels and dimes: A cross-national analysis of working poverty in affluent democracies. *Social Problems*. 57(4) p. 559-585.
- Branch, E. & Hanley, C. (2014). Upgraded to bad jobs: Low-wage black women's relative status since 1970. *The Sociological Quarterly*. 55(2) p. 366-395.
- Brown, M., Daniels, R.C., De Villiers, L., Leibbrandt, M. & Woolard, I. (eds.) (2012). *National Income Dynamics Study Wave 2 User Manual*. Cape Town: Southern Africa Labour and Development Research Unit, University of Cape Town.
- Bryson, A. & Freeman, R. (2013). Employee perceptions of working conditions and the desire for worker representation in Britain and the US. *Journal of Labor Research*. 34(1) p. 1-29.
- Burger, R. & Woolard, I. (2005). The state of the labour market in South Africa after the first decade of democracy. *Journal of Vocational Education and Training*. 57(4) p. 453-476.
- Chambers, R. (1988). *Poverty in India: Concepts, research and reality*. Institute of Development Studies Discussion Paper 241. Brighton: Institute of Development Studies, University of Sussex.
- Cheung, K. & Chou, K. (2015). Working poor in Hong Kong. *Social Indicators Research*. 129(1) p. 317-335.
- Chinhema, M., Brophy, T., Brown, M., Leibbrandt, M., Mlatsheni, C. & Woolard, I. (Eds.) (2016). *National Income Dynamics Study Panel User Manual*. Cape Town: Southern Africa Labour and Development Research Unit, University of Cape Town.
- Chisadza, S. (2015). *A bivariate probit model of the transition from school to work in the post-compulsory schooling period: A case study of young adults in the Cape area*. Pretoria: DNA Economics.
- Chronic Poverty Research Centre (2004). *The chronic poverty report 2004-05*. Manchester: Institute for Development Policy and Management, University of Manchester.
- Cotei, C. & Farhat, J. (2011). An application of the two-stage Bivariate Probit–Tobit model to corporate financing decisions. *Review of Quantitative Finance and Accounting*. 37(3) p. 363-380.
- Coudouel, A., Hentschel, J. & Wodon, Q. (2002). *Poverty measurement and analysis*. MPRA Paper 10490. Munich: University Library of Munich.
- Crettaz, E. & Bonoli, G. (2010). *Why are some workers poor? The mechanisms that produce working poverty in a comparative perspective*. The Reconciliation of Work and

- Welfare in Europe Working Paper No. REC-WP 12/2010. Edinburgh: RECOWOE Publication.
- Cuesta, M.B. & Salverda, W. (2009), Low-wage employment and the role of education and on-the-job training. *Labour*. 23(S1) p. 5-35.
- Davis, E.P. & Sanchez-Martinez, M. (2014). *A review of the economic theories of poverty*. Discussion Paper No. 435. London: National Institute of Economic and Social Research.
- De Villiers, L., Brown, M., Woolard, I., Daniels, R.C. & Leibbrandt, M. (Eds.) (2013). *National Income Dynamics Study Wave 3 User Manual*. Cape Town: Southern Africa Labour and Development Research Unit, University of Cape Town.
- Eardley, T. (1998). *Working but poor? Low pay and poverty in Australia*. Social Policy Research Centre Discussion Paper No. 91. Sydney: Social Policy Research Centre (SPRC), University of New South Wales.
- Festus, L., Kasongo, A., Moses, M. & Yu, D. (2015). *The South African labour market, 1995-2013*. Economic Research Southern Africa Working Paper No. 493. Cape Town: Economic Research Southern Africa.
- Finn, A. (2015). *A national minimum wage in the context of the South African labour market*. National Minimum Wage Research Initiative Working Paper No. 1. Johannesburg: National Minimum Wage Research Initiative, University of Witwatersrand.
- Finn, A. & Leibbrandt, M. (2016). *The dynamics of poverty in the first four waves of NIDS*. SALDRU Working Paper No. 174. Cape Town: SALDRU, University of Cape Town.
- Fleury, D. & Fortin, M. (2006). *When working is not enough to escape poverty: An analysis of Canada's working poor*. Human Resources and Social Development Canada Working Paper No. SP-630-06-06E. Ottawa: Human Resources and Social Development Canada.
- Foster, J., Greer, J. & Thorbecke, E. (1984). A class of decomposable poverty measures. *Econometrica*. 52(3) p. 761-765.
- Government of the Hong Kong Special Administrative Region. (2013). *Hong Kong poverty situation report 2012*. Hong Kong: Government of the Hong Kong Special Administrative Region.
- Grimshaw, D. (2011). *What do we know about low-wage work and low-wage workers? Analysing the definitions, patterns, causes and consequences in international perspective*. Geneva: International Labour Office.

- Guertzgen, N. & Heinze, A. (2010). *Should low-wage workers care about where they work? Assessing the impact of employer characteristics on low-wage mobility*. Centre for European Economic Research Discussion Paper No. 10-054. Mannheim: Centre for European Economic Research.
- Gunatilaka, R. (2010). *Sri Lanka's working poor*. Geneva: International Labour Office.
- Halleröd, B., Ekbrand, H. & Bengtsson, M. (2015). In-work poverty and labour market trajectories: Poverty risks among the working population in 22 European countries. *Journal of European Social Policy*. 25(5) p. 473-488.
- Haughton, J. & Khandker, S. (2009). *Handbook on Poverty and Inequality*. Washington DC: The World Bank.
- Heintz, J. & Posel, D. (2008). Revisiting informal employment and segmentation in the South African labour market. *South African Journal of Economics*. 76(1) p. 26-44.
- Hick, R. & Lanau, A. (2017). *In-work poverty in the UK: Problem, policy analysis and platform for action*. Cardiff: Cardiff University.
- Horemans, J., Marx, I. & Nolan, B. (2016). Hanging in, but only just: part-time employment and in-work poverty throughout the crisis. *IZA Journal of European Labor Studies*. 5(5) p. 1-20.
- Husmanns, R. (2007). *Measurement of employment, unemployment and underemployment: Current international standards and issues in their application*. Geneva: International Labour Organisation Bureau of Statistics.
- International Labour Organisation. (2016). *World employment social outlook: Trends 2016*. Geneva: International Labour Office.
- Jiyane, G., Majanja, M., Mostert, B. & Ocholla, D. (2013). South Africa as an information and knowledge society: The benefit to informal sector women entrepreneurs. *South African Journal of Libraries and Information Science*. 79(1) p. 1-12.
- Kapsos, S. (2004). *Estimating growth requirements for reducing working poverty: Can the world halve working poverty by 2015?* Employment Strategy Department Employment Paper No. 2004/14. Geneva: International Labour Office.
- Kenworthy, L. & Marx, I. (2017). *In-work poverty in the United States*. IZA Discussion Paper No. 10638. Bonn: IZA Institute of Labor Economics.
- Laing, D. (2011). *Labor Economics: Introduction to Classic and the New Labor Economics*. New York: W.W. Norton and Company.
- Lee, S. & Sobeck, K. (2012). Low-wage work: A global perspective. *International Labour Review*. 151(3) p. 141-155.



- Leibbrandt, M., Finn, A., Argent, J. & Woolard, I. (2010a). Changes in income poverty over the post-apartheid period: An analysis based on data from the 1993 project for statistics on living standards and development and the 2008 base wave of the national income dynamics study. *Studies in Economics and Econometrics*. 34(3) p. 25-44.
- Leibbrandt, M. & Woolard, I. (1999). *Household incomes, poverty and inequality in a multivariate framework*. DPRU Working Paper 99/31. Cape Town: Development Policy Research Unit, University of Cape Town.
- Leibbrandt, M., Woolard, I., Finn, A. & Argent, J. (2010b). *Trends in South African income distribution and poverty since the fall of apartheid*. OECD Social, Employment and Migration Working Paper No. 101. Paris: Organisation for Economic Cooperation and Development (OECD).
- Lekezwa, B. (2011). *The impact of social grants as anti-poverty policy instruments in South Africa: An analysis using household theory to determine intra-household allocation of unearned income*. Unpublished Masters mini-thesis. Stellenbosch: Stellenbosch University.
- Levinsohn, J., Rankin, N., Roberts, G. & Schöer, V. (2014). *Wage subsidies and youth employment in South Africa: Evidence from a randomised control trial*. Stellenbosch Economic Working Paper No. 02/14. Stellenbosch: University of Stellenbosch.
- Lilenstein, K., Woolard, I. & Leibbrandt, M. (2016). *In-work poverty in South Africa: The impact of income sharing in the presence of high unemployment*. SALDRU Working Paper No. 193. Cape Town: Southern Africa Labour and Development Research Unit, University of Cape Town.
- Longwe, A., Huisman, J. & Smits, J. (2012). *Effects of knowledge, acceptance and use of contraceptives on household wealth in 26 African countries*. Nijmegen Center for Economics Working Paper No. 12-109. Nijmegen: Radboud University.
- Majid, N. (2001). The working poor in developing countries. *International Labour Review*. 140(3) p. 271-291.
- Makgalemele, M. (2017). *Do tax incentives promote development of small medium enterprises that ultimately yield economic growth*. Unpublished Masters Dissertation. Johannesburg: University Of Witwatersrand.
- Meng, C. & Schmidt, P. (1985). On the cost of partial observability in the bivariate probit model. *International Economic Review*. 26(1) p. 71-85.
- Mosisa, A. (2003). The working poor in 2001. *Monthly Labor Review*. 126(11/12) p. 13-19.

- Nackerdien, F. & Yu, D. (2018). A panel labour data analysis of formal-informal sector linkages in South Africa. *Development Southern Africa*. Forthcoming.
- Nolan, B. & Marx, I. (1999). *Low pay and household poverty*. Luxembourg Income Study Working Paper No. 216. Luxembourg: Luxembourg Income Study.
- Nolan, B. & Marx, I. (2000). Low Pay and Household Poverty. In: Gregory, M., Salverda, W. & Bazen, S. (Eds). *Labour Market Inequalities: Problems and Policies of Low-Wage Employment in International Perspective*. Oxford: Oxford University Press.
- Nolan, B., Whelan, C. & Maitre, B. (2010). *Low pay, in-work poverty and economic vulnerability: A comparative analysis using EU-SILC*. University College Dublin Geary Institute Discussion Paper No. WP 201028. Dublin: Geary Institute, University College Dublin.
- Oosthuizen, M. (2006). *The post-apartheid labour market: 1995-2004*. DPRU Working Paper No. 06/103. Cape Town: Development Policy Research Unit, University of Cape Town.
- Oosthuizen, M. (2012). Low pay in South Africa. *International Labour Review*. 151(3) p. 173-192.
- Organisation for Economic Co-operation and Development. (1996). *OECD Employment Outlook 1996*. Paris: OECD Publishing.
- Organisation for Economic Co-operation and Development. (2015). *OECD Employment Outlook 2015*. Paris: OECD Publishing.
- Oyekale, A. (2015). Factors explaining households' cash payment for solid waste disposal and recycling behaviors in South Africa. *Sustainability*. 7(12) p. 15882-15899.
- Policy, Strategy, Information and Research Department. (2016). *Economic development and growth in Ethekwini: Embracing microbusiness in the informal economy*. Durban: Policy, Strategy, Information and Research Department, Ethekwini Municipality.
- Program for Appropriate Technology in Health (PATH) and United Nations Population Fund (UNFPA). (2006). *Meeting the need: Strengthening family planning programs*. Seattle: PATH and UNFPA.
- Rank, M., Yoon, H. & Hirschl, T. (2003). American poverty as a structural failing: Evidence and arguments. *Journal of Sociology and Social Welfare*. 30(4) p. 3-29.
- Republic of South Africa. (2012). *National contraception and fertility planning policy and service delivery guidelines: A companion to the national contraception clinical guidelines*. Pretoria: Department of Health.
- Republic of South Africa. (2017). *National Minimum Wage Bill 41257 of 2017*. Pretoria: Government Gazette.

- Rogan, M. & Reynolds, J. (2015). *The Working Poor in South Africa, 1997-2012*. Institute of Social and Economic Research Working Paper 2015/4. Grahamstown: Institute of Social and Economic Research, Rhodes University.
- Ruzek, W. (2014). The informal economy as a catalyst for sustainability. *Sustainability*. 2015(7) p. 23-34.
- Samuelson, P.A. (1956). Social indifference curves. *The Quarterly Journal of Economics*. 70(1) p. 1-21.
- Schmitt, J. (2012). *Low-wage lessons*. Washington DC: Center for Economic and Policy Research.
- Schnabel, C. (2016). *Low-wage employment*. Bonn: IZA World of Labor.
- Statistics South Africa. (1999). *October Household Survey: 1999. Statistical Release P0317*. Pretoria: Statistics South Africa.
- Statistics South Africa. (2004). *Labour Force Survey: September 2004. Statistical Release P0210*. Pretoria: Statistics South Africa.
- Statistics South Africa. (2008). *Quarterly Labour Force Survey: Quarter 1 and 2, 2008. Statistical Release P0211*. Pretoria: Statistics South Africa.
- Statistics South Africa. (2015). *Methodological report on rebasing of national poverty lines and development on pilot provincial poverty lines: Technical Report*. Pretoria: Statistics South Africa.
- Stewart, M. (2007). The interrelated dynamics of unemployment and low-wage employment. *Journal of Applied Econometrics*. 22(3) p. 511-531.
- Strengmann-Kuhn, W. (2004). Working Poor in Europe: A Partial Basic Income for Workers? In: Standing, G. (Ed.). *Promoting Income Security as a Right: Europe and North America*. London: Anthem Press.
- Sverke, M., Hellgren, J. & Näswall, K. (2006). *Job insecurity: A literature review*. Stockholm: The National Institute for Working Life.
- Thorbecke, E. (2004). *Conceptual and measurement issues in poverty analysis*. World Institute for Development Economics Research Discussion Paper DP2004/04. Helsinki: World Institute for Development Economics Research, United Nations University.
- United Nations. (2009). *Rethinking poverty: Report on the world social situation 2010*. New York: United Nations.
- United Nations Development Programme. (2014). *Human Development Report 2014. Sustaining human progress: Reducing vulnerabilities and building resilience*. New York: United Nations Development Programme.

- Valodia, I., Lebani, L., Skinner, C. & Devey, R. (2006). Low-waged and informal employment in South Africa. *Transformation: Critical Perspectives on Southern Africa*. 60(1) p. 90-126.
- Van der Berg, S., Burger, R., Burger, R., Louw, M. & Yu, D. (2006). *Trends in poverty and inequality since the political transition*. DPRU Working Paper 06/104. Cape Town: Development Policy Research Unit, University of Cape Town.
- Van der Berg, S., Louw, M. & Yu, D. (2008). Post-transition poverty trends based on an alternative data source. *South African Journal of Economics*. 76(1) p. 58-76.
- Vermaak, C. (2010). *The impact of multiple imputation of coarsened data on estimates on the working poor in South Africa*. World Institute for Development Economics Research Working Paper No. 2010/86. Helsinki: World Institute for Development Economics Research, United Nations University.
- Visser, M.A. & Meléndez, E. (2015). Working in the new low-wage economy: Understanding participation in low-wage employment in the recessionary era. *Journal of Labor and Society*. 18(1) p. 7-29.
- Woolard, I. & Leibbrandt, M. (1999). *Measuring poverty in South Africa*. DPRU Working Paper No. 99/33. Cape Town: Development Poverty Research Unit, University of Cape Town.
- Yu, K.C.D. (2012). *Using household surveys for deriving labour market, poverty and inequality trends in South Africa*. Unpublished Doctorate Dissertation. Stellenbosch: Stellenbosch University.
- Zizzamia, R., Schotte, S., Leibbrandt, M. & Ranchhod, V. (2016). *Vulnerability and the middle class in South Africa*. SALDRU Working Paper No. 188/ NIDS Discussion Paper 2016/15. Cape Town: SALDRU, University of Cape Town.

## APPENDIX

Table A1: Number of low-wage workers in the four approaches, 1995-2016

Year	LWT [1]	LWT [2]	LWT [3]	LWT [4]
OHS1995	3 400 827	3 331 884	2 585 392	3 331 884
OHS1996	3 085 413	3 085 413	3 085 413	3 085 413
OHS1997	3 255 626	3 112 726	2 593 018	3 044 389
OHS1998	3 496 858	3 330 503	2 919 840	3 008 090
OHS1999	4 566 669	3 873 910	3 481 224	3 349 737
LFS2000a	6 153 055	5 874 076	5 152 801	4 336 485
LFS2000b	6 260 697	6 012 389	5 002 097	4 663 978
LFS2001a	6 316 494	6 310 764	5 130 774	4 810 292
LFS2001b	5 219 384	5 209 349	4 101 359	4 066 186
LFS2002a	5 764 052	5 703 619	4 786 835	4 222 288
LFS2002b	5 527 699	5 243 914	4 510 409	4 052 271
LFS2003a	5 524 423	5 516 201	4 475 472	4 051 437
LFS2003b	5 314 294	5 301 579	4 246 712	3 833 933
LFS2004a	5 257 723	5 233 330	4 165 179	3 989 583
LFS2004b	5 220 069	5 115 624	3 988 743	3 984 100
LFS2005a	5 495 021	5 410 050	4 216 143	3 978 814
LFS2005b	5 709 983	5 693 899	4 574 900	4 298 820
LFS2006a	5 725 921	5 672 072	4 533 377	4 517 640
LFS2006b	5 758 606	5 613 001	4 564 532	4 564 532
LFS2007a	5 667 216	5 361 940	4 274 449	4 364 190
LFS2007b	5 440 362	5 420 591	4 255 988	4 244 892
2010Q1	5 917 207	5 816 023	4 191 518	4 874 980
2010Q2	5 806 214	5 725 459	4 104 079	4 788 695
2010Q3	5 725 707	5 658 444	4 071 484	4 856 128
2010Q4	5 683 637	5 616 528	3 983 191	5 131 737
2011Q1	5 809 206	5 734 627	4 077 534	4 831 698
2011Q2	5 768 255	5 667 144	4 045 157	5 065 673
2011Q3	5 835 673	5 706 445	4 282 259	4 728 824
2011Q4	5 622 252	5 474 702	4 017 872	5 267 646
2012Q1	5 975 241	5 640 328	4 039 911	5 034 085
2012Q2	5 902 716	5 559 378	4 235 865	5 221 979
2012Q3	5 812 818	5 481 871	4 288 374	4 821 804
2012Q4	5 840 612	5 626 741	4 204 088	4 704 101
2013Q1	5 865 244	5 680 960	4 287 511	4 372 451
2013Q2	5 834 664	5 653 741	4 099 884	4 564 941
2013Q3	6 079 109	6 003 853	4 302 023	4 668 460
2013Q4	6 264 078	6 170 523	4 300 256	4 707 496
2014Q1	6 112 114	5 976 098	4 506 982	4 630 796
2014Q2	6 288 680	6 095 789	4 614 754	4 608 741
2014Q3	6 204 717	5 982 548	4 534 258	4 538 446
2014Q4	6 152 457	6 052 821	4 464 398	4 733 003
2015Q1	6 440 773	6 319 598	4 615 843	4 579 660
2015Q2	6 423 177	6 334 533	4 629 573	4 538 018
2015Q3	6 913 423	6 330 913	4 842 903	4 591 195
2015Q4	6 764 282	6 166 861	4 729 029	4 727 268
2016Q1	6 406 987	5 785 776	4 455 316	4 545 893
2016Q2	6 170 877	6 106 496	4 346 486	4 407 035
2016Q3	6 445 383	6 299 083	4 480 276	4 401 428
2016Q4	6 461 895	6 235 444	4 399 124	4 399 124

Source: Own calculations using OHS 1995-1999, LFS 2000-2007 and QLFS 2010-2016.

Table A2: Low-wage employment versus poverty, NIDS 2008

1	2	3	4
	<b>Not poor</b>	<b>Poor</b>	<b>Total</b>
2	7 341 679 (54.51%)	1 275 090 (9.47%)	8 616 769 (63.98%)
3	1 370 830 (10.18%)	3 481 067 (25.85%)	4 851 897 (36.02%)
4	8 712 509 (64.69%)	4 756 157 (35.31%)	13 468 666 (100.00%)
<b>Not low-wage</b>			
<b>Low-wage</b>			
<b>Total</b>			

Table A3: Low-wage employment versus poverty, NIDS 2010

1	2	3	4
	<b>Not poor</b>	<b>Poor</b>	<b>Total</b>
2	7 109 096 (55.07%)	1 121 462 (8.69%)	8 230 558 (63.75%)
3	1 708 002 (13.23%)	2 971 734 (23.02%)	4 679 736 (36.25%)
4	8 817 098 (68.30%)	4 093 196 (31.70%)	12 910 294 (100.00%)
<b>Not low-wage</b>			
<b>Low-wage</b>			
<b>Total</b>			

Table A4: Low-wage employment versus poverty, NIDS 2012

1	2	3	4
	<b>Not poor</b>	<b>Poor</b>	<b>Total</b>
2	8 568 531 (57.81%)	1 033 752 (6.97%)	9 602 283 (64.78%)
3	2 096 397 (14.14%)	3 124 069 (21.08%)	5 220 466 (35.22%)
4	10 664 928 (71.95%)	4 157 821 (28.05%)	14 822 749 (100.00%)
<b>Not low-wage</b>			
<b>Low-wage</b>			
<b>Total</b>			

Table A5: Low-wage employment versus poverty, NIDS 2014

1	2	3	4
	<b>Not poor</b>	<b>Poor</b>	<b>Total</b>
2	10 456 751 (60.88%)	1 186 747 (6.91%)	11 643 498 (67.79%)
3	2 296 926 (13.37%)	3 235 326 (18.84%)	5 532 252 (32.21%)
4	12 753 677 (74.25%)	4 422 073 (25.75%)	17 175 750 (100.00%)
<b>Not low-wage</b>			
<b>Low-wage</b>			
<b>Total</b>			

Table A6: Probit regressions on labour force participation likelihood

	2008	2014
	Marginal effects	
Female	-0.1170***	-0.1530***
Coloured	0.0407*	0.0766*
Indian	-0.0311	0.1108***
White	-0.0574*	-0.0587
Age 25 to 34 years	0.3001***	0.3435***
Age 35 to 44 years	0.2945***	0.3542***
Age 45 to 54 years	0.1994***	0.2867***
Age 55 to 65 years	0.0087	0.0931***
Urban	0.0509***	0.0696***
Western Cape	0.1233***	N/A <sup>†</sup>
Northern Cape	0.0914***	-0.0801***
Free State	0.0901***	-0.0969***
KwaZulu-Natal	0.1713***	-0.1251***
North West	0.1260***	-0.1170***
Gauteng	0.1569***	-0.0679***
Mpumalanga	0.1129***	-0.0270
Limpopo	-0.0254	-0.0401*
Years of education	-0.0054	-0.0224***
Years of education-squared	0.0020***	0.0036***
Married	0.0656***	0.0242
Head	0.1204***	0.1283***
Children	-0.0015	-0.0088**
Elderly	-0.0262**	-0.0658***
Number of observations	15 466	22 304
Prob > Chi-squared	0.0000	0.0000
Pseudo R-squared	0.2270	0.2395

Source: Own calculations using NIDS 2008 and 2014 data.

\*\*\* Significant at 1%

\*\* Significant at 5%

\* Significant at 10%

<sup>†</sup> Omitted due to collinearity

Table A7: Heckprobit regressions on employment likelihood, conditional on labour force participation

	2008	2014
	Marginal effects	
Female	-0.0931***	-0.0358**
Coloured	0.0192	-0.1058**
Indian	0.1488***	-0.0372
White	0.1413***	0.1112*
Age 25 to 34 years	-0.1736***	-0.0409
Age 35 to 44 years	-0.0906*	0.0122
Age 45 to 54 years	0.0241	0.0583*
Age 55 to 65 years	0.2429***	0.1477***
Urban	-0.0585***	0.0448***
Western Cape	0.0336	N/A <sup>†</sup>
Northern Cape	-0.0063	-0.0102
Free State	-0.0614*	0.0047
KwaZulu-Natal	-0.0793**	0.0738***
North West	-0.1238***	0.0589***
Gauteng	-0.0322	0.0629***
Mpumalanga	-0.0400	0.0250
Limpopo	0.0687**	0.0378*
Years of education	-0.0393***	-0.0464***
Years of education-squared	0.0025***	0.0026***
Lambda	-0.5588***	-0.2555***
Number of observations	9 682	12 036
Prob > Chi-squared	0.0000	0.0000
Pseudo R-squared	0.1355	0.1289

Source: Own calculations using NIDS 2008 and 2014 data.

\*\*\* Significant at 1%

\*\* Significant at 5%

\* Significant at 10%

<sup>†</sup> Omitted due to collinearity



Table A8: Low-wage employment transition matrix – NIDS Wave 1, 2008 vs. Wave 2, 2010

<b>Wave 1, 2008</b>	<b>Wave 2, 2010</b>		<b>Total</b>
	Not low-wage employed	Low-wage employed	
Not low-wage employed	84.28	15.72	100.00
Low-wage employed	32.19	67.81	100.00
<b>Total</b>	<b>72.19</b>	<b>27.81</b>	<b>100.00</b>

Table A9: Low-wage employment transition matrix – NIDS Wave 1, 2008 vs. Wave 3, 2012

<b>Wave 1, 2008</b>	<b>Wave 3, 2012</b>		<b>Total</b>
	Not low-wage employed	Low-wage employed	
Not low-wage employed	87.15	12.85	100.00
Low-wage employed	36.97	63.03	100.00
<b>Total</b>	<b>75.50</b>	<b>24.50</b>	<b>100.00</b>

Table A10: Low-wage employment transition matrix – NIDS Wave 2, 2010 vs. Wave 3, 2012

<b>Wave 2, 2010</b>	<b>Wave 3, 2012</b>		<b>Total</b>
	Not low-wage employed	Low-wage employed	
Not low-wage employed	89.49	10.51	100.00
Low-wage employed	39.19	60.81	100.00
<b>Total</b>	<b>75.50</b>	<b>24.50</b>	<b>100.00</b>

Table A11: Low-wage employment transition matrix – NIDS Wave 2, 2010 vs. Wave 4, 2014

<b>Wave 2, 2010</b>	<b>Wave 4, 2014</b>		<b>Total</b>
	Not low-wage employed	Low-wage employed	
Not low-wage employed	91.12	8.88	100.00
Low-wage employed	63.01	36.99	100.00
<b>Total</b>	<b>83.30</b>	<b>16.70</b>	<b>100.00</b>

Table A12: Low-wage employment transition matrix – NIDS Wave 3, 2012 vs. Wave 4, 2014

<b>Wave 3, 2012</b>	<b>Wave 4, 2014</b>		<b>Total</b>
	Not low-wage employed	Low-wage employed	
Not low-wage employed	92.09	7.91	100.00
Low-wage employed	56.20	43.80	100.00
<b>Total</b>	<b>83.30</b>	<b>16.70</b>	<b>100.00</b>

Table A13: Employed poverty transition matrix – NIDS Wave 1, 2008 vs. Wave 2, 2010

<b>Wave 1, 2008</b>	<b>Wave 2, 2010</b>		<b>Total</b>
	Not employed poor	Employed poor	
Not employed poor	87.93	12.07	100.00
Employed poor	33.08	66.92	100.00
<b>Total</b>	<b>72.41</b>	<b>27.59</b>	<b>100.00</b>

Table A14: Employed poverty transition matrix – NIDS Wave 1, 2008 vs. Wave 3, 2012

<b>Wave 1, 2008</b>	<b>Wave 3, 2012</b>		<b>Total</b>
	Not employed poor	Employed poor	
Not employed poor	90.23	9.77	100.00
Employed poor	46.56	53.44	100.00
<b>Total</b>	<b>77.87</b>	<b>22.13</b>	<b>100.00</b>

Table A15: Employed poverty transition matrix – NIDS Wave 2, 2010 vs. Wave 3, 2012

<b>Wave 2, 2010</b>	<b>Wave 3, 2012</b>		<b>Total</b>
	Not employed poor	Employed poor	
Not employed poor	92.40	7.60	100.00
Employed poor	39.75	60.25	100.00
<b>Total</b>	<b>77.87</b>	<b>22.13</b>	<b>100.00</b>

Table A16: Employed poverty transition matrix – NIDS Wave 2, 2010 vs. Wave 4, 2014

<b>Wave 2, 2010</b>	<b>Wave 4, 2014</b>		<b>Total</b>
	Not employed poor	Employed poor	
Not employed poor	92.76	7.24	100.00
Employed poor	58.60	41.40	100.00
<b>Total</b>	<b>83.34</b>	<b>16.66</b>	<b>100.00</b>

Table A17: Employed poverty transition matrix – NIDS Wave 3, 2012 vs. Wave 4, 2014

<b>Wave 3, 2012</b>	<b>Wave 4, 2014</b>		<b>Total</b>
	Not employed poor	Employed poor	
Not employed poor	92.34	7.66	100.00
Employed poor	51.64	48.36	100.00
<b>Total</b>	<b>83.34</b>	<b>16.66</b>	<b>100.00</b>

Table A18: Low-wage poverty transition matrix – NIDS Wave 1, 2008 vs. Wave 2, 2010

<b>Wave 1, 2008</b>	<b>Wave 2, 2010</b>		<b>Total</b>
	Not low-wage poor	Low-wage poor	
Not low-wage poor	89.98	10.02	100.00
Low-wage poor	40.93	59.07	100.00
<b>Total</b>	<b>82.02</b>	<b>17.98</b>	<b>100.00</b>

Table A19: Low-wage poverty transition matrix – NIDS Wave 1, 2008 vs. Wave 3, 2012

<b>Wave 1, 2008</b>	<b>Wave 3, 2012</b>		<b>Total</b>
	Not low-wage poor	Low-wage poor	
Not low-wage poor	92.59	7.41	100.00
Low-wage poor	55.22	44.78	100.00
<b>Total</b>	<b>86.53</b>	<b>13.47</b>	<b>100.00</b>

Table A20: Low-wage poverty transition matrix – NIDS Wave 2, 2010 vs. Wave 3, 2012

<b>Wave 2, 2010</b>	<b>Wave 3, 2012</b>		<b>Total</b>
	Not low-wage poor	Low-wage poor	
Not low-wage poor	94.24	5.76	100.00
Low-wage poor	51.37	48.63	100.00
<b>Total</b>	<b>86.53</b>	<b>13.47</b>	<b>100.00</b>

Table A21: Low-wage poverty transition matrix – NIDS Wave 2, 2010 vs. Wave 4, 2014

<b>Wave 2, 2010</b>	<b>Wave 4, 2014</b>		<b>Total</b>
	Not low-wage poor	Low-wage poor	
Not low-wage poor	95.01	4.99	100.00
Low-wage poor	68.95	31.05	100.00
<b>Total</b>	<b>90.32</b>	<b>9.68</b>	<b>100.00</b>

Table A22: Low-wage poverty transition matrix – NIDS Wave 3, 2012 vs. Wave 4, 2014

<b>Wave 3, 2012</b>	<b>Wave 4, 2014</b>		<b>Total</b>
	Not low-wage poor	Low-wage poor	
Not low-wage poor	94.40	5.60	100.00
Low-wage poor	64.14	35.86	100.00
<b>Total</b>	<b>90.32</b>	<b>9.68</b>	<b>100.00</b>