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DEPARTMENT OF ECONOMICS

THE IMPACT OF EDUCATIONAL ATTAINMENT ON HOUSEHOLD POVERTY IN SOUTH AFRICA: A CASE STUDY OF LIMPOPO PROVINCE

By

Fru Awah Wanka

(Student no: 2834156)

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University of the Western Cape

Supervisor: Prof Ravinder Rena

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DECLARATION

I declare that "The Impact of Educational Attainment on Household Poverty in South Africa: A Case Study of Limpopo Province" is my own work and has not been submitted for any degree or examination in any university. All the sources I used or quoted have been indicated and acknowledged by complete references.
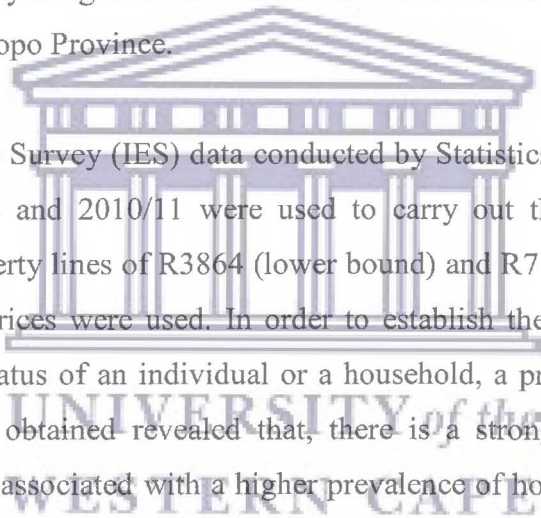
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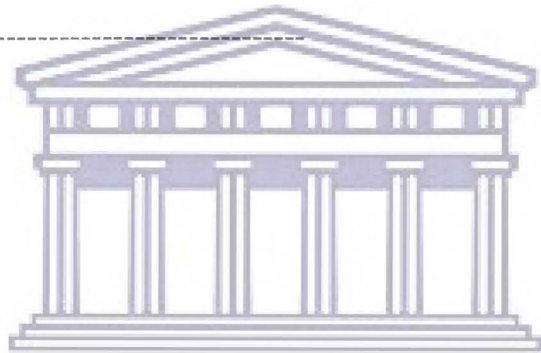
ABSTRACT

From 1947-1994, South Africans were ruled under apartheid – a racially discriminatory political and economic system. As the name itself implies, apartheid is an Afrikaans name meaning "apartness". The provision of education in South Africa during this regime was poor, particularly for the African (black) population and most especially those living in homelands. This led to under-investment in human capital development particularly in the rural areas which resulted in, low levels of skills that have persisted till today. This has hindered those lacking the required skills to obtain lucrative employment and earning prospects. This study aims at investigating the impact of a household head's educational attainment level on the poverty status of the household in South Africa with case study of Limpopo province. This study sought to establish if education has an effect on the poverty status of households in Limpopo Province.

The Income and Expenditure Survey (IES) data conducted by Statistics South Africa, for the period 1995, 2000, 2005/06 and 2010/11 were used to carry out this investigation. The official absolute income poverty lines of R3864 (lower bound) and R7116 (upper bound) per capita per annum in 2000 prices were used. In order to establish the relationship between education and the poverty status of an individual or a household, a probit regression model has been used. The results obtained revealed that, there is a strong tendency for lower educational attainment to be associated with a higher prevalence of household poverty. That is, households headed by someone with primary or no education are more likely to be poorer than those headed by someone with tertiary education. Rural and Black households are the most vulnerable in Limpopo Province. Although there is large allocation of resources towards education, educational outcomes have not improved. This raises questions regarding the lack of association between educational outcomes and resource allocation.

KEYWORDS: Educational attainment, Poverty, Human capital, Household head, Households Employment and Earnings, Signalling theory, South Africa, Limpopo Province.

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ABBREVIATIONS

ABET	Adult Basic Education and Training
AIDS	Acquired Immune Deficiency Syndrome
CBN	Cost of Basic Needs
CHS	Cameroon Household Survey
CPI	Consumer Price Index
CSG	Child Support Grant
FEI	Food Energy Intake
FGT	Foster-Greer-Thorbecke
FOS	Federal Office of Statistics
GDP	Gross Domestic Product
GHS	General Household Survey
GNI	Gross National Income
HDI	Human Development Index
HIV	Human Immune Virus
HPI	Human Poverty Index
IES	Income and Expenditure Survey
LF	Labour Force
LCS	Living Condition Survey
LFPR	Labour Force Participation Rate
LFS	Labour Force Survey
MRC	Medical Research Council
NISH	National Integrated Survey of Households
OHS	October Household Survey
PIRLS	Progress in International Reading and Literacy Study
RDA	Recommended Daily Allowances
SACMEQ	Southern African Consortium for Monitoring Educational Quality
SANRD	South Africa National Report Development
SALDRU	Southern African Labour and Development Research Unit
STATS SA	Statistics South Africa
SMG	State Maintenance Grant
TIMSS	Trend in Mathematics and Science Study
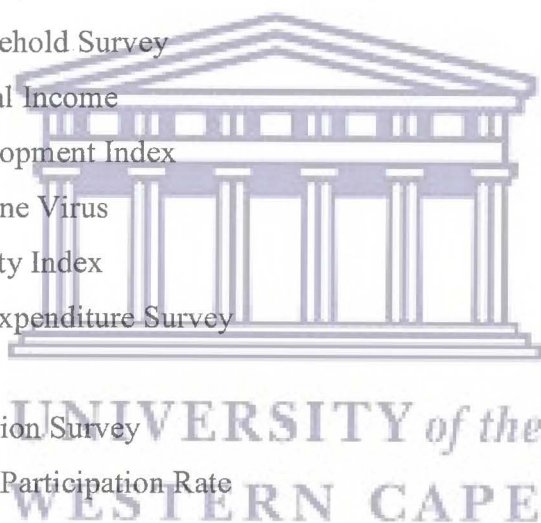
UNESCO   United Nations Educational, Scientific and Cultural Organisation

WBLSMS   World Bank Living Standards Measurement Study
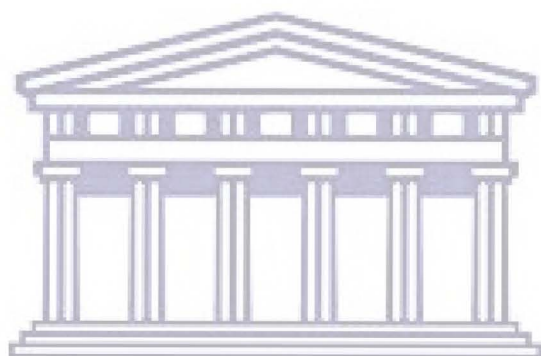
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CHAPTER ONE: INTRODUCTION

1.1   Background of the Study

Poverty is a complex, multifaceted phenomenon which can be difficult to define. The definition of poverty determines its measurement. Although poverty is a global problem, due to the unique nature of apartheid in South Africa which was based on legislative segregation, poverty greatly affected Blacks, Coloureds and Indians in the country (Aliber, 2001: 6). During this period, equal access to quality education, employment, resources and services were denied to these racial groups particularly Blacks, all as part of a deliberate attempt to retard their quality of life (Mokgotho, 2010: 1). As a result, the racial dimension of poverty is resilient amongst these racial groups in the country. Furthermore, the rate of poverty is higher in rural areas, particularly former homelands due to unemployment, lack of access to basic services such as; quality education to gain lucrative jobs, health care, water and sanitation just to name but a few. According to Armstrong et al (2008: 11); Lekezwa (2011: 60), the poorest 63% of households dwelled in rural areas as opposed to 37% in urban areas, at the time of Income and Expenditure Survey (IES) 2005/06.

Most poverty reduction policies emphasized on the need for quantity and quality education, healthcare, housing and social security. In 1993, equality was attained in the spending on social security, where the amount received by White and Black pensioners for social pensions was equal (Patel & Wilson, 2003: 221). The social security system was restructured by post-apartheid government, whereby, it introduced the Child Support Grant (CSG) and eliminated the State Maintenance Grants (SMG). These grants have greatly relieved many poverty-stricken households in the country. Von Kotze (2007: 23) indicated that, in 1994 the new government considered education as one important tool to fight illiteracy and to provide the necessary skills required to move out of poverty. As such, the provision of education on the basis of equality and quality to all South Africans was seen as a priority by the democratic government. For this reason, Adult Basic Education and Training (ABET) was introduced in 1995. Due to lack of skills and resources most people particularly Blacks could not succeed (Waghid & Schreuder, 2000: 85).

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Educational reforms are important tools to increase labour productivity and promote economic growth and development, through expanding and improving education which increases economic competitiveness. Furthermore, for there to be sustainable livelihoods and economic competitiveness in a society, there is a need for better education to meet the developmental challenges that are due in part, to the rapid changes in technological innovation and increased globalisation. Globalisation has led to increased economic competition within and amongst countries, and the world at large (Sahlberg, 2006: 260).

This chapter is divided as follows: section 1.2 is problem statement which looks at the situation faced by people of Limpopo Province; section 1.3 captures the significance of research, how it will add more knowledge to existing research; section 1.4 focuses on objectives of the research, that is, what the research aims at achieving; section 1.5 gives an overview of the research method; section 1.6 is the ethical statement and 1.7 is the conclusion of this chapter.

1.2   Problem Statement

Limpopo Province which was formerly known as Northern Province (NP) is a province in South Africa. It is one of the poorest provinces in the country. Poor households in the province are characterised by low levels of education (some lack school materials like textbooks), difficult and time-consuming access to; fuel, water and other basic services, and few opportunities for lucrative employment (Department of Basic Education, 2012: 9). In addition, children in these areas are afflicted by high malnutrition, morbidity and mortality rates. Also, the majority of men in this province move to other provinces such as Western Cape (WC) and Gauteng Provinces (GP) in search for jobs, meanwhile, women remained behind to take care of their families. The men who stayed behind were mostly unemployed, while the women practise subsistence farming in order to survive hunger with their children. Poverty continued amongst those left behind due to; skills shortage, financial constraints to relocate, just to name but a few. As a result, unemployment turns out to be a problem in this province. The rural areas and Blacks in particular are mostly affected, though constituting the largest part of the province (Mokgotho, 2010: 4). Seventy-two percent of the rural populace face deep poverty as opposed to 32.8% in the urban areas (Pauw et al, 2005: 7 – 10).

According to South African National Report Development - SANRD (2008: 12), the percentage of people who attended Adult Basic Education and Training (ABET) at the time of the report was very low in Limpopo Province. The province has a high illiteracy rate of about 46% and the second; lowest rate of urban unemployment and highest rate of rural unemployment, indicating widespread of unemployment and low income. The unemployment rate in terms of the broad definition is about 46%. This unfortunate situation greatly affects Black communities compared to their White counterparts. This could be ascribed to the lack of; skills necessary to gain formal employment and resources and mobility to move to other parts of the country to look for employment (Altman 2007: 7). Recent studies estimated that more than 45% of the populace, live below the estimated national poverty line and poverty in the province has racial, gender and regional dimension. Inadequate infrastructure such as lack of; proper health care amenities, housing and sanitation, employment and other basic needs, impacts negatively on households (Walters 2008: 189).

As aforementioned, these problems faced by most poor communities of Limpopo Province are rooted in the policies of South Africa's Apartheid past, which led to under-investment in human capital development and high poverty rate that is still persistent today (Tshitangoni et al, 2010: 2376 - 2378). These poor groups urgently need developmental supports which include the provision of; literacy programmes, small business skills, subsistence agricultural development for food security, job creation, infrastructure and general health awareness. Education can be of great importance in addressing these problems and challenges poor communities in South Africa – Limpopo Province face (Tosterud, 1996: 36).

1.3   Significance of the study

Most past researches carried out in South Africa on education and poverty proved that there is a negative relationship between these concepts. That is, the higher an individual's level of education, the less prone he/she is to poverty and the poorer an individual is, the less likely for him/her to further his/her education (Armstrong et al 2008; Van der Berg, 2002 & 2008; Botha, 2010). Given the level of poverty in Limpopo Province and the incessant emphasis on the importance of education, none of the previous researches greatly explored the link between schooling and poverty in this province. Apart from Van der Berg (2002) and Botha (2010) who have analysed the impact of education on poverty to a certain extent in South

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Africa, no other study has clearly tested for this, most especially the educational attainment level of the household head, on household poverty in Limpopo Province particularly. For this reason this mini-thesis aims to fill this gap in past literature. Also, the aforementioned problems and challenges faced in Limpopo Province motivated this research.

Finally, the results of the research are expected to be beneficial to policy makers, the people of Limpopo Province and the economy as a whole, since it will reveal the extent of poverty and education in the study area. Thereby, indicating the percentage of the population that need special attention by policy makers. The next section looks at the objectives of the study.

1.4   Research objectives

The main aim of this research is to look at the impact of educational attainment on household poverty in Limpopo Province. Using the South African Income and Expenditure Survey of 1995, 2000, 2005/06 and 2010/11 data released by Statistics South Africa (Stats SA), this study aims to;

- Illustrate the extent of poverty in Limpopo Province.
- Show the rate of educational attainment in terms of area type, gender and race in Limpopo Province.
- Demonstrate how educational attainment can influence the poverty status of an individual or household.

The following section summarises the methodology that will be used in carrying out the research.

1.5   Methodology

The study is primarily quantitative in nature. The researcher used secondary data sets and there was no human subject participation. The Income and Expenditure Survey (IES) data, conducted by Statistics South Africa in 1995, 2000, 2005/2006 and 2010/11 was used for analysis, to determine poverty and educational trends over these periods at the time of the surveys. The measurement of poverty is not straightforward. In measuring poverty the most widely used approach is the income/consumption approach at individual or household levels

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(Woolard & Leibbrandt, 1999: 38). According to Ravallion (1992: 13), the consumption approach is a much better measure of well-being than income and therefore will be used. This research used the Foster-Greer-Thorbecke poverty measure to show the extent of poverty in South Africa and Limpopo Province. Two absolute income poverty lines are used to identify households living in poverty. This includes those consuming; R3864 – lower bound and R7116 – upper bound per capita income per annum in 2000 prices. A probit regression model was run using the data sets, to determine the relationship between education and the poverty status of households in Limpopo Province. The subsequent section is based on the ethical statement and the outline of the study.

1.6   Ethical statement and outline of the study

Permission to do this research was obtained from the Department of Economics, University of the Western Cape. The researcher ensured that the rules and regulations required in carrying out research were strictly followed. This includes; all the sources used or quoted were indicated and acknowledged, by complete references.

The outline of this study is as follows: Chapter Two looks at literature review on education and poverty. It showcases the impact of education on poverty and the relationship between these two concepts; Chapter Three deals with the methodology used to obtain the results; Chapter Four presents the results of empirical analyses, using IES 1995, 2000, 2005/06 and 2010/11 data and an econometric analysis conducted using the data sets to investigate if education has an influence on the poverty status of an individual or household and interpretation of findings; Chapter Five presents the conclusion of the thesis. The next section summaries this chapter.

1.7   Conclusion

This chapter has covered background to the study, problem statement, research objectives, and summary of the methodology. The next chapter is chapter two which covers the Literature Review.

CHAPTER TWO: LITERATURE REVIEW

2.1   Introduction

This chapter aims at examining education and poverty, their measurement and how education impacts on household poverty, as well as consider a literature review of previous attempts to establish the link between both concepts, with reference to both South Africa and worldwide. Poverty is a diverse and multidimensional phenomenon which is dominant in most regions of the world and one of the greatest challenges people in the 21st century face. Its definition varies from one person to the other. Also, the concept varies across time (Govender et al, 2007: 119; Mbuli, 2008: 17). Poverty can be measured using two approaches; objective and subjective approaches. Both measures of poverty bring valued understanding to the measurement and analysis of poverty. They tackle and capture the issue of poverty from different perspectives and aspects, but none of these approaches is definitely wrong or right. However, the measurement of poverty over the years was dominated by the objective approach (absolute and relative approaches). This approach, determines the minimum consumption bundle for food/non-food items essential for survival (Kaplan & Makoka, 2005: 8).

Recently, international organisations have taken serious interest in the subjective measure (it involves self-evaluation by individuals to decide if they feel poor or not) of poverty (Kaplan & Makoka, 2005: 9). This is mainly due to the increasing acknowledgment of the short falls of the objective indicators and the significance of understanding the perception of poor individuals in determining programmes and policies. An important censure of both the absolute and relative poverty concepts is that, they are generally concerned with income and/or consumption levels which are objectively resolute by a researcher. Also, they assume fixed poverty lines which might classify someone as poor meanwhile they do not actually feel poor and non-poor though they actually feel poor. As such, the participatory poverty evaluation methods have been gaining ground (Ferrer-I-Carbonell & Van Praag, 2005: 4).

The subjective approach of poverty captures the multifaceted poverty analysis. According to United Nations (2010: 9); Ferrer-I-Carbonell and Van Praag (2005: 4), the subjective approach starts by questioning people to evaluate their own conditions. In this case, people's

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poverty status is derived from their own subjective standards. Given the extent of poverty in the developing world (that is; poor health care, lack of adequate skills and training, low income, malnutrition to name but a few), policies critically essential to reduce poverty include; education, safe water, quality healthcare, energy, food security and sanitation. Education is understood to be an important tool to fight poverty in a country or society. This is because, it enables broader opportunities for employment and higher income earnings possibilities, improved healthcare for families, children and societies, and lowers fertility rates (Bonal, 2007: 6; Schiller 2008 as cited in Botha, 2010). Several studies in South Africa and other parts of the world have reported an inverse relationship between education and poverty (Woolard & Leibbrandt, 2001; Van der Berg, 2002 & 2008; Weber, 2007; Botha, 2010; Njong, 2010; Van der Berg et al, 2011).

This chapter is structured as follows: section 2.2 looks at the definition and measurement of poverty; section 2.3 explains the impact of education on poverty; section 2.4 reviews literature on the relationship between educational attainment and poverty status, section 2.5 looks at poverty in South Africa and the Limpopo province; section 2.6 presents the relationship between education and poverty in South Africa and section 2.7 is the conclusion.

2.2 The definition and measurement of poverty

This section looks at the different ways of defining poverty, and poverty measures used to identify the poor and non-poor individuals.

2.2.1 Definition of Poverty

Alcock (1993: 3) stated that "many people, including academics, campaigners and politicians, talk about the problem of poverty, and underlying their discussion is the assumption that identifying the problem of poverty provides a basis for action upon which all will agree." Based on Alcock's quote, the method used to measure poverty is determined by the concept used to define it. Although poverty alleviation is one of the major goals in virtually all South Africa's social expenditure programmes, there has been no consensus on its definition (Mbuli, 2008: 16). Poverty is a phenomenon that is multidimensional in nature and its meaning varies from one individual to another. It can be seen as; failure to attain certain

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capabilities, absolute or relative[1] or lack of income. It is chronic or temporary[2], is often linked with underdevelopment, economic exclusion and vulnerabilities, and sometimes closely correlated with inequality (Van der Berg, 2008: 7; Mbuli, 2008: 17 - 22).

Furthermore, over the years there have been many definitions of poverty. However, based on the Human Development Report (1997: 16), the general agreement is that, poverty has mainly been defined in terms of income, capability and basic needs perspectives. As such, these three perspectives can be used to define poverty:

    i.   *Income/consumption*: It is the most commonly used approach to identify the poor particularly in applied welfare economics. Based on this approach, someone is considered poor if and only if, he/she has limited access to economic resources, to purchase commodities sufficient to meet their basic needs (Lipton, 1997: 1004). In addition, Ravallion (1994: 3) stated that, given a specific standard in a country, if a household lives below this expectation, then poverty is prevalent in that household.

    ii.   *Basic needs*: According to this approach, poverty is defined as the lack of necessary materials acceptable to satisfy basic human needs. These needs can be education, food, shelter, water, clothing and sanitation that are important to avert illiteracy, malnutrition and ill health to name but a few (Mbuli, 2008: 23). Thus, the vulnerability of adverse events beyond the control of people is greatest for those stricken by poverty and are usually poorly treated and excluded from power by the state (World Bank, 2001: 15).

    iii.   *Human capability*: With respect to this, the lack of some basic capabilities needed to function, is seen as poverty. Basic capabilities, refer to the aptitude to satiate certain

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[1] According to Van der Berg (2008: 1 – 2), absolute poverty is the lack of financial resources needed to sustain a given minimal standard of living, while relative poverty is poverty that is mostly determined by the community in which an individual lives. Absolute poverty is rare in developed countries, but predominant in underdeveloped countries (Raffo et al, 2007: 80)

[2] Govender et al (2007: 121) stated that, chronic poverty is poverty where by at each successive observation people are seen to be poor, while temporary poverty means moving from being poor to non-poor.

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crucially essential functioning's, up to a certain minimally adequate level (Sen[3], 1993: 41). The relevant functioning refers to the different relevant things one can do or be which includes; well-nourished, living a long life, adequately clothed and sheltered, being healthy, and so on. However, though Sen's ideas are intellectually and instinctively attractive, to empirically define and measure capabilities is very difficult. This is one reason why this approach has not been credibly applied (Ferrer-I-Carbonell and Van Praag, 2005: 4).

Nonetheless, although an obvious alternative to define poverty might be to use the broader way (based on the perspectives outlined above), most studies conducted in South Africa limited their definitions in ways that are objectively and easily measurable. The main reason is, if poverty is defined in a broader way, the method of measurement becomes demanding and complicated. As such, policy makers find it difficult to evaluate poverty reduction strategies. This study follows the approach of the World Bank (as cited in Woolard & Leibbrandt, 2001: 42) which defines poverty as the inability to meet a certain standard of living.

Based on this definition of poverty, there exist two approaches to measure the "standard of living." These are; the welfarist and non-welfarist approaches. In terms of the welfarist approach, expenditures on all goods and services are considered, including the consumption of goods/services produced at home. The non-welfarist focuses on the various forms of deprivation from specific commodities, particularly insufficient food consumption (Ravallion, 1992: 7). No matter the approach, the well-being of an individual is usually taken to depend solely on the consumption of market goods. Given that there are enormous problems in valuing access to public goods, current income or consumption is used as a determinant of well-being (Deaton & Muellbauer, 1980: 223). With respect to the definition adopted above, the measurement of poverty can then be done. This is well-elaborated in section 2.2.2 below.

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[3] Sen is pioneer of this approach. According to Sen (1985, 1997 & 1999), the maximisation of utilities or its proxies should not represent development. Instead human capabilities expansion should be seen as such.

2.2.2 Measurement of poverty

The aim of poverty measures is to determine the extent of poverty in a country or society. This helps in measuring the; welfare of people in a country who are most vulnerable to economic situations, nature of deprivation between people and well-being as well as the standards of living of a society (Pauw et al, 2003: 10; Bhorat et al (2004: 1). Generally, poverty can be measured using objective and/or subjective approaches. The objective approach is based on determining the minimum consumption bundle for the food/non-food items essential for survival, by fixing a measurable value upon which distinctions can be made between the poor and non-poor individuals. This approach is attached on the cardinal pattern (that is, can be counted for instance, income is cardinal) of poverty assessment. The subjective approach involves self-evaluation by individuals to decide whether they feel poor or not. This approach is grounded on the qualitative analyses of poverty and adopts the ordinal pattern (the opposite of cardinal, ordered water is ordinal) of poverty valuation (Ravallion, 1992: 34; Ferrer-I-Carbonell & Van Praag, 2001: 148).

Pauw et al (2003: 10) stated the following steps in identifying the poor;

- Firstly, individuals or households are to be classified according to a given welfare parameter such as income/expenditure.
- Next, select a poverty line which distinguishes the poor from the rich.
- Finally, using the available survey data, construct a poverty profile[4] of the poor individuals or households.

The most vital step in identifying poor groups is to derive poverty lines. These lines are pre-determined levels of the standard of living, which must be reached if a person is not to be considered poor (Coudouel et al, 2004: 33; Pauw et al, 2003:11). In addition, the World Bank (2001: 18) affirmed that, since different regions have different characteristics, poverty lines should be constructed within the context of a given society so that it reflects the socio-economic circumstances of that society. According to Stats SA (2007: 7); Ravallion (1992:

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[4] Felice van Edig and Frankfurt am Main (2005: 16) ascertained that, poverty profile is the characteristics of poor households.

26), when computing poverty lines for statistical measures, the commonly used method is assessing the cost of a minimum bundle of commodities that satisfies the essential daily energy an individual needs per month. The two main types of poverty lines commonly used are; absolute and relative poverty lines (Govender et al, 2007: 124: Lanjouw, 2001: 2).These will be discussed further in the next two subsections.

The income/consumption approach at individual or household levels is most widely used when measuring poverty (Woolard & Leibbrandt, 1999: 38; Govender et al, 2007: 122). Data on consumption is preferred because it is believed that these data are more reliable and capture long-run welfare levels much better than income data. That is, in comparison, consumption may better measure and reflect a household's ability to meet its basic needs than income (Ravallion, 1992: 13). Furthermore, income varies more over time, while expenditure is often smoothed, and depicts a more reliable and actual consumption level, particularly among poor groups (Coudouel et al 2004: 30; Govender et al, 2007: 123). In this research, the consumption method has been used.

According to Woolard and Leibbrandt (2001: 49), majority of questions in the household surveys are asked at household level, while questions regarding for example gender and age, are asked at individual levels. Since income and expenditure data are derived from household surveys, they are difficult to split to individual level. The measurement of poverty is therefore done at the household level. Also, household members share electricity and food expenditure making it difficult to break down household level variables to individual level. Due to differences in household composition and size, it could be misleading to do a simple comparison of total household consumption (Lanjouw & Ravallion, 1994: 1; Woolard & Leibbrandt 2001: 50).

Moreover, in order to take into consideration the dissimilarities in household composition and size, total expenditure by a household is divided by the number of the same adults (known as per capita measure), and attuned to take into account economies of scale, denoted as θ (Deaton & Muellbauer 1980: 313 – 315; Stats SA 2008: 13). The per capita measure is used in this research. The limitations of the household surveys are listed below;

- They provide limited information about inequalities within households.

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- It is difficult to interpret the comparisons between households since households vary in size and composition.
- The availability of information needed to measure individual welfare is rare. (Woolard & Leibbrandt, 2001: 71; Govender et al. 2007: 131 - 132).

It is significant to know that, like defining poverty, there are many ways of measuring the extent of poverty in a country or society. For instance, it can be measured using the Human Development Index (HDI), Foster-Greer-Thorbecke (FGT) measure, Human Poverty Index (HPI - non-income poverty measure) just to name but a few. None of which can be said to be very right or wrong. Reason being that, value or ethical judgements play crucial role. Consequently, most poverty studies conducted on South Africa, yield similar results in terms of the poverty characteristics in the country, but differed in terms of the magnitude. However, the measurement of poverty in this research is revised in accord with the definition adopted in section 2.2.1 above. The different measurements of poverty; absolute and relative (objective approach) and subjective approach, are briefly explained in subsequent sections.

2.2.2.1 Absolute approach of poverty measurement

Most previous studies on the measurement of poverty focused on absolute poverty, which takes two forms; money metric and non-money metric poverty analyses. Some South African studies that have used these include: Hoogeveen & Özler (2004); Armstrong et al (2008); Lekezwa (2011).

I.   Money metric absolute poverty

This is based on the objective measurement of an individual's minimal needs for basic survival. It only captures the amount of income households have access to, in order to obtain these basic goods and services. This type of absolute poverty line refers to a specific income/expenditure level, below which someone is deemed poor and above it, non-poor (Coudouel et al, 2004: 33). The objective approach is commonly used to determine this poverty line and consists of two main approaches; Cost of Basic Needs (CBN) and Food Energy Intake (FEI) approaches (Ravallion, 1992: 34).

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Furthermore, the consumption bundle used as reference group essential for basic existence, taken from nutritional necessities for good health is referred to as the CBN. It estimates the cost of a basket for all subgroups (each region, area type and so on). This is the most frequently used method to set poverty lines in South Africa followed by the "food intake" (Gumede, 2008: 7 - 8). The Cost of Basic Needs measure functions through the following steps as delineated by (Ravillion, 1992: 26 – 27; Woolard & Leibbrandt, 2006: 21; Haughton & Khandker, 2009: 49 – 50);

- A consumption basket comprising of food (Z^F) and non-food items (Z^{NF}) is required. Normally, 2100 calories per individual per day is the nutritional requirement for good health. For South Africa, it is 2261 kilocalories per person per day (Lekezwa, 2011: 45).
- Collection of prices of the items.
- The costs of having food and non-food requirements are estimated, which forms the basis of the poverty line. The cost of basic needs poverty line (C^{BN}), is given by $Z^{BN} = Z^F + Z^{NF}$.

This approach thus has shortcomings (Ravillion, 1998: 17; Haughton & Khandker, 2009: 50). Though it might be expected that different countries should have similar poverty lines, this is not the case when using this approach. According to Woolard and Leibbrandt (2006: 21), there is vast difference across the world in terms of the food types consume by poor persons. In a country, this may differ as prices or access to goods and services may differ. Since individuals have different metabolic systems, the calories required for good health could vary from one individual to the other. Also, increase in national income leads to increase in the non-food component, of the poverty line budget. There might be unavailability of price data for all items in the consumption basket. As such, the FEI method is used to construct a poverty line.

The FEI is a regression equation[5] relating the value of food intake to calories consumed. The Recommended Daily Allowances (RDA) of calories is used to calculate it (Woolard & Leibbrandt, 1999: 11). The RDA of 2261 kilocalories per person per day for South Africa was suggested by South African Medical Research Council (MRC). In terms of Rand, it is R211 per person in 2000 prices. The FEI reflects the consumption pattern of individual household (Ravallion 1998: 10). Also, it only reflects food poverty as such it needs to be protracted to take into account basic material needs individuals may possess, for instance, clothing. Figure 2.1 below illustrates the FEI method. For some level of adequate energy intake, the curve can be used to determine the poverty line. This curve signifies the expected amount of caloric intake, for instance, 2261 calories per day at a given level of total consumption (Z). This approach is useful as it includes both food and non-food items automatically and does not require information about price (Haughton & Khandker, 2009: 54).

Figure 2.1: The Food – Intake Method
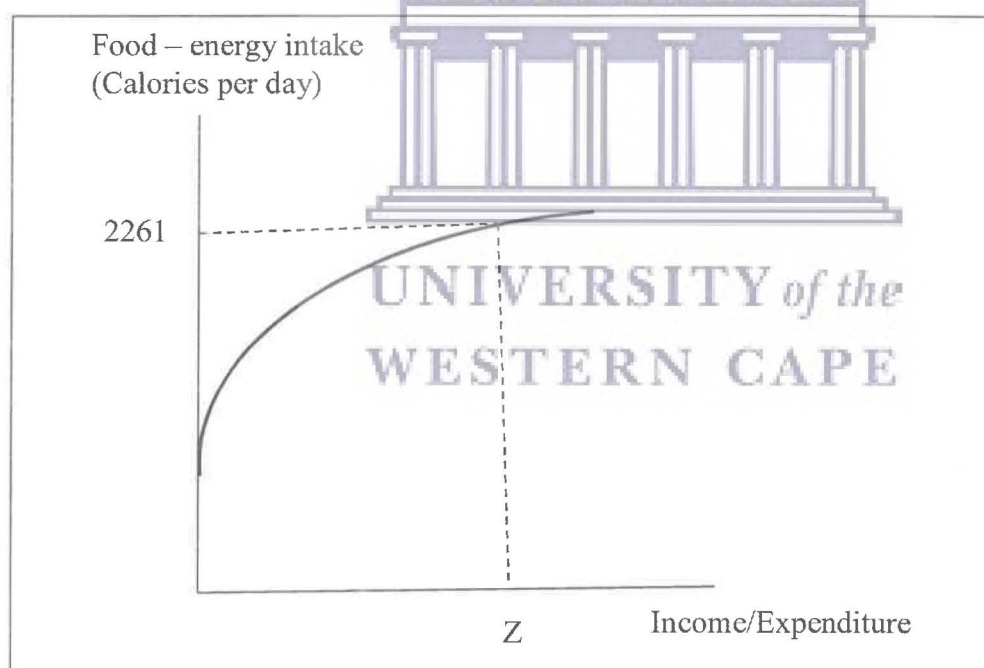
Source: Modified from Ravallion (1998: 11)

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[5] Ln Z = a + bC + μ, (where Z = value of food consumption, C = amount of calories consumed and μ error term – goodness of fit to household values), obtained by observing consumption pattern of each household in the sample.

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The set back of this approach as stated by Ravallion (1992: 28) is that "the relationship between food energy intake and consumption/income is not going to be the same across regions/sectors/dates, but will shift according to differences in tastes, activity levels, relative prices, publicly provided goods or other variables." Hence, it is unlikely to generate constant poverty lines. Both methods CBN and FEI, incorporate intake of caloric and other non-food consumption measures like; life expectancy at birth, education and health index, which is consistent with expenditure by the poor (Lekezwa, 2011: 46).

II. Non-money metric absolute poverty approach

Restricting the analysis of poverty to income/expenditure is insufficient considering the fact that poverty also includes a non-income dimension. Those who are poor do not only lack income or material wealth, they also require political representation and social amenities. One of the earliest works bringing this perspective to the study of poverty is credited to Sen (1993: 41). From this perspective, the poor are separated from the non-poor by objectively specifying, the level at which non-money metric items or capabilities are attained. Those that fall below the defined level are considered to be poor, while those that are able to meet or above it are considered to be non-poor.
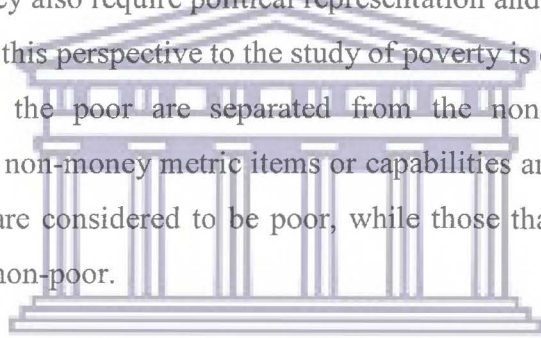
2.2.2.2 Relative approach of poverty measurement

This approach resulted because the absolute poverty measure failed to account for the fact that poverty can be caused by inequality. In this case, poor people are those suffering from relative deprivation in a society. With the relative poverty line, the second quintile or median is used as a cut-off point. Woolard and Leibbrandt (1999: 10) state that, in South Africa most studies set the relative poverty line at 40% of the national income. Those that are considered poor fall under this line and the non-poor are those who are above this line. In addition, Woolard and Leibbrandt (1999: 48); Lekezwa (2011: 44) objected this measure stating that "the poor will always be among us." This implies, even if there is great improvement in standard of living, poverty share of those in poverty remain unchanged.

2.2.2.3 Subjective approach of poverty measurement

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Nowadays, poverty is not only centred on economic issues, but involves cultural (the right to uphold one's heritage and be involved in a community's cultural life), political (freedom of speech, association and thought) and social (access to education and health care) issues. These issues, alongside the emergence of problems connected with social segregation, significantly raised the need for a multidimensional approach to poverty analysis. This multifaceted poverty analysis is not fully captured under absolute and relative poverty approaches, but it is captured in the subjective approach (Ferrer-I-Carbonell & Van Praag, 2005: 4). De Vos and Garner (1991: 268) argued that, subjective poverty depends on people's opinions regarding their own conditions, and this should eventually be the vital element to be considered when defining poverty. This implies, the subjective method of poverty measurement can disclose that, the composition of households is the dominant characteristic of poverty (Kaplan & Makoka, 2005: 9).

Subjective poverty lines are naturally subjective judgements based on what might represent a minimum living standard, socially acceptable in a given society (Ravallion, 1992: 33). This method often depends on the survey responses to the minimum income questions (MIQ). According to Ravallion (1998: 21), the minimum income level, is an increasing function of actual income as depicted by Figure 2.2 below. The subjective poverty line is represented by the point z*; individuals whose income is above z*, are more likely to be satisfied with their income, while those with income below z* may feel their income is insufficient.
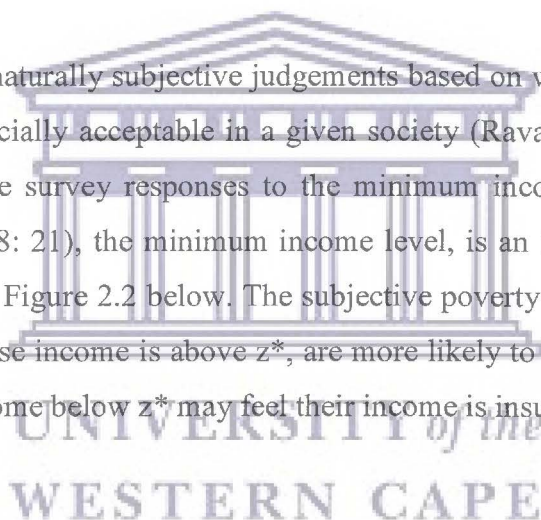
Figure 2.2: The Subjective Poverty Line (Z*)
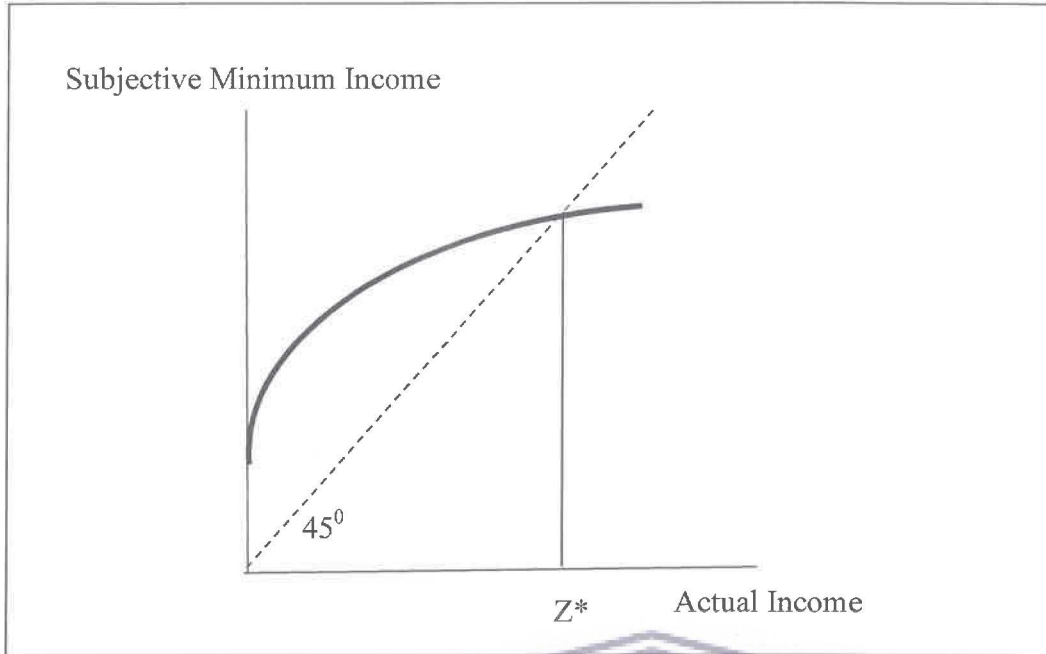
Source: Ravillion (1998: 22)

Growing body of research that have examined the subjective poverty and well-being in South Africa include; Kingdon and Knight (2006, 2007); Posel and Casale, (2011); Jansen et al, (2013). Although poverty lines are imperfect measures, in order to make analysis, they are used so as to understand the extent of poverty in a country or society (Woolard & Leibbrandt, 2001: 46 & 2006: 18). Given some of the problems caused by poverty, it is important to apply policies that help alleviate poverty and education is understood to be one important tool.

According to Bloom et al (2005: 16 - 17); Palmer et al (2007: 13 – 14); Thomson (2008: 5 – 8), education could be seen as a product and/or a tool, that leads to changes in both rural and urban communities. It creates environmental consciousness and sustainability that people cultivate values such as; health care, human rights and cultural conservancy. They established that education increases; human capital, social values, self-esteem and capacity development. When the level of cultural understanding is high together with quality supply of highly skilled labour gained through better education, this can stimulate development and thus poverty reduction. Hence, education is a primary factor to achieve poverty alleviation in a society, if it is of quality and there is an environment to absorb these skills (Navaratnam, 1986: 6 – 9). In addition, UNESCO (2002: 13) established that, the educational levels that contribute to

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development are; basic, higher, rural adult and vocational education. The next section showcases the impact of education on an individual's poverty status.

2.3   The impact of education on poverty status

The opportunity to reduce poverty, narrow extreme inequalities and improve public health is largely dependent on the level of education within the population. Equalisation of prospects in education is one of the most important conditions to overcome social injustice and to reduce social inequalities in a country (UNESCO, 2009: 24). An important relationship between education and poverty can be established via the labour market. Education is essentially linked to labour force participation. It has a positive relationship with the probability of employment. This implies, more educated people are more likely to partake in the labour market and get lucrative jobs available (Bhorat & McCord, 2003: 135)

Van der Berg et al (2011: 8) argued that, education plays a significant role in determining labour market outcomes. The probability of those who drop out of school or whose educational quality is low and most children from poor homes usually have less chances of obtaining lucrative and stable jobs. Generally, the most important income source for most households is wages. One of the main ways an individual can escape poverty is by obtaining a lucrative job and subsequently earns better wages. This shows the direct impact of education on poverty status. Increase in the wages of individuals, is based on the assumption that, education leads to knowledge that increases the productivity of workers. Poverty can extend itself through low quantity and quality of educational attainment, resulting in terrible labour market prospects, thus creating a vicious cycle which obstructs social mobility. Education, particularly if it is of good quality, helps alleviate poverty by increasing a poorer individual's productivity, improves health, reduces fertility rates, and equips this individual with the right skills needed to fully participate in the economy and society, particularly the labour market (World Bank, 1995: 1; Abdulahi, 2008: 25).

Given the importance of education on the poverty status of a household, it is also vital to know how it is measured. The method used to quantify education is necessary because it tells us the link between education and the poverty status of an individual in a given society. The following section explains these methods.

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2.3.1 The measurement of education

There are several components comprising an individual's education. These include; quantity and quality of education, and efforts by students. Constructing a measure that quantifies these components accurately turns out to be very difficult. The only characteristic directly observable is an individual's years of schooling. Aspects such as individual ability, effort through standardised tests and educational quality could be measured indirectly. Nevertheless, there is disparity concerning the trustworthiness of these tests. In microeconomic analysis where wage disparities are seen as a function of an individual's year of schooling, education is often used as an explanatory variable. The advantage of this is that, in developed countries, there is availability of data. Nonetheless, it does not take into account variances in the type or quality of education received (Gordon, 1995: 66).

In macroeconomic analysis, the variable for human capital is often included by economists. Since human capital incorporates variety of characteristics such as; education, work experience and health just to name but a few, measuring it directly becomes very difficult. When the total human capital of a country needs to be measured, it should have the following characteristics: It must:

- Be comparable across countries;
- Address the wide range of standards that include human capital;
- Have elements of human capital whereby there is availability of data or data can be estimated (Dahlin, 2005: 7).

As mentioned above, when calculating the education of a country dissimilarities in the quality of education raise problems. Suggested quantitative methods of educational quality include; number of doctorate holders amid administrators and faculty, student-faculty ratio, costs per student and library expenditures (Conrad & Pratt, 1985: 10). There is no ideal consensus concerning the grouping of such measures in formulating an educational quality index. None of these approaches alone can provide much insight into educational quality – for example, low student-faculty ratio, gives no information on teaching ability of the faculty. Methods used to measure aggregate human capital and education of individuals in a country is imperfect. Discrepancies between researchers as to which measure is appropriate for the

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various aspects of human capital and education, make it very difficult to compare empirical findings so as to make conclusion on the actual impact of education on an individual's income and poverty status (Hanushek, 1996: 20)

Assuming workers received the value of their marginal product, well-educated workers would earn higher wages as such better-educated workers are less prone to poverty. Kjelland (2008: 70) argued that, the two theories that attempt to explain the contributory relationship between education and earnings which affect the poverty status of an individual are; human capital and signalling theories explained below.

I.   Human capital theory

According to Appleton (2001: 16); Mbuli (2008: 90); Borjas (2009: 252); Leibbrandt et al (2012: 4), the human capital theory draws links between education and poverty with respect to education as a means to reduce poverty. Investing in education, leads to the creation of skills which improves productivity and increases the chances of obtaining employment and earning higher future incomes. These studies show an empirically strong relationship between workers' wage and educational levels. Furthermore, Macerinskiene and Vaiksnoraite (2006) in Naeem (2013: 396) affirmed that, in terms of micro-economics, human capital theory depends on the fact that, an individual acquires competences and skills through education, which are transferable and negotiable in the labour market, have a transactional value and a direct impact on an individual's average income. Based on theory and empirical evidence there is, a positive relationship between education and employment. That is, as an individual's level of education increases/decreases, the probability of gaining employment increases/decreases (Levinsohn, 2008; Borjas, 2009).

According to traditional econometric model, the decision to register in formal education is a function of; direct and indirect costs, opportunity costs, work opportunities, expectations of future benefits and available aid (Hill, 2008: 30). In micro-economic human capital based models, post - college salaries usually represent the expected benefits of investment in higher education. Figure 2.3 below designates the investment possibilities available to prospective a student, that is a high school graduate aged 18 and a college graduate aged 22, and the overall wage benefits linked with the educational options. College enrolment includes direct costs

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that are tuition, fees, and supplies, in addition to indirect cost which is delayed earnings. Direct cost may be lessened by work opportunities which make the cost more affordable, loans and grants. Micro-economic human capital based models of college enrolment are forecast on this intention of direct and indirect costs, and perceptions of the post-investment wealth possibilities. Based on human capital theory, though delay in earnings, increased direct costs and opportunity costs (forgone earnings if an individual stopped schooling after graduating from high school) is experienced by individual consumers of higher education, in this case, those who enrolled in college, for most of these individuals, the short term financial sacrifices are strongly justified by the anticipated earnings differential (Todaro, 1977; Hill, 2008: 31; Borjas, 2009: 240).

Figure 2.3: Potential Earnings Streams for a High School and College Graduate
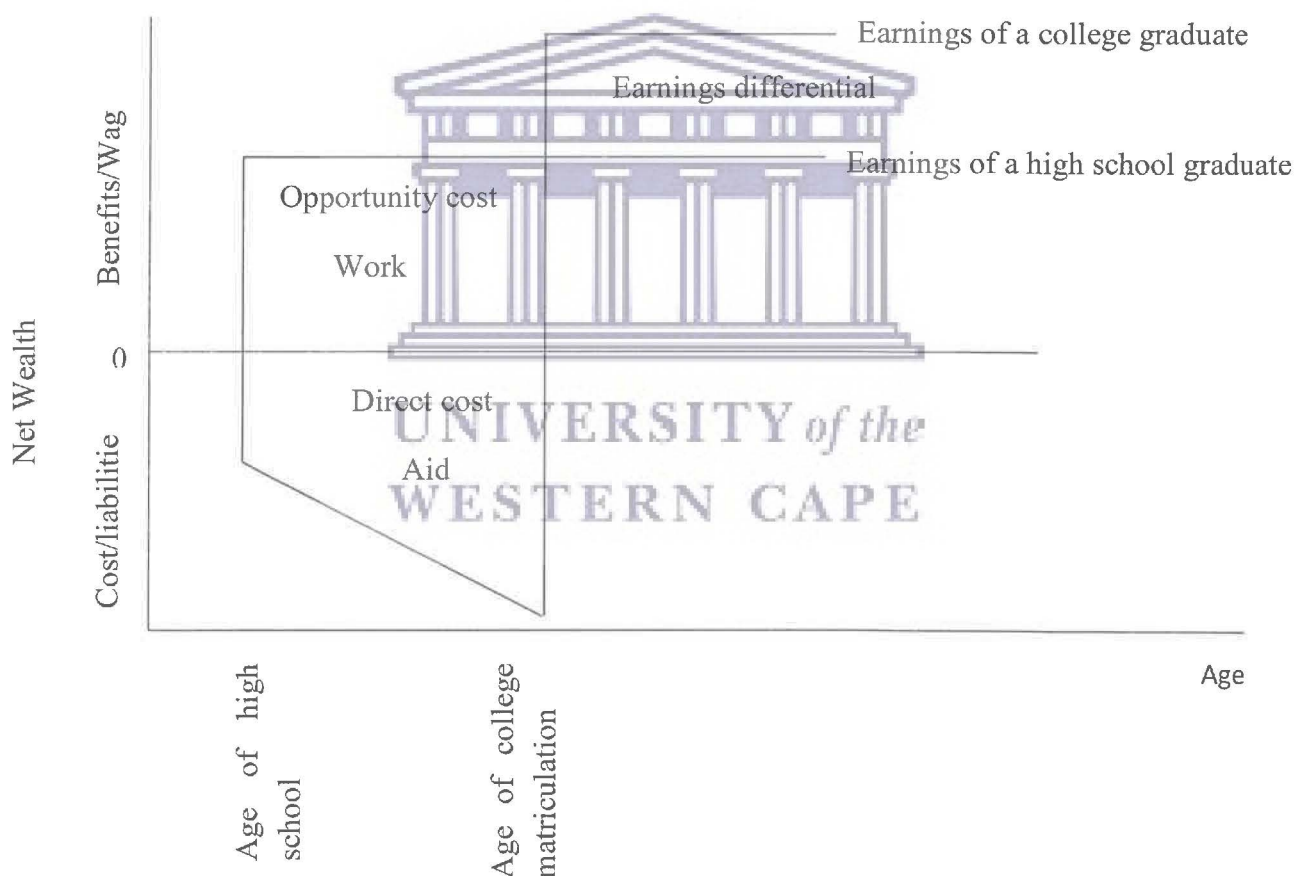
Source: Hill (2008: 31); Borjas (2009: 240)

Rosen (1977: 11); Card (1999: 1806); Borjas (2009: 241) noted that, when an individual is faced with two or more schooling decisions, he/she has to choose the level of education that

maximises his/her present value of earnings, holding all other factors constant. The individual calculates the present value linked with each education option (for example, one year, two years etc.) and chooses the option that maximises the present value of the income stream. In order to know when it is best to leave school and enter the labour market, it is more advisable to use the wage schooling locus (WSL). This refers to the amount employers are ready to pay a specific employee for each level of education attained. This approach is good as it helps in the estimation of the rate of return to schooling. The WSL is shown on figure 2.4 below. The locus indicates that, an individual with 12 years of schooling (that is, a high school graduate) earns W_1 annually and the amount increases as he/she adds the year of schooling. If he/she then completes college, the wage goes up to W_2 annually. The wage gap between the matric holder and the college holder is $W_2 - W_1$. As such, one can conclude that, the higher the level of education attained, the more likely you can earn higher wages, which in tend may lead to a lower probability of being poor.

Figure 2.4: The Wage – Schooling Locus (WSL)
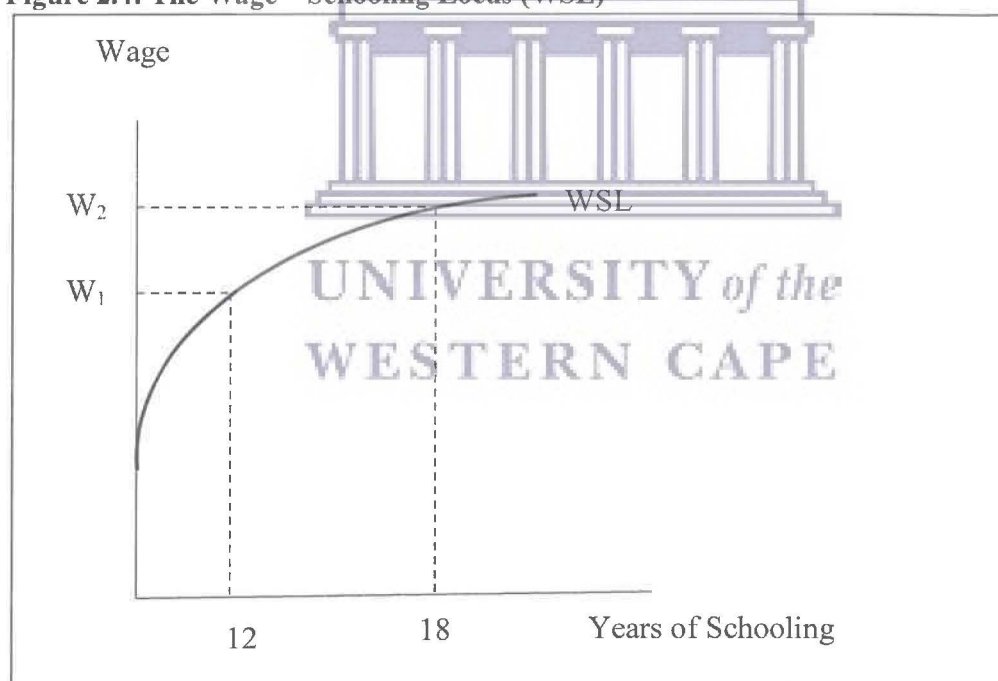
Source: Modified from Rosen (1977: 11); Card (1999: 06); Borjas (2009: 242)

This locus is market determined. That is, the wage for each educational level is determined by the intersection of the demand for and the supply of workers with that particular level of schooling. According to the worker, the wage linked with each educational level is a constant. The gradient of the curve is closely associated to any empirical measure of the rate

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of return to schooling. The schooling decision of an individual is demonstrated on Figure 2.5 below, where S* is the optimal level of education. An increase in marginal cost of schooling that is the additional cost incurred resulting from an additional schooling year, from MC to MC' as represented by Graph A Figure 2.5 below or decrease in the marginal rate of return (MRR) to schooling that is the additional earnings received resulting from an additional school year, from MRR to MRR' as represented by Graph B Figure 2.5 below, leads to a decrease in the optimal quantity of education from S* to S'. Leaners will quit schooling when their marginal cost of schooling equals the marginal rate of return to schooling (MC = MRR), that is, at point S*. The return to schooling is what motivates most individuals to get educated (Rosen, 1977: 12; Card, 1999: 06; Borjas, 2009: 242)

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Figure 2.5: The Optimal Schooling Option

GRAPH A

Marginal cost,
Marginal Rate of Return
(MRR)

MC'

MC

MRR

S'   S*   Years of Schooling

GRAPH B

Marginal cost,
Marginal Rate of Return
(MRR)

MC

MRR

MRR'

S'   S*   Years of Schooling
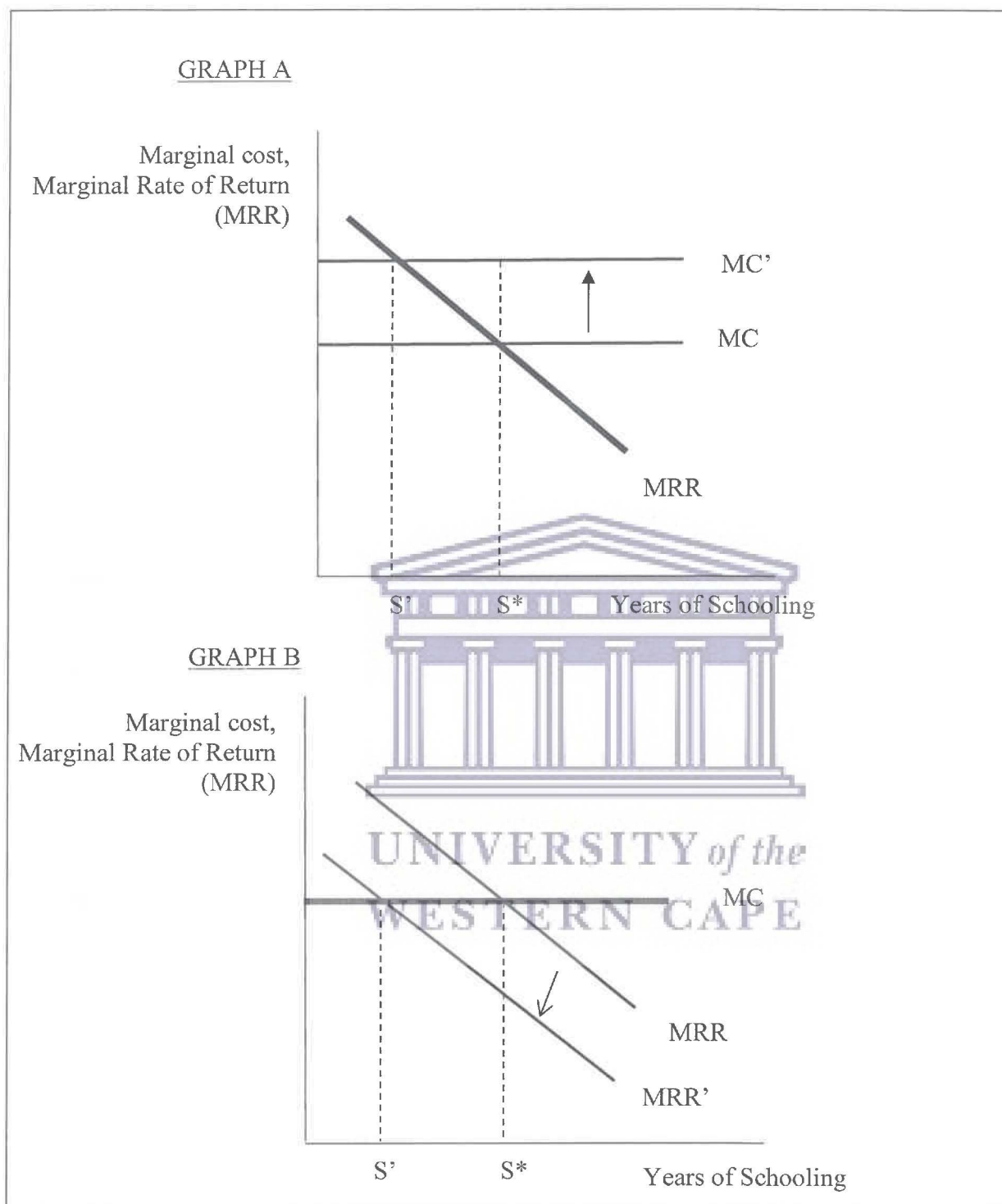
Source: Rosen (1977: 12); Card (1999: 06); Borjas (2009: 243)

Van der Berg (2008: 11) emphasised that, the probability of gaining employment by a well-educated person is much higher than someone without education (and less education). Also, a well-educated person is more economically productive and more likely to earn higher income. As such, households with educated people are less likely to be poor, suggesting a

positive association between education and earnings, and therefore, a negative association between education and poverty. It therefore appears that, education affects poverty predominantly through the labour market (Orazem et al, 2007: 5; Schiller 2008 as cited in Botha, 2010: 124). Figure 2.6 below shows the link between unemployment and poverty. It summarises the link between labour force participation and earnings. If someone loses his/her job or is unable to acquire employment, this usually decreases his/her income and consumption spending. As such, he/she tends to reduce his/her consumption of some essential commodities. Unemployed labour market participants who are unable to find work have a higher likelihood of being poor. This is because it becomes difficult for them to sustain an effective purchasing power when their wages drop to zero. This is mostly the case if they do not have an alternative income source. It should be noted that there are others who might be employed but their earnings is insufficient to place them on or above the poverty line. This is particularly the case for semi-skilled or unskilled workers or due to underemployment (Schultz, 1999: 79; Van der Berg, 2008: 5 - 7; Zaman et al, 2010: 259 – 260; Ganguli et al, 2011: 8).

Figure 2.6: Labour force status, earnings and poverty status

Labour Force Status	Earnings	Poverty Status
Participants — Employed	Hours worked × wage rate	None
Participants — Unemployed	Zero	Yes
Non - participants	Zero	Yes
	Interest/Passive Income	None
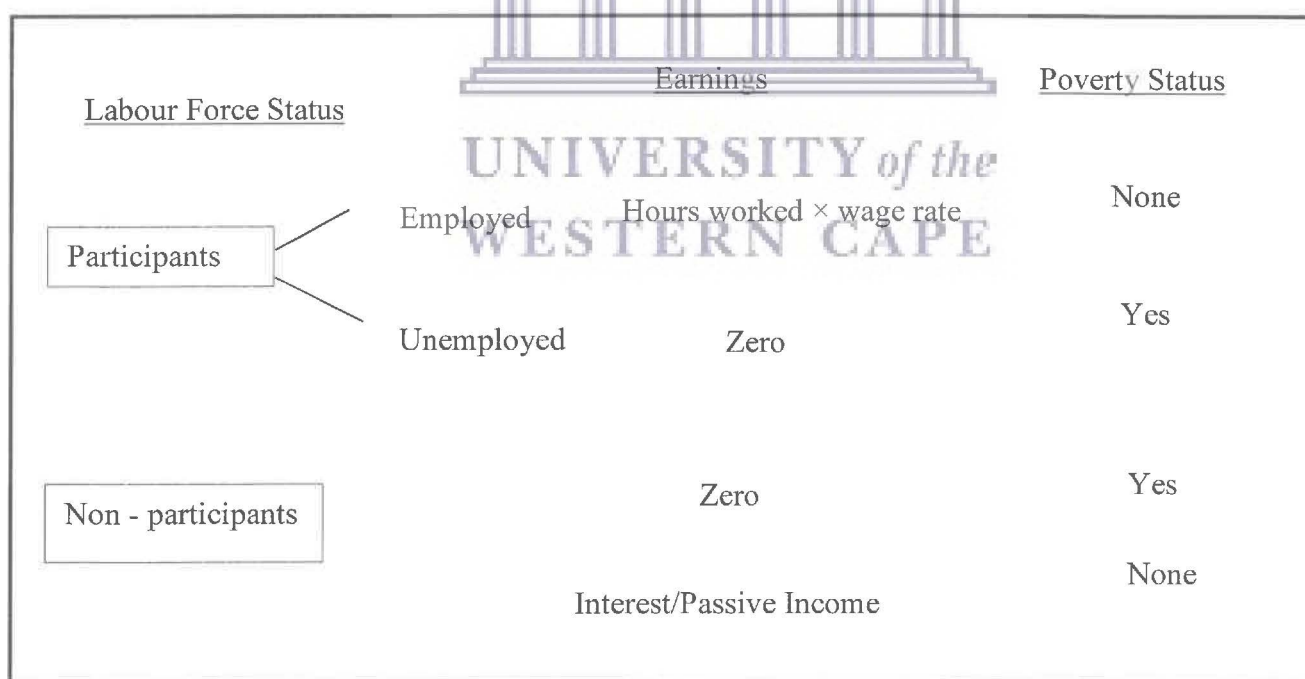
Source: Mbuli (2008: 83)

It is important to note that, returns to education differ with factors such as the; supply of educated workers, level of development and shift in demand for such workers in the

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development process (Van der Berg, 2002: 1 & 2008: 11). Also, the emergence of globalisation has led to increased economic competition within and amongst countries, and the world at large. This has increased competitiveness in the labour market, causing lower skilled labour ever more replaceable and hence investing in higher levels of education is important (Bonal 2007: 6 – 7; Tarabini 2010: 210).

I. Signalling theory

This theory is an alternative explanation for the positive association between education and earnings. Kjelland (2008: 70) explained that, in most cases individuals use their education to signal broad sets of inherent productive characteristics, which employers cannot observe and that educational attainment does not necessarily result in enhancing productivity directly. In addition, Weiss (1995: 135); Flores-Lagunes and Light (2007: 3) argued that, this theory is mostly predominant for those with productive skills or aptitudes not easily identified by employers. As such, education signals the existence of human capital, thereby, resolving information asymmetries. Employers also use educational attainment to make employment decisions and set employees' wages on the basis that those with more education are more productive (Page, 2010: 33).

According to Zaman et al (2010: 257), education is also associated with lower levels of poverty through its association with improvement of human development indicators. A highly educated female population is associated with reduced fertility rates, as many women will spend time schooling to equip themselves for the labour market. It is also associated with smaller household size, enabling more parental participation in their children's education (since time is an issue for parents). This in turn, results to better school performance of the child and thus motivates him/her to follow additional years of schooling. In addition, it improves health care and sanitation in a household. Parental involvement in their children's health also reduces the rate of infant and child mortality. These factors are positive externalities resulting from education (Van der Berg, 2008: 8; UNESCO, 2002: 20 - 33).

Ganguli et al, (2011: 8); Van der berg, (2008: 5 – 7); Zaman et al (2010: 259 - 260) found that, an educated workforce of great quality turns to be more productive. Thus, stimulating industrial growth and attracts foreign direct investment. As investment increases in a country,

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many jobs tend to be created, that can absorb some of these quality skills. Bloom et al (2005: 18) concluded that, communities with high human capital tend to grow faster. Oxaal (1997: 8) also added that, education reduces the gap between rural and urban areas, as it facilitates migration from rural to urban areas. Those who migrate learn new skills, which could be beneficial to their local communities, such as, increase in developmental projects, which might result to poverty reduction. Figure 2.7 below, summarises the direct and indirect impact of education on poverty.

Figure 2.7: Direct and indirect effects of education on poverty

Source: Modified from Michaelowa (2000: 2)
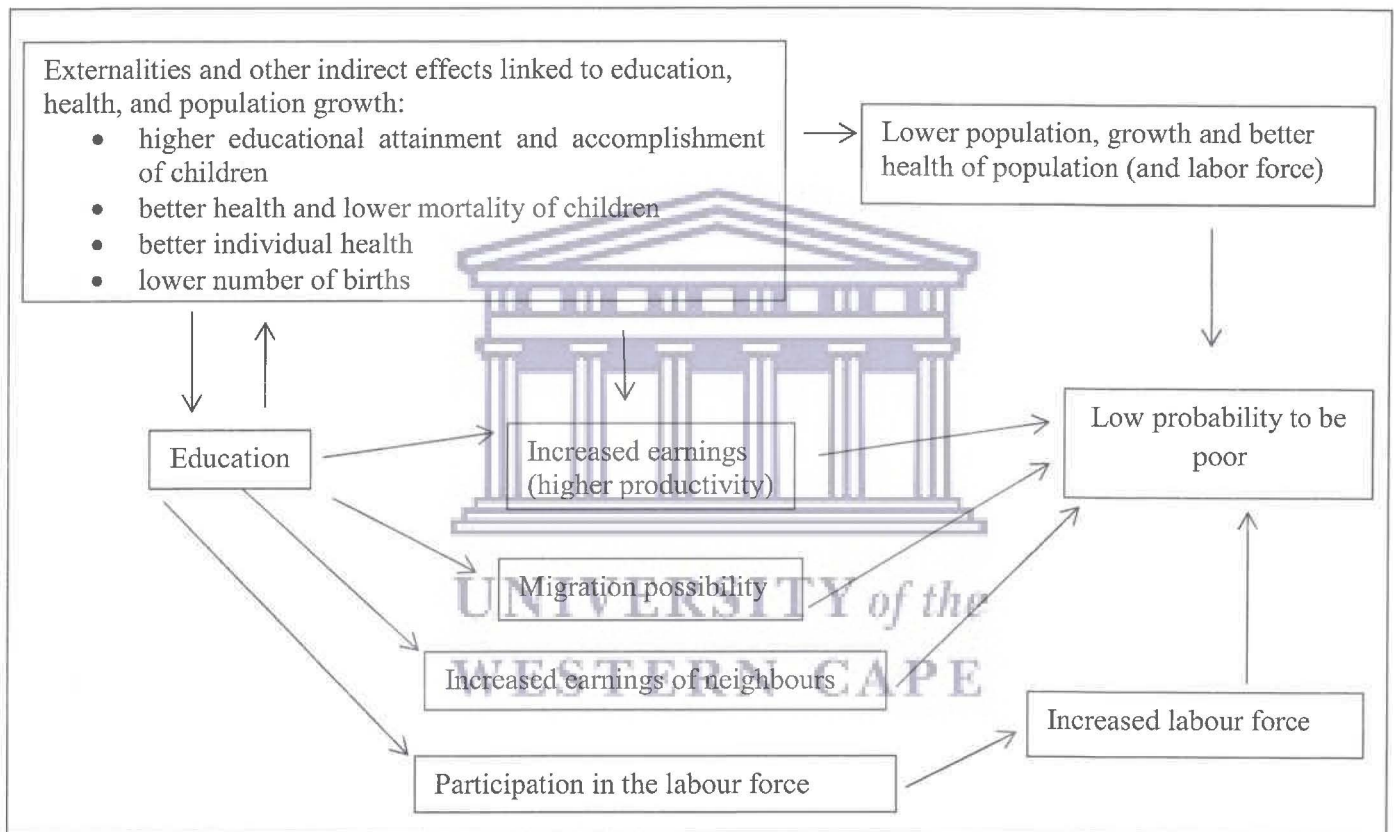
According to Van der Berg (2007: 7), there is an inverse relationship between education and poverty. This implies the lower the educational level the more likely poverty might prevail in a household. In addition, Tilak (2002: 198) argued that, poor education and income poverty are jointly reinforcing. This indicates that, lack of education is the main cause for income poverty and income poverty retards people from overcoming poverty of education. Schiller (2008) in Botha (2010: 125) argued that, students from poor homes are less likely to complete their education up to a certain level not because they are not intelligent, but because of low

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rate of enrolment due to insufficient funds to enrol in school. Armstrong et al (2008: 19) further noted that, individuals with low educational levels are likely to be poor than those with higher education. The next section looks at the link between education and poverty, in terms of education being a way out of poverty.

2.4 Review of past studies on the relationship between Educational Attainment and Poverty Status

Reports from both international and South African studies on education and poverty continue to show that, education and poverty are inversely proportional. Oxaal (1997: 1) argued that, the link between education and poverty, can be seen in two ways; firstly, investing in education as a tool to alleviate poverty can improve the skills and productivity among poor households, and secondly, poverty can be a barrier to educational attainment both at micro (less education is received by children from poor homes) and macro (generally, poor countries do have lower enrolment rates) levels. This research focuses on the first option. Below are some past studies that have shown this relationship.

2.4.1 International Evidence

Weber et al (2007: 443) noted that, encouraging students to stay in school and improving the quality of education is one possible approach to reduce poverty and raise local welfare. Using the US Panel Study of Income Dynamics data, they found that, households headed by a well-educated person, have a lower probability of being poor. Education had great effect on the poverty status of households, that is, for each additional year of schooling (further education) by a household head, that household was 39% less likely to be poor, which is lower than households whose heads do not further their education.

According to Njong (2010: 3- 5), using the Cameroon Household Survey (CHS) conducted in 2001, education has an inverse relationship with an individual's poverty status. That is, the more educated an individual becomes, the likelihood of being poor is slim. This is an indication that, education is a critical determinant of the incidence of poverty. Education has a negative impact on poverty, implying that, the chances of an individual escaping poverty increases as his/her level of education increases. Furthermore, a study carried out by Ijaiya

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and Nuhu (2011: 88) using questionnaires based on Federal Office of Statistics (FOS), National Integrated Survey of Households (NISH) and World Bank Living Standards Measurement Study (WBLSMS) methods on Ilorin Metropolis in Nigeria found that, an important determinant of poverty is the educational level. For example, their findings revealed that, poverty is less prevalent amongst households in which the head has attained a higher level of education.

Given these theories surrounding education and poverty, and the link between these concepts, the next section looks at this in the context of South Africa and Limpopo Province. Before looking at the relationship between education and poverty status of an individual or household in South Africa, it is vital to first highlight the extent of poverty in the country and Limpopo Province. Many studies have been carried out with respect to poverty in South Africa and Limpopo Province using one of the methods explained in section 2.2.2. The next section looks at past studies on poverty in South Africa and Limpopo Province.

2.5   Poverty in South Africa and Limpopo Province

The end of apartheid in 1994 ushered in a new democratic government that inherited a nation with millions of its inhabitants stricken by poverty (Perret, 2004: 3). According to Statistics South Africa (2012: 5), using the international poverty lines of $1.25 and $2.50 a day, about 10.7% and 36.4% respectively, of the population lived below these lines. Using the Living Condition Survey (LCS) of 2008/09, it found that, roughly 26.3%, 38.9% and 52.3% of the populace lived below R305 - the food poverty line, R416 - the lower bound poverty line and R577 - the upper bound poverty line respectively. Using the food poverty line, the poverty gap and poverty severity were approximately 8.5% and 3.8% respectively. The poverty gap was about 15% and the severity of poverty was roughly 7.5% for the lower bound poverty line and approximately 23.6% and 13.3% respectively, for the upper bound poverty line at the time of the survey.

The level of poverty in South Africa is compared with some selected countries in terms of six social indicators; adult literacy, access to improved water and sanitation, life expectancy at birth, total fertility and infant mortality. The other countries are Botswana, Brazil, Chile, Malaysia, Romania and Turkey – middle-income countries, Kenya, Morocco, Nigeria and Sri

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Lanka – low-income countries. The social indicators for South Africa compared to those of the low income countries, particularly African countries like Kenya, Morocco and Nigeria is much better. That for Sri Lanka however, shows that some low-income countries have attained better social levels than some upper-middle-income countries like South Africa. Table 2.1 below shows the Gross National Income (GNI) per capita in 2010, the figures for the various social indicators and the Gini coefficient[6] for each country.

With respect to the middle-income countries, the social indicators of South Africa are almost in line with those of the African countries that is, Botswana and Tunisia. The middle-income countries in Asia - Malaysia and Romania, Latin America - Brazil and Chile and Eastern Europe - Turkey, all have considerably better outcomes than South Africa and the other African countries. The difference is more pronounced in health indicators (HIV/AIDS has greatly affected infant mortality and life expectancy rates in Botswana and South Africa), nonetheless, it extends to low fertility levels, educational measures and access to basic services (Armstrong et al, 2008: 5).

The main reason for the relatively poor social indicators of South Africa, a middle-income country, is the skewed nature of income distribution within the country as indicated by the Gini coefficient in the last column of table 2.1 below. The Gini coefficient of South Africa exceeds that of the other selected countries. Growth in per capita income for most middle-income countries, led to widespread enhancement in living standards, and therefore, social indicators. On the contrary, social indicators for South Africa remained relatively low. This indicates that, progress in South Africa lags behind compared to the other countries in the middle-income group. According to World Bank (2012: 104), the poorest 20% only had command over 2.7% of the country's income, while the richest 20% controlled 68.2% of income.

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[6] The Gini coefficient is widely used to summarise measures of income inequality and ranges from 0 – income is perfectly equally distributed to 1 – income is perfectly unequally distributed.

Table 2.1: Selected countries social indicators

Countries	GNI per capita[1]	Life Expectancy at Birth[2]	Infant Mortality Rate[3]	Adult Literacy Rate[4]	Total Fertility Rate[5]	Access to Improved Water[6]	Access to Improved Sanitation[7]	GINI coefficient
Kenya	790	56	55	87	4.7	59	32	47.7
Morocco	2850	72	30	56	2.3	83	70	40.9
Nigeria	1180	51	88	61	5.5	58	31	48.8
Sri Lanka	2240	75	14	91	2.3	91	92	40.3
Botswana	6790	53	36	84	2.8	96	62	61.0
South Africa	6090	52	41	89	2.5	91	79	63.1
Tunisia	4160	75	14	78	2.0	94	85	41.4
Brazil	9390	73	17	90	1.8	98	79	54.7
Chile	10,120	79	8	99	1.9	96	96	52.1
Malaysia	7760	74	5	92	2.6	100	96	46.2
Romania	7850	73	11	98	1.4	89	73	30.0
Turkey	9890	74	14	91	2.1	100	90	39.0

Source: World Bank 2012 and 2013

Note: [1] Current US dollars (2010)

[2] Years (2010)

[3] Per 1000 live births

[4] Percentages of ages 15 and older (2005 – 2010)

[5] Births per woman (2010)

[6, 7] Percentage of population (2010)

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According to Todaro and Smith (2009: 208), the relative income share of households, individuals and percentile groups in a particular population, gives the best information on poverty for policy makers. The most usable generalisations about the poor are, they are; mostly located in rural areas, generally active in agriculture and related activities, and more likely to be women (Todaro & Smith, 2009: 238). There is a strong racial poverty dimension in South Africa, rooted from the history of the country. Apartheid created dissimilarities in poverty level, and the distribution of wealth and income amongst the different population groups. Since democratisation, things have not changed in South Africa and Limpopo Province. Most studies on poverty in South Africa have shown a high incidence of poverty particularly for African (Black) population than other racial groups (Woolard, 2002; Hoogeven & Özler, 2006; Lekezwa, 2011).

The nine provinces in the country differ significantly in terms of poverty rates, likewise the urban and rural areas of the country. Using a lower bound poverty line of R322 and the 2000 OHS[7] and IES data, Hoogeveen and Özler (2006: 65) found that, the three provinces with the highest poverty rates in 2000 were; Eastern Cape (with poverty rate of approximately 76%), Limpopo (76%) and KwaZulu – Natal (68%). Provinces with the lowest poverty rates were Gauteng (37%) and Western Cape (31%). Armstrong et al (2008: 9) also found similar results and noted that, these provinces with the highest poverty rates are the most populated and rural provinces, and housed 47.4% of the South African population at the time of IES 2005. Hence, those residing in the Eastern Cape and Limpopo Provinces are most likely to be poor. Given that poverty is highly concentrated in rural provinces, is an indication that the incidence of poverty is most likely to be highest in the rural than urban settlements of the country (Armstrong et al, 2008: 10).

According to Posel and Rogan (2012: 97 & 104), of the world's poor, 70% are women, due to HIV/AIDS epidemic, persistent gender gap in real income and increased unemployment rates among women, just to name a few. Using the OHS of 1995 and 1999, GHS[8] of 2004 and 2006, income measures and a poverty line of R322 per capita in 2000 prices, they noted that, over these years the estimated poverty rates was consistently lower for men than women.

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[7] OHS = October Household Survey

[8] GHS = General Household Survey

For instance, in 1999 and 2006 they noted that, 65.8% and 59.6% of females and 61.3% and 52.3% of males respectively lived in poor households. Most studies on poverty in South Africa have also found similar results in terms of gender disparities (Govender et al, 2007; Armstrong et al, 2008; Lekezwa, 2011).

The rate of poverty is expected to be relatively high in young age, decrease in middle age, and then increase in old age[9]. According to Armstrong et al (2008: 14); Lekezwa (2011), children below the age of 15[10] and adults at the age of 65 and above, had the highest incidence of poverty of 58.7% and 43.3% respectively, at the time of IES 2005. Those in the working age group – in South Africa it refers to those between the ages 15 - 65 for males and 15 - 60 for females, experienced lower poverty rates.

2.5.1   Poverty in Limpopo Province

The uneven distribution of poverty in terms of race, gender and area type in Limpopo Province is similar to the national level, but the extent of poverty is quite different (Walters 2008: 189). The challenges of post-apartheid reconstruction and development in the country are greatly felt particularly in the province. The province is very rural, and the provincial economy is not predominantly diversified. The major economic activities in the province are agriculture, mining and tourism. Poverty rate is lower in the urban than rural areas. Nevertheless, poverty in the urban areas is likewise significant (Tshitangoni et al, 2010: 2376).

According to Kongolo (2009: 248), the poorest regions in Limpopo Province are; Bushbuckridge, Central, Lowveld and Southern administrative areas. Many households in the province are headed by women and the elderly, and there are high dependency ratios (number

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[9] Perlman (1976) asserted that, though there are differences between those aged below 15 and those aged above 65, these groups have similar poverty-inducing characteristic which is, they are in the non-working age.

[10] Households headed by this age group made up approximately 0.3% of all households as such this result may not be reliable. Also, they usually lack; tertiary education, cognitive skills and work experience to secure lucrative jobs.

of people relying on those working, and is divided into child and aged dependency ratios). The dependency ratio for Limpopo Province is very high compared to the national level. In 2007, the dependency ratio for Limpopo Province stood at approximately 81.6% and that of South Africa was roughly 59.1%. This implies an average South African in the working age carries fewer burdens to support the economically inactive than in Limpopo Province (Limpopo Provincial Treasury, 2012: 34). Approximately, 47.6% of households in the province have access to social grants, which is the highest percentage when compared to other provinces in the country (SANRD, 2008: 12).

The Human Development Index (HDI) for Limpopo Province is approximately 0.47, the lowest compared to the national average of about 0.68. Infant mortality rate is about 50 per thousand live births, greater than an average rate of 42 per thousand live births nationally. Indicators such as those related to; health, literacy, employment, water and energy consumption, life expectancy for Black households fall far below the overall national average (Kongolo, 2009: 249). In 2007, about 12.4% of households in the province lacked access to proper sanitation amenities as opposed to 8% nationally. About 83.6% of households in the province have access to piped water. Approximately 18% and 40% of households in Limpopo Province, had access to pipe water inside and outside their yards respectively, as opposed to 47% and 18% respectively in South Africa. The life expectancy at birth for the province was about 55.6 years in 2010 longer than that of South Africa which is about 50.4 years (Limpopo Provincial Treasury, 2012: 35 – 36).

The fertility rate for South Africa in 2010 measured in terms of average births per woman was roughly 2.4 and that for Limpopo Province was 2.7 the highest in the country. These evidences on poverty in South Africa and Limpopo Province show lapses in terms of development. From previous knowledge, economic growth leads to poverty reduction in a region. Hence, there is the need for developmental policies such as education to help lift households from poverty (Limpopo Provincial Treasury, 2012: 65 & 70). As seen in the theories, education has a negative relationship with the poverty status of an individual and its impact on poverty is greatly felt in the labour market. Section 2.5 below looks at this in the context of South Africa.

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2.6 The relationship between education and poverty status in South Africa

The problem of educational quantity and quality in post – apartheid South Africa dates back from the apartheid period (1948 – 1994). During this period, equal access to quality services and educational resources were limited, and at the worst denied to most South Africans especially Blacks, Coloured and Indians - all as part of a deliberate attempt to reduce and/or deprive them from attaining quality education. The introduction of the Bantu Education Act of 1954 was to prescribe educational access based on race. This greatly affected educational attainment of the South Africans. As such, it contributed greatly to the high poverty rate prevalent particularly amongst the aforementioned racial groups (Schuster, 2011: 41).

Louw et al. (2006: 15) using the census data of 1970 to 2001 found that, differences in quantitative educational attainment reduced during the apartheid era. Blacks born in 1920, 1950, 1960, 1970 and 1980 on average attained 7.2, 6.0, 4.9, 3.6 and 2.3 years of education respectively less than that of Whites. Despite this reduction, mean attainment by race and urban versus rural areas still had large differentials, but gender disparities were quite small. The provision of education on the basis of equality and quality to all South Africans was seen as a priority by the new government (Waghid & Schreuder, 2000: 85). They further stated that, the issue of eliminating deep poverty levels prevalent particularly in rural communities of the country (particularly; KwaZulu – Natal, Eastern Cape and Limpopo provinces) was also a main focus of the democratic government. Von Kotze (2007: 23) noted that, in 1994, education was the fundamental developmental tool by the new government to fight illiteracy and provide essential skills that can help alleviate poverty. It is important to note that, the quantity of education attained by an individual is insignificant if it is not of quality because it negatively affects an individual's prospects of being employed. This is discussed in more details in the next two subsections below.

2.6.1 Quantity of education and labour market prospects

According to Van der Berg (2007: 851), the legacy of the apartheid schooling system, with under-resourced and racially segregated schools for Blacks, is still seen in large educational inequalities between Whites and Blacks. This is noticeable particularly on educational quality. When there is high level of inequality in educational attainment, this leads to a great

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increase in wage differentials. As such, it is important for this inequality to decline both within and between these population groups. Leibbrandt et al (2012: 11) found that, the lack of progress in closing the disparity in racial earnings is due to lack of improvement in completing post – secondary school among Africans (Blacks). Using the 1998 and 1999 October Household Surveys (OHSs) and 2000 to 2007 Labour Force Surveys (LFSs) on men and women of age 25 to 59, Leibbrandt et al (2012: 10) affirmed that, from 1997 to 2007 the cumulative distribution of education using different estimates for Africans and Whites had large racial differentials. Years of schooling for White men and women were greater than that of Africans. In both groups, men and women have very similar school distribution. This explains why Whites have greater chances of gaining lucrative employment and better wages than Blacks.

More so, right to the age of 15, there is virtually universal school enrolment. But it is noticed that, there is high failure rates at matric level and high school dropout at upper secondary level. This is attributed to a weak educational quality in South Africa (Van der Berg, 2007: 852). Human capital theory assumes that, there is a positive relationship between an individual's future earnings streams and years of schooling. Also, it assumes that people can predict their future earnings streams (Borjas 2009: 252). Nevertheless, Lam et al (2008: 13) ascertain that, youths cannot accurately predict their future earnings. As such, educational value is not known to most of them. This led to early school drop out for many youths. Furthermore, according to Smith (2011: 8), many South African youths do not have matric due to high school drop-out rate. In addition, Gustafsson (2011: 17-25) noted some reasons for this which includes:

❖ They cannot cope with the study regimes;
❖ Poor facilities such as no proper classrooms and no desks, some schools are over-crowded;
❖ High rates of teenage pregnancies: Approximately 42% of females who drop out from school result from pregnancy. This has been a serious problem as it increases the likelihood of early drop-out. According to Kyei (2012: 135), though the highest fertility level in the country is in the Limpopo Province, which stands at five children per woman, teenage fertility rate is the third highest in the country after Mpumalanga (22.7%) and KwaZulu-Natal (19.2%), with Limpopo (18.4%);

❖ Financial constraints since many do not have money to pay school fees, buy books and uniforms and other school necessities.

These factors also account for the less participation of these individuals in the labour market as their level of schooling is low.

Smith (2011: 9) accentuated that, about 30% of those aged 18 and above, do not attend any educational institution. Moreover, approximately above 11% of children in high school, drop - out each year to join the labour force. These high rates of school drop-out reduce the education quantity for most people in the labour market. As a result, increase their chance of being unemployed. This shows that education enhances an individual's chances of being employable. Lam et al (2008: 15) using 2001 census and Cape Area Panel Study, noted that, matric holders are 16 percentage points more likely, to be employed after school compared to those not having matric. Leibbrandt et al (2012: 12) using 1998 and 1999 OHS and LFS of 2000 to 2007, also found that, African men with a diploma or degree are about 20 percentage points more likely to be employed compared to those with grade 7.

Moreover, Mbuli (2008: 91) using Stats SA data of 1995 and 2002 found that, 33.12% and 32.30% of those without schooling in 1995 and 2002 respectively were unemployed. While the rate was lowest that is, 6.44% and 15.37% amongst those with tertiary education in the given years respectively. One can therefore assume that, those without schooling (and less schooling) are more likely to be poor, since they are most likely to be unemployed. Woolard (2002: 30) found that, in 1998, 58%, 53%, 34%, 15% and 5% of adults with; no education, primary education, incomplete secondary education, complete secondary and tertiary education in South Africa respectively were poor. In addition, Armstrong et al (2008: 19) using the IES 2005/2006 data and a poverty line of R322 per capita per month in 2000 prices, ascertained that, as an individual's level of education increases, the rate of falling into poverty is likely to decrease. Those with degrees had the lowest poverty rate of 1.2%, while those with no schooling had 66.3%. Just having a degree or any form of education is not enough if it is not of quality. The next section looks at the importance of quality education on an individual's labour market prospects.

2.6.2 Educational quality and labour market prospects

Nowadays, Black pupils do attend formerly White schools though great variations in terms of quality among formerly Black schools still exist. Generally, the performance of South African schools is lower compared to most of their African counterparts, even though it has more educated parents and resources, and less acute poverty. Based on international tests, intervention in the educational system of the country is required at the early stage than matric. Since it is relatively easy to gain promotion to higher grades, educational quantity may overstate progress in intellectual levels mastered (Van der Berg, 2007: 852). Some evidence on the quality of education was summarized by Taylor et al. (2003: 41) as: Researches done about South Africa for the period 1998 to 2002 proposed that, the scores of learners are extremely below expectation at all schooling system levels, compared to some countries and the expectations of South African's curriculum. Many studies carried out in South Africa have supported this view:

- In international tests such as TIMSS (Trends in International Mathematics and Science Study), PIRLS (Progress in International Reading and Literacy Study) and SACMEQ (Southern African Consortium Education Quality) South Africa performs poorly. For the mean scores of science and mathematics (TIMSS, 2003) for grade 8 pupils by country, of the participating countries, South Africa was ranked at the bottom as shown on figure A. 1 and 2 in the appendix below. Taylor et al (2009: 4) explained that, these scores were respectively above two standard deviations, from international average. Furthermore, for PIRLS (2006), South Africa was at the bottom see figure A. 3 in the appendix. The performance of South Africa in SACMEQ II for grade 6 pupils was also poor. The country was ranked 8th in reading and 9th in mathematics of the 14 participating countries shown in table A. 1 in the appendix. In comparison with other countries, South Africa's quality of education is very low relative to international countries; nevertheless, higher than some countries in Africa (Van der Berg, 2007: 855).

According to Van der Berg (2008: 149), the difference in schools (based on the; quality of teaching materials, pupil-teacher ratio and under-expenditure by government in historically Black schools) to some extent, explain the labour market inequalities in South Africa. Moreover, although South Africa is fast becoming an urbanised country, most learners still attend schools located in rural areas. Highly urbanised provinces like Gauteng and Western

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Cape Provinces spend lots of money on school resources, than predominantly rural provinces for instance, Limpopo and Eastern Cape Provinces (Macfarlene, 2005: 4). In addition, Veriava (2013: 2) noted that, in 2012, there was serious crisis in Limpopo Province because the Department of Education in the province had not ordered for textbooks. This greatly affects the quality of education in the province. Moreover, Moses (2011: 26) explained that, in order to determine wages in the labour market, it is important that for education quality to be reflected by cognitive skills. Nevertheless, some schools in South Africa lack resources to provide these necessary cognitive skills. This leads to inequalities in the South African quality of education and the labour market.

Armstrong (2009: 22) explained that, historically Black schools mostly in the homelands have fewer teachers such that, the student-teacher ratio in these schools is significantly high. She further explained that, this has a negative effect on graduates from these schools. In addition, based on some selected middle-income countries - Brazil, Chile, Malaysia, Tunisia, Romania and Thailand and some low-income countries – Kenya, Nigeria and Morocco, South Africa, a middle income country compared to the others has the highest pupil – teacher ratio of 31, but lower than that of some selected low-income countries (Nigeria and Kenya) except Morocco. This also accounts for the low quality of education in South Africa, given that teachers do not give proper attention to individual students due to high pupil – teacher ratio (World Bank, 2012: 123). Also, when the method of teaching is considered, problem arises. Reason being that, many students at home and elsewhere speak different languages while being taught in English at school. As such, students tend not to have a good mastery of subjects (Armstrong, 2009: 22).

According to Louw et al (2006: 2), the quality of education of a school in South Africa is determined by its history. This implies the quality of graduates from historically White schools is considered higher than those from historically Black schools. For instance, Pauw et al (2006: 19) noted that, approximately 60% of those gaining access to universities, are functionally illiterates with most coming from historically Black schools. These schools lack teachers, proper infrastructures and learning facilities (Lam et al., 2008: 20). The poor infrastructures are reflected by; lack of boards, classrooms and desks, as such classes are over-crowded (Moses 2011:12). Additionally, according to findings by Clotfelter et al (2007: 38), teachers do have a significantly positive effect on the performance of students. Klasen

(1997: 65) accentuated that, employment has a positively significant effect on earnings. This implies those who are employed stand higher chances of earning better wages, thus the probability of being poor tends to be slim.

Using the Southern African Labour and Development Research Unit (SALDRU) survey data of 1993, Klasen (1997: 66) found that, about 80% of poor households are headed by someone with no level of education. This is because those with no schooling have less chances of being employed and earn better wages. Poverty prevails less in households with well - educated heads. With respect to reverse causality, inadequate access to quality education is also recognized as a significant consequence of poverty, which helps to replicate inter-generational poverty. In addition, Pauw et al (2006: 8) asserted that, unemployment is highest among holders of certificates or diplomas in comparison to those with degrees. In their findings, approximately 82% of those with certificates and diplomas in 2005 were unemployed compared to about 18% for degree holders. Nonetheless, the quality of post-matric certificates or diplomas from particularly Black historic schools is unknown. Consequently, employers are reluctant to employ them and these unemployed individuals are more likely to be poor, since they may not have a reliable source of income. The next section summarises the findings of this chapter.

2.7 Conclusion

Poverty is a multidimensional phenomenon therefore the definition may vary from one individual to the other. Its measure is based on the definition adopted. This implies there is no fixed definition or measurement of poverty. Education is seen as one important tool that can be used to alleviate poverty in a household or society. This impact is greatly felt in the labour market, whereby education provides an individual with cognitive skills and signals to employers the skills which they cannot see. Also, well-educated persons are more likely to gain lucrative jobs and earn better wages, which then reduces their chances of being poor. This shows that education has an inverse relationship with the poverty status of an individual. This implies, as an individual's level of education increases the possibility of being poor decreases. Although poverty can lead to less educational attainment, this research did not focus on this aspect. The following chapter covers the methodology used to obtain results for this research.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1   Introduction

This study looks at the impact educational attainment has on household poverty in South Africa, using Limpopo Province as a case study. This chapter looks at the model that will be used to derive the results. Many models have been used by researchers to assess the impact of education on household poverty. In this research, poverty is a dependent and a binary variable. When the regressand has a binary/dichotomous (0, 1) outcome, a binary response model is often used to estimate the variable. The objective is to find the probability of something happening. As such, a qualitative response regression model that is where the dependent variable is binary is often known as a probability model (Gujarati, 2003: 581). A dichotomous response model is a model where by, the regressand takes on only two values (Bosch, 2008: 123). The regressand which is poverty in this case has only two options; either the respondent is poor or non-poor. The category poor, is assigned a value of 1 and 0 if non-poor. This study is out to measure the impact of the regressors on the probability of having a value of 1 on the regressand.

The Linear Probability Model (LPM) can be used when modelling for poverty to estimate the coefficients. Nevertheless, problems with this model include: the disturbance term (μ) is not normally distributed; predictions are not bound between 0 and 1; errors are highly Heteroscedastic and difficult to correct (Gujarati, 2003: 584 – 586; Bosch, 2008: 125). The most commonly used probability models on poverty analysis include; Probit, Logit and Tobit just to name but a few. These models ensure that the probabilities estimated will indeed fall between 0 and 1, the logical limits (Gujarati, 2003: 584). Previous studies on the impact of education on poverty conducted by Botha (2010); Ijaiya and Nuhu (2011) just to name but a few, used one of these probability models. This study makes use of a probit model to analyse the impact of educational attainment on the poverty status of households.

The chapter is sub-divided as follows: section 3.2 discusses the data sources; section 3.3 looks at model for poverty analysis, section 3.4 focuses on the model for regression analysis and section 3.5 is the conclusion.

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3.2   Data Sources

The variables considered for this study are; the poverty status of each household head (poor and non-poor), educational attainment proxied by the category of education attained by individual household heads and the vector of household characteristics such as; gender, area type and race of the head of house, and household size. In evaluating the impact of education on household poverty, a cross-sectional data obtained from Statistics South Africa was used. The data used for this study is the Income and Expenditure Survey (IES), conducted after every five years by Statistics South Africa for the periods 1995, 2000, 2005 and 2010. IES 1995 took place September 1995, IES2000 took place October 2000, IES2005/2006 known as IES2005, took place between September 2005 and August 2006 and IES2010/2011 known as IES2010, took place between September 2010 and August 2011. Across these years the sample size for South Africa was approximately 29582 in IES1995, 26263 in IES 2000, 21144 in IES 2005 and 25328 in 2010. The sample size was 2668, 3104, 1951 and 3306 for the various years for Limpopo Province respectively.

Yu (2010: 6) asserted that, these surveys are widely used to gather necessary information required to analyse poverty. The IES provides important information on expenditure patterns on services and items by households as well as various sources of income. The purpose of the IES is to collect information on services and items households acquired, together with various sources of income and expenditure. This helps in updating the baskets of goods and services, vital to compile the Consumer Price Index. In order to accomplish this, all acquisitions of and expenditures on goods/services by the participating households for their own consumption within these reference periods were collected.

The collection of these data was different across surveys. With respect to IES 1995 and 2000, a recall method was used. This method required participants to record their expenditures for a period of 11 or 12 months using a questionnaire which encompassed annualised figures of expenditure. The IES 2005 and 2010 used two methods; diary and the recall methods. The diary method required respondents (which changed every month) to record their expenditures on personal care and food items for four weeks. This method was used monthly, mainly to record expenditure values for non-durable goods such as food. The outcome is later

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annualised. The diary and record methods were used to obtain annual figures for semi-durable and durable goods (Stats SA, 2008: 11).

3.3   Model for Poverty Analysis

Poverty analysis in this dissertation is based on the absolute money-metric measure of poverty (discussed in chapter 2, section 2.2.2.1). The two absolute income poverty lines (as defined earlier, these lines indicate the threshold on which poor and non-poor individual's will be distinguished) adopted by Woolard and Leibbrandt (2006) and used in most recent poverty studies in South Africa are used in this research that is; the "lower-bound" which amounts to R322 per capita per month, when decomposed gives R211 used for consumption of essential food and R111 for non-food intakes or R322 × 12 = R3864 per capita per annum in 2000 prices and the "upper- bound" decomposed gives R211 for food and R382 for other non–food items, amounts to R593 per month or R593 × 12 = R7116 per capita per annum in 2000 prices. The per annum poverty lines are used to estimate those consuming below or above this threshold.

i.   Derivation of the poverty lines

The approach commonly used by most researchers in South Africa to construct poverty lines, is the Cost of Basic Need method. The poverty lines used in this research were derived by Statistics South Africa. According to Stats SA (2007b: 7 - 8), in South Africa, the nutritive value for each bundle of food item proposed by the Medical Research Council (MRC), provides approximately 1927 kilocalories per capita/day to an individual. This cost R180 in real 2000 prices. Using the Recommended Daily Allowances (RDA) of 2261 kilocalories per person per day for South Africa suggested by South African Medical Research Council (MRC), the essential amount needed to buy sufficient food to obtain the basic daily food energy requirement is calculated as $R180 \times \left(\frac{2261}{1927}\right) = R211$. This value is known as the food poverty line.

In estimating the poverty lines of non-food items, it is assumed that, the non-food items usually purchased by households spending roughly R211 per capita per month on food items

can be seen as important. This is because these households forgo expenditure on food in order to purchase these items. The cost of these important non-food items amounted to R111 per capita each month. Therefore, R211 + R111 = R322. This gives the lower bound poverty line. Stats SA (2007b: 10) estimated again that, the average per capita expenditure level of households spending is about R211 per capita each month on food was R593 in 2000 prices. This means that, these households spent R382 per capita every month on non-food items. When the R382 is decomposed, R111 is used to acquire essential non-food items and R271 to obtain non-essential non-food items.

Furthermore, Ravallion (1994: 34) encouraged that, at least two or most preferably many poverty lines should be considered when measuring poverty. This is because, given a small change in poverty setting, this helps to test the responsiveness of poverty measures. In measuring the incidence and share of poverty, these poverty lines, particularly the lower bound (R3864) except otherwise will be used. Poverty incidence refers to the level at which a specific group is affected by poverty. Poverty share is the fraction of poverty a specific group, takes in the overall poverty of a given group (Stats SA 2007: 7 – 8). These poverty lines do not reveal the extent of poverty in a given country or society. As such, the Foster-Greer-Thorbecke (FGT) poverty measure is used, as explained in section 3.2.1 below.

3.3.1   The Foster-Greer-Thorbecke (FGT) class of decomposable poverty measure

Several methods can be used for poverty measurement, for instance, HDI, HPI, FGT just to name but a few. The HDI and HPI cannot be used in this case because they are non-income poverty measures. This research uses the FGT measure proposed by Foster, Greer and Thorbecke (1984) and is the most commonly used measure of poverty. This measure is used because it examines three poverty measures; headcount index (P_0), poverty gap index (P_1) and squared poverty gap index (P_2). If households are classified according to their income measure and we define household i = 1….. q, as poor and i = (q + n)….. n, as non-poor, the FGT poverty measure is expressed as:

$$P_\propto = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z - y_i}{z}\right)^\propto, \propto \geq 0 \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (1)$$

Where: z = *poverty line,*

Y_i = *measure of income of the ith household,*
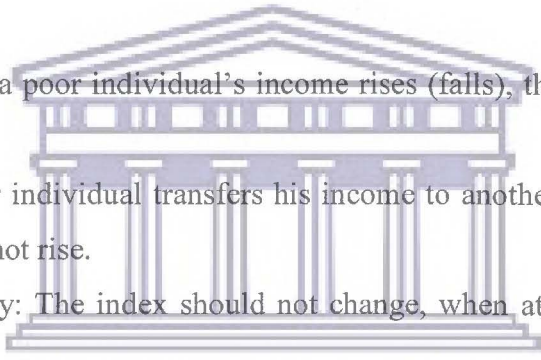
n = *sample size*

q = *number of poor individuals and*

α = *poverty aversion parameter* (Foster et al, 1984: 762).

The interpretation of P_α varies for every given value of α. It should be noted that for all poor households (i = 1 ..... q), (z – y$_i$) is positive because they earn less than the poverty cut-off point.

According to Govender et al (2007: 125); Woolard and Leibbrandt (1999: 20), Sen 1976 put forward four axioms that good poverty measures need to satisfy. They are;

1. Monotonicity: In case a poor individual's income rises (falls), the index needs to fall (rise).
2. Transfer: When a poor individual transfers his income to another person poorer than him, the index should not rise.
3. Population – Symmetry: The index should not change, when at least two populaces are pooled.
4. Proportion – of – Poor: If it grows/ decreases, the index must increase/fall.

These axioms will be used in this study to assess the measures of FGT.

i.   Head–Count index (P_0)

It indicates the proportion of people living below a given poverty line in a country or society. It is stated as:

$$\text{When } \propto = 0, \ P_\propto = P_0 = q/n \ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots. (2)$$

The advantage of P_0 is that, it is easy to compute and understand (Coudouel et al, 2002: 33; Mbuli, 2008: 30; Woolard et al, 2009: 2). As such, it is used in many researches in analysing poverty in a region (for example, see Hoogeveen & Özler, 2004; Armstrong et al, 2008). The weakness of this ratio is that, it does not give the depth (gap) and the severity of poverty

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(Ijaiya & Nuhu, 2011: 7). As such, violates Sen's first two axioms of Sen 1976 (Johnson, 1996: 114). Due to these drawbacks, P_0 should be used concurrently with the poverty gap ratio which will be the case in this research.

ii.   Poverty gap index (P_1)

It is the difference between the poverty line and income per capita, of a given household (Woolard and Leibbrandt, 1999:56). It is expressed as:

$$\text{When } \propto = 1, P_\propto = P_1 = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{Z - Yi}{Z} \right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(3)}$$

The advantages of this are: it reveals the average shortfalls of poor individuals, thus providing a clear picture of poverty depth; also, when multiplied by the given poverty line, P_1 indicates the amount that has to be transferred to the poor in an economy to move their expenditures above the poverty line (May et al, 2000: 30; Kaplan & Makoka, 2005: 20). Hence, from P_1 it is easy to obtain the least cost of eradicating poverty with transfers. That is, the cost of eradicating poverty by targeting the rightful poor group, with no distortion or targeting costs. The main shortfall of P_1 index is that, it does not take into account the variances in the severity of poverty between poor persons and ignores inequality amid poor individuals themselves.

iii.   Squared poverty gap index (P_2)

P_2 shows how poverty is distributed below a given poverty line. It is often calculated as severity of poverty measure and can be seen as the sum of an amount, resulting from the poverty gap and inequality amongst poor people (Ravallion, 1992: 39).

P_2 is expressed as:

$$P_2 = \frac{(P_1)^2}{P_0} + \frac{(P_0 - P_1)^2}{P_0} C_q^2 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(4)}$$

(Contribution of inequality amongst the poor)

(Contribution of the poverty gap)

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Where, C_q^2 = squared coefficient of variation of income among poor individuals or group.

The advantages of P_2 are: apart from capturing the gap between poor people from the poverty line that is, the poverty gap, it also identifies inequality amongst poor individuals; the value helps us to make comparisons over space or time or between different policy options (Woolard & Leibbrandt: 2001: 55). P_2 is needed as P_1 might not indicate the distributional changes of the population's poor fragment adequately. For instance, if there is a policy in place, that has an effect on cash transfer from someone slightly beneath the poverty line to the poorest individual; P_1 would not be able to reflect this change, but P_2 would. At all times, IP_2I when taken into account on its own tells us very little about poverty.

It is not easily interpreted as P_0 and P_1 even though it weights the poorest of the poor more heavily in its calculation, thus, not widely used (Woolard and Leibbrandt, 1999: 58; Kaplan & Makoka, 2005: 20; Woolard et al, 2009: 2). The P_α index satiates Sen's transfer axiom, which states that, when income is transferred from a poor household to a rich one, measured poverty rises. Another advantage of the P_α measure is that, it is decomposable by population subcategories. Hence, the overall poverty measure can be expressed as the sum of group measures, weighted by the population share of respective group (Kaplan & Makoka, 2005: 21).

3.4   Model for Regression Analysis

In carrying out empirical analysis on the relationship between education and poverty, most previous studies used the probit regression model for instance, Botha (2010). This model is suitable in this case because the dependent variable which is poverty is binary in nature and takes on two values; poor or non-poor, which will be denoted as 1 and 0, respectively (Gujarati, 2003: 608). A household is considered poor if its head's consumption expenditure falls below R3 864 or R7116 per annum and non-poor if annual income is above R3 864 or R7116 per annum. Also, the model allows the reporting of changes in the response probability that is marginal effects (Gujarati, 2003: 609).

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The precise form of the model is given as:

$$\text{POVERTY } (Y) = \beta_0 + \beta X + \mu \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (5)$$

In equation (5), β_0 is the constant; β is the vector coefficients, associated with the explanatory variables (X); μ is the error term, subject to the standard normal distribution. In a probit model, it is assumed that though the values, 0 and 1 are observed for Y, there is Y* - a latent unobserved continuous variable, which determines the value of Y (Gujarati, 2003: 606). Assuming there are latent variables Y^* such that;

$$Y^* = \beta X + \mu, \qquad \mu \sim N\,(0, \sigma^2) \leftarrow \text{Normal } = \text{probit} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (6)$$

In a linear regression model, Y^* is observed directly, but in probits,

$$Y = \begin{cases} 0 \text{ if } Y^* \leq 0 \\ 1 \text{ if } Y^* > 0 \end{cases} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (7)$$

Since we are concerned with Y = 1, the error term μ is translated to a possible value of;

$$Y^* > 0 \rightarrow \beta X + \mu > 0 \rightarrow \mu > -\beta X,$$

$$\rho[Y^* > 0|X] = \rho(Y = 1|X) = \rho(\mu > -\beta X)$$

$$= \rho\left(\frac{\mu}{\sigma} > \frac{-\beta X}{\sigma}\right)$$

$$= \phi\left(\frac{-\beta X}{\sigma}\right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (8)$$

Since β and σ entered equation (8) as ratio, they cannot be estimated. Therefore, setting $\sigma = 1$, makes μ a standard normal distribution. In a binary response model, the main concern is with the response probability given as;

$$\rho(Y = 1 \mid X) = \rho(Y = 1|x_1, x_2 \dots x_k) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (9)$$

Where; Y = dependent variable. It is dichotomous and takes the value of 1, if the individual is poor and 0 if otherwise. X = explanatory variables (these explanatory variables are some socioeconomic elements affecting poverty dynamics), $\rho(Y = 1 \mid X)$ is the probability that, a household is poor given the values of the independent variables (X). To remove the limitations of the Linear Probability Model (LPM), we make the following assumptions:

$$\rho(Y = 1 \mid X) = F[\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_k x_k] \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (10)$$

F (.) is a function such that, F: $x \rightarrow [0, 1]$, $\forall x \in R$. The Probit model assumes that F (.) follows a normal (cumulative) distribution,

$$F(x) = \phi(x) = \int_{-\infty}^{x} \emptyset(z)\, dx \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (11)$$

Where; ϕ = standard normal cumulative distribution function and $\emptyset(z)$ = normal density function, and is written as;

$$\emptyset(z) = \frac{exp\left(-\frac{z^2}{2}\right)}{\sqrt{2\pi}} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (12)$$
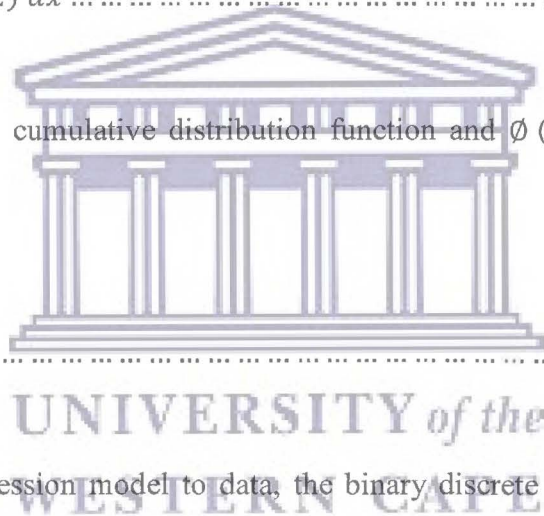
Hence, fitting the probit regression model to data, the binary discrete selection model that affects poverty of individual households can be denoted as following;

$$\rho(POOR = 1 \mid X = x) = \rho(income < 3864 \mid x) = \rho[\mu > -(\beta_0 + \beta) \mid x]$$
$$= 1 - \phi[-(\beta_0 + \beta x)] = \phi = (\beta_0 + \beta x) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (13)$$

The same substitution applies for R7116. Given that,

$$X = f(LE, HHc) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (14)$$

Where; LE stands for level of education and HHc are the vector of households' characteristics.

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HHc in this analysis is given as;

$$HHc = f(\text{FEMALE, BLACK, RURAL, and HHSIZE}) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (15)$$

Hence, equation (13) is re-written as;

$$\rho(\text{POOR} = 1 \mid X) = \rho(\text{POOR} = 1 \mid \text{LE, HHc}) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (16)$$

Therefore,

$$\rho(\text{POOR} = 1 \mid X) = \rho(\text{POOR} = 1 \mid \text{LE, FEMALE, BLACK, RURAL, and HHSIZE}) \dots\dots\dots (17)$$

As such,

$$\rho(\text{POOR} = 1 \mid X) = F(\beta_0 + \beta_1 \text{LE} + \beta_2 \text{FEMALE} + \beta_3 \text{BLACK} + \beta_4 \text{RURAL} +$$
$$\beta_5 \text{HHSIZE}) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (18)$$

Where;

β_0 = the intercept

β_1 to B_5 = estimation parameter
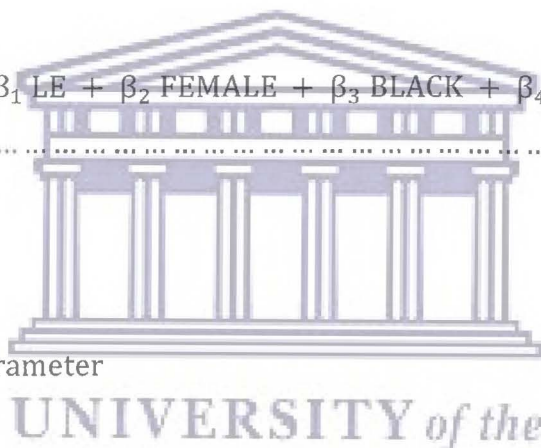
During the model specification, emphasis is on whether educational attainment has any significant impact on household poverty in South Africa, looking at Limpopo Province in particular. The validity of the model was tested using a-priori expectation, which is based on the signs and magnitude of the coefficient (β) of the variables under investigation. β measures the marginal effect of the regressors on the regressand. The marginal effect is assessed using the mean values of the regressors used. It indicates how much the dependent variable (poverty) changes when the independent variable changes (Gujarati, 2003: 613). In a probit model with many independent variables, the model for the marginal effect is given as;

$$\frac{d\rho}{dx}(\text{Poor} = 1 \mid X) = F[\beta_0 + \sum(\beta_1 \text{LE} + \beta_2 \text{FEMALE} + \beta_3 \text{BLACK} + \beta_4 \text{RURAL} +$$
$$\beta_5 \text{HHSIZE})] \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (19)$$

To know if this model fits significantly better than that with just primary, secondary, matric, post-matric and HHsize as the predictor variables, the likelihood test ratio (LR) will be used. If the calculated LR is greater than the critical value or p – value, then our model with all predictor variables fits better. The likelihood ratio test equation is:

$$X^2 = 2\big[(\text{log-likelihood for bigger model}) - (\text{log-likelihood for smaller model})\big] \dots\dots (20)$$

The specific details of each explanatory variable are provided in table 3.1 below. The characteristics describing the individual households include; educational attainment level [none (reference group), primary, secondary, matric and post-matric (matric + certificate/diploma and degree combined, due to the small sample size of degree holders)], racial classification [Black (reference goup), Coloured, Indian and White], gender type [male (reference group) and female] of the household head, area type [urban (reference group) and rural] and the household size (HHsize). The age of household heads was not included as a predictor variable because the main focus of the thesis is not on poverty distribution. Also studies done by Botha (2010); Ijaiya and Nuhu (2011) on similar work did not include it.

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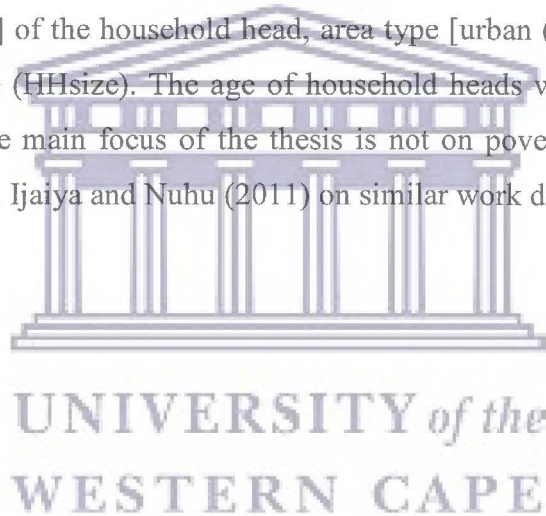
Table 3.1: List of explanatory variables for the probit regression model

Explanatory Variables	Description of Variables
LE	*Educational level attained by household head:*
	None dummy: 0 = No, 1 = Yes:
	Primary education dummy: 0 = No, 1 = Yes
	Secondary education dummy: 0 = N0, 1 = Yes
	Matric education dummy: 0 = No, 1 = Yes
	Post-Matric education dummy: 0 = No, 1 = Yes
FEMALE	*Gender of household head:*
	Male dummy: 0 = No, 1 = Yes
	Female dummy: 0 = No, 1 = Yes
BLACK	*Population group of household head:*
	Black dummy: 0 = No, 1 = Yes
	Coloured dummy: 0 = No, 1 = Yes
	Indian dummy: 0 = No, 1 = Yes
	White dummy: 0 = No, 1 = Yes
RURAL	*Area type of household head:*
	Urban dummy: 0 = No, 1 = Yes
	Rural dummy: 0 = No, 1 = Yes
HHSIZE	*Size of the household*

The following subsection summaries the findings of this chapter.

3.5   Conclusion

This chapter looked at the method and the data that was used to obtain the results for this mini-thesis. Data used is from the Income and Expenditure Survey (IES) carried out by Statistics South Africa for the period 1995, 2000, 2005/2006 and 2010/11. The Foster-Greer-Thorbecke poverty measure will be used alongside with two absolute poverty lines (R3864 – lower bound and R7116 – upper bound per capita income per annum in 2000 prices) to distinguish between the poor and non-poor individuals in Limpopo Province and nationally. Since the dependent variable (poverty) is binary in nature, a probit regression model will be run to determine the relationship between education and poverty in Limpopo Province. The next chapter discusses the research findings.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION OF RESULTS

4.1   Introduction

As discussed earlier, the main aim of this research is on educational attainment and its impact on household poverty in South Africa with Limpopo Province as a case study. The purpose of this chapter is to analyse and interpret the results obtained from the data sets used; Income Expenditure Survey (IES) 1995, 2000, 2005/06 and 2010/11 for South Africa and Limpopo Province. The general trend is analysed and for more statistical clarification IES 1995 and 2010/11 were mostly analysed, for simplicity and proper understanding of the results. It should be noted that the sample size for Coloureds, Indians and Whites in Limpopo Province are quite small as opposed to Blacks. The chapter is structured as; section 4.1 presents descriptive statistics of the results obtained; section 4.2 analyses the result of the probit regression and section 4.3 Conclusion.

4.2   Descriptive statistics

This section gives the statistics of poverty and education in Limpopo Province, which is then compared to the national level. Subsection 4.1.1 focuses on the extent of poverty in Limpopo Province and amongst the different schooling categories and subsection 4.1.2 looks at the rate of education in different dimensions.

4.2.1   The extent of poverty in Limpopo Province

As indicated in Table 4.1 below, using the lower bound poverty line of R3864 over these years there was an increase in the head-count index from 1995 to 2000 that is, by 0.188 and 0.11 respectively, which then dropped from 2000 to 2010 by 0.163 and 0.166 for Limpopo Province and South Africa respectively. The poverty gap and squared poverty gap increased by 0.154and 0.12 respectively from 1995 to 2000 for Limpopo Province and by 0.096 and 0.081 respectively nationally, which then dropped by 0.146 and 0.13 respectively from 2000 to 2005 and slightly increased by 0.002 and 0.017 respectively from 2005 to 2010 for Limpopo Province. For South Africa it decreased by 0.125 and 0.97 respectively from 2000

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to 2010. Using the upper bound poverty line of R7116, over these years there was an increase in the head-count index by 0.144 and 0.081, poverty gap by 0.160 and 0.097 and squared poverty gap by 0.15 and 0.093 from 1995 to 2000 for both Limpopo Province and South Africa respectively, which then dropped by; the Headcount – 0.101 and 0.14, the poverty gap – 0.134 and 0.138 and the squared poverty gap – 0.132 and 0.123 from 2000 to 2010 for both Limpopo Province and South Africa respectively.

Considering IES 2010, Limpopo Province and these poverty lines, the head-count ratio of 0.596 and 0.777 respectively represent 59.6% and 77.7% of households in Limpopo Province whose level of consumption is below the aforementioned poverty lines. These figures indicate that, 59.6% and 77.7% of households in the province are poor since their head's consumption-expenditure level falls below the set poverty lines at the time of this survey. This is higher than the national rate of 40.6% and 58.3% respectively. The poverty gap ratio of 29.0% and 48.1% respectively, represent those whose average consumption-expenditure is below these poverty lines. This gap indicates the degree of poverty of poor households, thus representing the percentage of expenditure required to bring each poor household below these poverty lines up to these poverty lines. Compared to the national rate of 19.3% and 33.6% respectively, this is much higher. The squared poverty gap index of 0.177 and 0.338 represent 17.7% and 33.8% respectively of the poorest of the poor households in Limpopo Province that required special attention by policy makers in the distribution of social amenities. For instance; education, clean water, and sanitation and health care facilities, income generating activities and food that will help improve their living standards. This is higher than the national level of 11.7% and 23.0% respectively. The same explanation applies for the previous years.

Comparing IES 1995 and 2010 for Limpopo Province, and using these poverty lines, the headcount ratio increased by 2.5% and 4.3% respectively in 2010, indicating additional 2.5% and 4.3% of households in the province became poor since their head's consumption-expenditure level fell below the set poverty lines at the time of IES 2010. The poverty gap ratio increased by 1% and 0.7% respectively. This shows that, an additional 1% and 0.7% expenditure was required to bring each poor household below theses poverty lines up to the poverty lines in 2010. The squared poverty gap ratio increased by 0.026 and 0.018 respectively, at the time of IES 2010. This signifies more 2.6% and 1.8% of the poorest of

poor households that required special attention by policy makers in the distribution of social amenities at the time of IES 2010. The distribution and share of poverty in the province in terms of area type, race and gender is shown in Table A. 2 in the appendix, based on the head-count ratio and the lower bound poverty line. In summary at the time of all surveys, the rate and share of poverty was highest for Blacks, rural areas and females.

Table 4.1: Trend in head-count, poverty gap and squared poverty gap in percentages for Limpopo Province and South Africa

	1995		2000		2005		2010	
	L	SA	L	SA	L	SA	L	SA
Poverty Line: R3864								
Head-Count (P_o)	57.1	46.2	75.9	57.2	63.9	47.3	59.6	40.6
Poverty Gap (P_1)	28.0	22.2	43.4	31.8	28.8	21.7	29.0	19.3
Squared Poverty Gap (P_2)	17.0	13.3	29.0	21.4	16.0	12.6	17.7	11.7
Poverty Line: R7116								
Head-Count (P_o)	73.4	64.2	87.8	72.3	81.7	65.2	77.7	58.3
Poverty Gap (P_1)	45.5	37.7	61.5	47.4	49.8	38.2	48.1	33.6
Squared Poverty Gap (P_2)	32.0	26.0	47.0	35.3	34.0	26.0	33.8	23.0

Source: Researcher's own calculations using IES 1995, 2000, 2005 and 2010 data
Note: L = Limpopo and SA = South Africa

In Table 4.2 below, the FGT measures are disaggregated by the highest educational level of the household head for Limpopo Province. The head-count ratio is higher for households in which the head has primary or no education comparative to households where the head has matric or post-matric education. Moreover, the depth and severity of household poverty is much lower if the household head has matric or post-matric education. Looking at IES 2010, 73.6% and 91.8% of households whose head had no schooling were poor as their head consumption level falls below these poverty lines R3864 and R7116 respectively, at the time of the survey. While only 18.7% and 26.2% of households whose head had post-matric were poor respectively, since their head consumption expenditure falls below these poverty lines respectively.

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Table 4.2: Trend in poverty rate by highest educational attainment in percentages in Limpopo Province

	1995		2000		2005		2010	
	R3864	R7116	R3864	R7116	R3864	R7116	R3864	R7116
None								
P_0	74.4	88.7	86.5	96.2	75.1	93.0	73.6	91.8
P_1	38.1	58.4	49.8	69.1	33.6	58.4	33.5	57.3
P_2	23.7	42.7	32.8	53.3	18.4	40.0	19.0	39.6
Primary								
P_0	63.8	82.7	84.7	94.5	73.7	92.5	63.5	87.3
P_1	31.5	51.3	50.7	69.1	34.2	57.0	30.6	52.4
P_2	19.2	36.3	34.7	54.0	19.4	39.6	18.2	36.1
Secondary								
P_0	52.2	72.4	72.4	87.7	61.4	80.4	61.9	78.7
P_1	23.4	42.1	40.0	59.1	27.8	48.1	32.1	50.3
P_2	13.0	28.4	26.5	44.2	15.9	33.0	20.7	36.5
Matric								
P_0	20.2	36.8	47.5	64.1	41.4	59.4	39.4	54.9
P_1	7.6	17.8	23.5	38.0	16.0	32.1	18.5	31.9
P_2	4.2	10.6	14.5	26.8	7.5	20.2	11.2	22.0
Post- Matric								
P_0	4.4	12.8	12.8	26.8	14.9	21.7	18.7	26.2
P_1	1.0	3.7	5.3	11.9	6.7	12.3	9.0	15.2
P_2	0.3	1.7	3.1	7.1	3.6	8.1	5.4	10.5

Source: Researcher's own calculations using IES 1995, 2000, 2005 and 2010 data

The next section looks at the level of schooling from different dimensions that is, area type, race and gender.

4.2.2 Educational attainment in Limpopo Province in different dimensions.

Households headed by someone located in urban areas on average have a higher level of education than those located in rural areas. Table 4.3 below shows the educational attainment level by household heads in the urban and rural areas of Limpopo Province. The results show that for the period 1995, 2000, 2005 and 2010, about 5.5%, 7.7%, 4% and 12.1% respectively of household heads in the urban areas have degree, while the rural areas recorded 1.8%, 1.3%, 1.5% and 2.1% respectively. In terms of no schooling by household heads the highest was the rural area with about 42.6%, 38.9%, 33.5% and 25.2% in 1995, 2000, 2005 and 2010

household heads have no schooling, while White household heads 0.4% in 1995 and 0% in both 2000 and 2005, and 0.4% in 2010 respectively have no schooling. In addition, the percentages of degree holders for Black household heads are 1.8%, 1.9%, 1.7% and 3.1%, and for Whites 14.6%, 14.3%, 6.8% in 1995, 2000, 2005 and 14.6% in 2010 respectively hold a degree. Overall, the percentage of household heads with post-matric was highest for Whites and lowest for those with primary or no education than their Black counterparts across these periods. Similar trends could be seen nationally. This is shown in Table A. 4 in the appendix. This could be one reason why poverty is dominant amongst Blacks than the other race group as shown in Table A. 2 in the appendix, as they might not have acquired the required skills gained through education to secure lucrative jobs.

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Table 4.4: Trend in educational attainment by race in percentages in Limpopo Province

Household Heads	1995				2000				2005				2010			
Educational Attainment Category	B	C	I	W	B	C	I	W	B	C	I	W	B	C	I	W
None	41.5	5.1	0.0	0.4	35.7	50.6	9.5	0.0	32.6	11.7	0.0	0.0	23.3	17.9	0.0	0.4
Primary	16.6	8.7	8.9	5.9	24.6	37.4	40.2	0.0	23.4	0.0	0.0	0.0	25.2	0.0	0.0	0.0
Secondary	25.1	23.1	32.4	29.5	29.1	12.0	12.0	31.7	31.1	62.2	17.5	50.5	34.6	62.9	47.9	26.3
Matric	5.9	17.0	44.1	23.9	4.8	0.0	5.2	32.4	7.4	26.1	45.2	49.5	8.1	12.5	19.5	30.6
Matric + Certificate/diploma	5.5	5.1	0.0	22.4	2.9	0.0	0.0	21.7	3.7	0.0	31.3	34.9	4.3	0.0	15.1	28.2
Degree	1.8	0.0	14.7	14.6	1.9	0.0	33.1	14.3	1.7	0.0	6.1	6.8	3.1	0.0	14.1	14.6
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Researcher's own calculations using IES 1995, 2000, 2005 and 2010 data
Note: B = Black, C = Coloured, I = Indian and W = White

Finally female household heads have lower educational attainment than male. As shown in Table 4.5 below, at the time of IES 1995, 2000, 2005 and 2010 approximately 34.8%, 23.4%, 18.6% and 15.1% respectively of male heads, had no schooling and while 49.6%, 45.3%, 42.5% and 29.7% in 1995, 2000, 2005 and 2010 respectively of female heads had no schooling. In addition, the percentages of female heads with degrees were; 0.6%, 0.9%, 0.6%, and 1.8%, and 3.1%, 3.6%, 3.8% and 5.1% for male heads in 1995, 2000 2005 and 2010 respectively at the time of these surveys. Generally, the percentage of household heads with post-matric is highest for male heads than female across these periods. A similar trend is observed at national level as shown in Table A. 5 in the appendix. One can assume that, one of the reasons for females to be less educated than males is because of pregnancy which might have caused some of them to drop out of school. This could be one reason why poverty is more prevalent amongst female than males as shown in Table A. 2 in the appendix, as they do not have the required skills gained through education to secure lucrative jobs.

Table 4.5: Trend in educational attainment in Limpopo Province by gender in percentages

Household Heads	1995		2000		2005		2010	
Educational Attainment Category	Male	Female	Male	Female	Male	Female	Male	Female
None	34.8	49.6	23.4	45.3	18.6	42.5	15.1	29.7
Primary	16.7	15.6	28.5	20.5	27.1	19.2	26.9	22.7
Secondary	26.4	23.2	32.7	25.9	33.8	28.6	36.6	32.8
Matric	7.4	4.7	5.0	3.7	10.3	6.6	9.1	8.0
Matric + Certificate/diploma	7.9	2.6	3.8	2.6	6.9	2.5	6.0	3.5
Degree	3.1	0.6	3.6	0.9	3.8	0.6	5.1	1.8
Total	100	100	100	100	100	100	100	100

Source: Researcher's own calculations using IES 1995, 2000, 2005 and 2010 data

The next section looks at the impact of the explanatory variables particularly educational attainment on the probability of an individual household being poor in each poverty line, using a probit regression model.

4.3   Regression Analysis

To determine the effect of the explanatory variables on the probability of an individual household being poor in each poverty line, probit regressions were run for the different data sets. The marginal effects are shown in Table 4.6 and 4.7 below for the various IES data sets and poverty lines used. Before analysing the regression, the researcher first of all checked whether the model proposed in Chapter 3 fits significantly better. The likelihood test ratio statistic (distributed chi-squared) is used to determine this. This involves running two models; one with five predictor variables as shown in Table 4.6 below that is the restricted model – model 1 and the other with all the predictor variables as shown in Table 4.7 below – model 2, then the likelihood test ratio statistic (distributed chi-squared) was calculated and the values obtained are shown in Table 4.8 below.

The likelihood ratio test statistic is 171.66 with four degrees of freedom, 261.60 with five degrees of freedom, 88.23 with two degrees of freedom and 177.00 with five degrees of freedom for 1995, 2000, 2005 and 2010 respectively for the lower bound poverty line of R3864. For the upper bound poverty line of R7116 it is 239.73 with four degrees of freedom, 310.53 with five degrees of freedom, 116.52 with four degrees of freedom and 245.15 with five degrees of freedom for 1995, 2000, 2005 and 2010 respectively. We can use a table or find the associated p-value that corresponds to these likelihood test ratios, which is $p < 0.001$. This probability is very small as such, indicating that the model with all the predictors fits significantly better than the model with only five predictors. Hence, the analysis that follows is based on Table 4.7 and the robust standard errors are shown in parenthesis. For better analysis and due to the small sample size of those with degrees, it was combined with matric + certificate/diploma as post-matric. All the perfectly predicted outcomes were omitted from the result as seen in Table 4.7 below. This implies, for the given poverty lines and IES 1995 no Indian household head was poor at the time of this survey. The same conclusion applies for Coloured, Indian and White that were omitted from the IES 2005 results for the lower bound poverty line and White for the upper bound poverty line.

Holding the other variables constant, based on a priori grounds, the coefficient estimate of educational attainment for 1995 have the expected sign and likewise, for 2000 and 2010 when using the poverty line of R7116 per annum. The a-priori expectation result indicates

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that, the more people with lower education in Limpopo Province, the more the poverty incidence. This is in accord with Todaro (1977), who noted that, in developing countries, the high poverty level makes it tough for most people to either attend, complete or even advance with their schooling due to the direct cost involved which includes; school fees and cost of books and clothing, and the decreasing income and wages of the individuals hence affecting their aspiration of schooling. Except for the coefficient of Coloureds, the other variables were statistically significant at 1% level of significance, considering the R3864 per annum poverty line in 1995. From the poverty line of R7116 per annum for the period 1995 to 2010 most of the estimated coefficients were statistically significant at the 1% significance level, except the coefficient estimate for primary and secondary (from 2000 to 2010), matric (2005), Coloureds and Indians, which are insignificant.

The number of units of change and direction in the dependent variable resulting from one unit change in each explanatory variable is shown by the β values for education and poor while holding the other explanatory variables constant. The result shows that a more educated individual is less likely to be poor. Considering IES 1995 and 2010, and 1% significant level, at R3864 poverty line and controlling for the effects of race, gender, area type and household size, the result indicates that a household with the head having matric is 32.79% and 9.29% respectively, less likely to be poor than a household with the head having no education, whereas a similar household is 42.30% and 16.86% respectively less likely to be poor when using the R7116 poverty line. In addition, where the head has post-matric education, the likelihood of the household to be poor is 45.89% and 30.88% respectively, at R3864 poverty line and 64.35% and 49.35% respectively at R7116 poverty line, less than a household in which the head has no education. The same interpretation applies for 2000 and 2005.

With respect to the additional explanatory variables, poverty is higher among female-headed and rural households and households with larger size. Moreover, households with a Black head are most likely to be poor compared to their Coloured, Indian and White counterparts as shown in Table 4.7 below. Keeping all other explanatory variables constant and considering IES 2010 and 1% significant level, at R3864 and R7116 poverty lines, a household headed by a White is 30.51% and 42.73% respectively less likely to be poor than that headed by a Black. Considering IES 2010 and the poverty lines of R3864 and R7116, and controlling for the effects of gender, area type, education and household size, the result shows that a

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household headed by a female is 13.96% and 14.46% respectively, more likely to be poor than those headed by a male. Keeping all other explanatory variables constant, a household whose head resides in the rural area is 21.70% and 24.86% respective more likely to be poor than that headed by someone residing in the urban area. Finally, controlling for the effects of the other explanatory variables, the result shows that an increase in the size of a household the more likely for the household to be poor.

Table 4.6: Probit results, reporting marginal effects for highest educational level of the household using five predictor variables

	1995		2000		2005		2010	
	3864	**7116**	**3864**	**7116**	**3864**	**7116**	**3864**	**7116**
Primary	-0.1134***	-0.0660**	-0.0665***	-0.0728***	0.0197	-0.0252	-0.0206	-0.0434
Secondary	-0.2093***	-0.2267***	-0.1504***	-0.1316***	-0.0205	-0.1192***	-0.0079	-0.1027***
Matric	-0.3841***	-0.5175***	-0.3840***	-0.4145***	-0.1701***	-0.2668***	-0.1878***	-0.3028***
Post-Matric	-0.4937***	-0.6834***	-0.6117***	-0.7300***	-0.4544***	-0.6889***	-0.3866***	-0.5940***
Household size	0.0632***	0.0443***	0.0806***	0.0380***	0.0890***	0.0697***	0.0781***	0.0732***
Sample size	2668	2668	3104	3104	1951	1951	3306	3306
Likelihood ratio (5)	752.78	802.02	958.34	806.33	490.65	543.16	662.76	838.77
Prob. > Chi^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Log Likelihood	-1460.4344	-1352.7299	-1605.9025	-1248.8006	-1106.9138	-902.50842	-1947.6035	-1719.1474

Source: Researcher's own calculations using IES 1995, 2000, 2005 and 2010 data.
*** Significant at 1%; ** Significant at 5%; * Significant at 10%

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Table 4.7: Probit results, reporting marginal effects for highest educational level of the household head using all predictor variables

	1995		2000		2005		2010	
	3864	7116	3864	7116	3864	7116	3864	7116
Primary	-0.0907***	-0.0524*	0.0071	-0.0141	0.0712**	0.0117	0.01870	-0.0004*
	(0.0276)	(0.0331)	(0.0284)	(0.0237)	(0.0358)	(0.0321)	(0.0279)	(0.0287)
Secondary	-0.1641***	-0.1679***	-0.0461*	-0.0352*	0.0398	-0.0579**	0.0653**	-0.0148*
	(0.0233)	(0.0271)	(0.0266)	(0.0220)	(0.0316)	(0.0294)	(0.0252)	(0.0257)
Matric	-0.3279***	-0.4230***	-0.2173***	-0.2004***	-0.0713*	-0.1222***	-0.0929***	-0.1686***
	(0.0240)	(0.0345)	(0.0403)	(0.0391)	(0.0488)	(0.0463)	(0.0336)	(0.0365)
Post-Matric	-0.4589***	-0.6435***	-0.5288***	-0.6104***	-0.4024***	-0.6247***	-0.3088***	-0.4935***
	(0.0136)	(0.0189)	(0.0324)	(0.0387)	(0.0358)	(0.0408)	(0.0284)	(0.0325)
Coloured	-0.0890	-0.1413	0.0757	-0.1106	omitted	-0.2552*	-0.1575	-0.1406
	(0.1204)	(0.1434)	(0.2517)	(0.2241)		(0.1663)	(0.1422)	(0.1485)
Indian	omitted	Omitted	-0.1906	-0.1544	omitted	-0.4195	0.0944	-0.0938
			(0.2352)	(0.1811)		(0.2921)	(0.1403)	(0.1408)
White	-0.2598***	-0.5025***	-0.4219***	-0.5636***	omitted	omitted	-0.3051***	-0.4273***
	(0.0461)	(0.0484)	(0.0921)	(0.0845)			(0.0771)	(0.0890)
Female	0.1737***	0.1258***	0.1963***	0.1419***	0.2027***	0.1570***	0.1396***	0.1446***
	(0.0221)	(0.0219)	(0.0198)	(0.0150)	(0.0251)	(0.0218)	(0.0189)	(0.0184)
Rural	0.2040***	0.2401***	0.2515***	0.1984***	0.1555***	0.2172***	0.2170***	0.2486***
	(0.0234)	(0.0263)	(0.0237)	(0.0201)	(0.0345)	(0.0330)	(0.0227)	(0.0239)
Household size	0.0613***	0.0380***	0.0773***	0.0332***	0.0871***	0.0650***	0.0734***	0.0675***
	(0.0046)	(0.0047)	(0.0049)	(0.0034)	(0.0064)	(0.0052)	(0.0046)	(0.0048)
Sample size	2668	2668	3104	3104	1951	1951	3306	3306
Likelihood ratio	916.38[9]	1031.86[9]	1219.94[10]	1116.86[10]	501.59[7]	545.45[9]	839.76[10]	1083.92[10]
Prob. > Chi^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Log Likelihood	-1374.6077	-1232.8631	-1475.1046	-1093.5345	-1062.7982	-844.25069	-1859.1051	-1596.5731

Source: Researcher's own calculations using IES 1995, 2000, 2005 and 2010 data.

*** Significant at 1%; ** Significant at 5%; * Significant at 10%. Note: The powers in brackets on the likelihood ratio values signify the degree of freedom

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Table 4.8: The Likelihood ratio test statistic

Year	Poverty lines	
	3864	7116
1995	171.66 (4)	239.73 (4)
2000	261.60 (5)	310.53 (5)
2005	88.23 (2)	116.52 (4)
2010	177.00 (5)	245.15 (5)

Source: Researcher's own calculations using IES 1995, 2000, 2005 and 2010 data.
Note: The values in bracket signify the degree of freedom

The findings of this chapter is summarised in the next section.

4.4   Conclusion

Comparing the level of poverty in Limpopo Province and the national level it was found that, the poverty rate in Limpopo Province was much higher than the national level. But in terms of poverty distribution it is still; racially biased with Blacks being poorer than the other racial groups, highest in the rural areas and amongst females, which is similar to the national level as seen in the literature. Over a period of 15 years, using the lower and upper bound poverty lines of R3864 and R7116 per annum respectively, there was an increase of 2.5% and 4.3% respectively of households that are poor because their head consumption-expenditure levels fell below the given poverty lines in Limpopo Province. The results showed that majority of household heads with no schooling in Limpopo Province; lived in the rural areas and were females and Blacks. While majority with degrees are; located in the urban area and were males and non-Blacks. From the regression result, it is seen that the higher the level of education of an individual, the less likely he or she will be poor. Hence, one can conclude that there is an inverse relationship between education and an individual's poverty status. The subsequent chapter outlines the conclusion of the thesis.

CHAPTER FIVE: CONCLUSION

5.1   Introduction

This research explored the impact of educational attainment on household poverty in South Africa, with Limpopo Province as the case study. The Income Expenditure Survey (IES) data of 1995, 2000, 2005/2006 and 2010, conducted by Statistics South Africa to analyse the trend in the poverty rate of households, poverty status of households given their heads level of education and the educational level of household heads was consulted. This chapter first reviews the findings of the research before the conclusion follows.

5.2   Review of findings

Chapter 2 looked at the different definitions and measures of poverty that is absolute, relative and subjective measures; the impact education has on household poverty and past research on the relationship between education and poverty. It was seen that; there is no one definition or method of measuring poverty and the impact of education is greatly felt in the labour market. These past researches revealed that there is a negative relationship between education and poverty, meaning the higher the level of education the lower the probability of being poor.

Chapter 3 discussed the methodology used in the research. The method used to measure poverty was the Foster-Greer-Thorbecke (FGT) class of decomposable poverty measure and the selected poverty lines; lower bound poverty line of R3864 per capita per annum and upper bound of R7116 per capita per annum, were used to identify poor and non-poor households. The poverty lines and poverty measures helped in measuring to a certain extent what was deemed an acceptable standard of living for South Africa and Limpopo Province. To establish that education has an impact on the poverty status of an individual or household, a probit regression was used due to the binary nature of the dependent variable.

Chapter 4 analysed the statistics on poverty rate, poverty status based on educational attainment of household heads and the rate of educational attainment of household heads. It was found that, poverty is less common among households headed by someone in an urban area and who were males and Whites and also attained more schooling than those in the rural

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area and who were females and Blacks, Coloureds and Indian. These results are similar to the findings of Pauw et al (2005); Armstrong et al (2008); Botha (2010); Lekezwa (2011). Using a probit regression model, the results showed that, in Limpopo Province, poverty is more prevailing and severe for households in which the heads have low or no level of educational attainment, lives in rural area and who are females and Blacks.

5.3   Conclusion

This dissertation has limitations; first, since poverty was measured at household level, specific poverty dynamics within households cannot be observed. Secondly, there is the possibility of endogeneity in the regression model. Endogeneity is an issue because though lack of education may lead to poverty, inadequate financial resources might also elucidate the incapability of obtaining satisfactory educational level in the first case. This issue was not controlled due to the absence of a suitable instrumental variable. The direction of causality between education and poverty is therefore not clear, and the estimated parameter(s) cannot be accepted as entirely conclusive. However, the results are strongly indicative of the evidence that higher education is associated with lower levels of poverty and this is in accordance with past research, for instance, Botha (2010); Ijaiya and Nuhu (2011); Njong (2011) and theory.

The immense shortage of skills in Limpopo Province may be a manifestation of the generally low educational attainment level in the province. By shifting the focus to better educational quality and the development of more skills, this will greatly improve an individual's skills thus giving him/her higher chances in the labour market. Although, substantial amount of money is allocated by the South African government towards education, nevertheless, this is less likely to have improved the quality of the educational system in South Africa in general and the Limpopo Province in particular (Van der Berg, 2002). This gives room for future research on the relationship between the allocation of resources towards education and the quality of education.

REFERENCES

Abdulahi, B. A. (2008). Education and rural development. *Pakistan Journal of Social Sciences*, 5(7), 655-662.

Alcock, P. (1993). *Understanding poverty*. London: Macmillan Press.

Aliber, M. (2001). *Study of the Incidence and Nature of Chronic Poverty and Development Policy in South Africa: An Overview*. Programme for Land and Agrarian Studies. School of Government: University of the Western Cape.

Altman, M. (2007). *Youth labour market challenges in South Africa*. Pretoria: Human Sciences Research Council.

Appleton, S. (2001). *Education, Incomes and Poverty in Uganda in the 1990s*. Center for Research in Economic Development and International Trade. University of Nottingham. Mimeo.

Armstrong, P. (2009). *The impact of teacher characteristics on student performance: An analysis using hierarchical linear modelling*. Stellenbosch Economic Working Papers: 07/09. Stellenbosch: University of Stellenbosch.

Armstrong, P., Lekezwa, B. and Siebrits, F. K. (2008). *Poverty in South Africa: A profile based on a recent household survey*. Stellenbosch Economic Working Papers 04/08. Stellenbosch: University of Stellenbosch.

Bhorat, H. and McCord, A. (2003). Employment and labour market trends in South Africa. In *Human Resources Development Review* (ed.). Cape Town: HSRC Press.

Bhorat, H., Poswell, L. and Naidoo, P. (2004). *Africa, dimension of poverty in post - apartheid South Africa 1996–2001*. Cape Town: Development Policy Research Unit, University of Cape Town.

Bloom, D., Canning, D. and Chan, K. (2005). Higher Education and Economic Development in Africa. Washington Dc: World Bank.

Bonal, X. (2007). On global absences: reflections on the failings in the education and poverty relationship in Latin America. *International Journal of Educational Development*, 27: 86-100.

Borjas, G. (2009). *Labour Economics*. 5th edition. New York: McGraw-Hill Companies, Inc.

Botha, F. (2010). The impact of educational attainment on household poverty in South Africa. *Acta Academia*, 42 (4): 122 - 147.

Card, D. (1999). The causal effect of education on earnings. In Ashenfelter. O. and Card, D. (ed), *Handbook of Labor Economics*, 3A: 1801 – 1860. Amsterdam: Elsevier

Clotfelter, T., Ladd, F. and Vigdor, L. (2007). *How and why do teacher credentials matter for student achievement?* National Bureau of Economic Research Working Paper 12828. Cambridge.

Conrad, C. and Pratt, A. (1985). Designing for Quality. *Journal of Higher Education*, 56(6): 601-622.

Coudouel, A., Hentschel, J. S. and Wodon, Q. T. (2004). Poverty measurement and analysis. *Core Techniques and Cross-Cutting Issues*, 1:27–74. Washington DC: World Bank

Dahlin, B. G. (2005). *The Impact of Education on Economic Growth: Theory, Findings and Policy Implications*. Working Paper, Duke University.

De Vos, K. and Garner, T. I. (1991). An evaluation of subjective poverty definitions: Comparing Results from the U.S. and the Netherlands. *Review of Income and Wealth Series*, 37(3): 267-285.

Deaton, A. and Muellbabauer, J. (1980). An almost ideal demand system. *The American Economic Review*, 70(3): 312-26.

Department of Basic Education (2012). Quality education for rural schools in South Africa – challenges and solutions. *South Africa Rural Educator*, 1: 9 – 12

Ferrer-I-Carbonell, A. and Van Praag, B.M.S. (2001). Poverty in Russia. *Journal of Happiness Studies*. 2: 147-172.

Ferrer-I-Carbonell, A. and Van Praag, B.M.S. (2005). *A multi-dimensional approach to subjective poverty*. Paper presented at the: International Conference on The Many Dimensions of Poverty, Brasilia. 29 - 31 August

Flores-Lagunes, A. and Light, A. (2007). Interpreting Sheepskin Effects in the Returns to Education.

Foster, J., Greer, J. and Thorbecke, J. (1984). A class of decomposable poverty measures. *Econometrica*, 52(3): 761-6.

Ganguli, I., Hausmann, R. and Viarengo, M. (2011). *Closing the Gender Gap in Education: Does it foretell the Closing of the Employment, Marriage and Motherhood Gaps?* Centre for International Development Working Paper, 220: Harvard University.

Gordon, E. (1995). Toward an Equitable System of Educational Assessment. *Journal of Negro Education*, 64(3): 360-372.

Govender, P., Kambabaran, N., Patchchett, N., Ruddle, A., Torr, G. and Van Zyl, N. (2007). Poverty and inequality in South Africa and the world. *South African Actuarial Journal*, 7: 117-60.

Gujarati, D. (2003). *Basic Econometrics*. 4th edition. New York: McGraw Hill. University of Stellenbosch.

Gumede, V. (2008). *Poverty and "second economy" in Southern Africa: an attempt to clarify applicable concepts and quantify extent of relevant challenges.* Development Policy Research Unit Working Paper, 8(133), Available [Online]: http://www.commerce.uct.ac.za/dpru/

Gustafsson, M. (2011). *The when and how of leaving school: The policy implications of new evidence on secondary schooling in South Africa.* Stellenbosch Economic Working Papers: 09/11. Stellenbosch: University of Stellenbosch.

Hanushek, E. (1996). Measuring Investment in Education. *The Journal of Economic Perspectives*, 10(4): 9-30.

Haughton, J. and Khandker, S. (2009). *Handbook on Poverty and Inequality.* Washington: The World Bank.

Hill, J. L. (2008). *The Ambiguous Effects of Undergraduate Debt: Extending the Human Capital Model of Graduate School Enrollment..* North Carolina State University (Edd Thesis).

Hoogeveen, J. G. and Özler, B. (2004). *Not Separate, Not Equal: Poverty and Inequality in Post-Apartheid South Africa.* Washington, DC: World Bank.

Hoogeveen, J. G. and Özler, B. (2006). Poverty and inequality in post-apartheid South Africa:1995 – 2000. In Bhorat, H. and Kanbur, R. (ed.), *Poverty and Policy in Post-Apartheid South Africa*. Cape Town: Human Sciences Research Council: 59-94.

Human Development Report (1997). *Poverty in the human development perspective: concept and measurement.* Available [Online]: http://hdr.undp.org/sites/default/files/reports/258/hdr_1997_en_complete_nostats.pdf.

Ijaiya, G. and Nuhu, M. (2011). Low educational attainment and the incidence of poverty in Ilorin Metropolis, Nigeria. *International Review of Social Sciences and Humanities*, 2(1): 81 – 90.

Jansen, A., Moses, M., Mujuta, S. C. and Yu, D. (2013). *Multifaceted poverty: absolute, relative and subjective poverty in South Africa*. Stellenbosch University Working Paper, 05.

Johnson, D. (1996). Poverty lines and the measurement of poverty. *Australian Economic Review*, 29(1): 110-126.

Kaplan, M. and Makoka, D. (2005). *Poverty and vulnerability - an interdisciplinary Approach*. Term Paper, Unpublished. Available [Online]: http://mpra.ub.uni-muenchen.de/6964/.

Kingdon, G. and Knight, J. (2006). Subjective well-being poverty versus income poverty and capabilities poverty? *Journal of Development Studies*, 42(7): 1199 – 1224.

Kingdon, G. and Knight, J. (2007). Community, comparisons and subjective well-being in a divided society. *Journal of Economic Behaviour and Organisation*, 64: 69 – 90.

Kjelland, J. (2008). Economic returns to higher education: signaling V_S human capital theory; an analysis of competing theories. *The Park Place Economist*, 16(1): 70 – 77.

Klasen S. (1997). Poverty, inequality and deprivation in South Africa: an analysis of the 1993 Southern Africa Labour and Development Research Unit survey. *Social Indicators Research*, 4(1): 51-94.

Kongolo, M. (2009). Women in Poverty: Experience from Limpopo Province, South Africa. *An International Multi-Disciplinary Journal*, 3(1): 246 – 258.

Kyei, K. A. (2012). Teenage fertility in Vhembe District in Limpopo Province, how high is that? *Journal of Emerging Trends in Economics and Management Sciences*, 3 (2): 134-140.

Lam, D., Leibbrandt, M. and Mlatsheni, C. (2008). *Education and Youth Unemployment in South Africa Labour*. Southern Africa Labour and Development Research Unit Working Paper No. 22. Cape Town: University of Cape Town.

Lanjouw, J. O. (2001). *Demystifying Poverty Lines*. United Nation Development Programme

Lanjouw, P. and Ravallion, M. (1994). Poverty and household size. *Policy Research Working Paper*, 1332: 1 – 30.

Leibbrandt, M., Lam, D., Branson, N. and Garlick, J. (2012). *Education and Inequality: The South African Case*. In: Southern Africa Labour and Development Research Unit Working Papers, 75.

Lekezwa, B. I. (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. University of Stellenbosch (Dissertation – Master's Degree).

Levinsohn, J. (2008). *Two policies to alleviate unemployment in South Africa*. Centre for International Development Working Paper, 166: Harvard University.

Limpopo Provincial Treasury (2012). *Socio Economic Review*. Available [Online]: http://policyresearch.limpopo.gov.za/bitstream/handle/123456789/939/socio%20ec onomic%20review%202012.pdf?sequence=2.

Lipton, M. (1997). Editorial: Poverty – Are the Holes in the Consensus? *World Development*, 25(7): 1003-1006.

Louw, M., Van Der Berg, S. and Yu, D. (2006). *Educational attainment and intergenerational social mobility in South Africa*. Stellenbosch Economic Working Papers: 09/06. Stellenbosch: University of Stellenbosch.

Macerinskiene, I. and Vaiksnoraite, B. (2006). The role of higher education to economic development. *Vadyba / Management*, 2(11): 82-90

Macfarlane, D. (2005). Treat rural schools as special case, report urges. *Mail and Guardian*, 2: 4.

May, J., Woolard, I and Klasen, S. (2000). The nature and measurement of poverty. In May, J. (eds). *Poverty and inequality in South Africa: Meeting the challenge*. Cape Town.

Mbuli, B. N. (2008). *Poverty Reduction Strategies in South*. University of South Africa (Dissertation – Master's Degree).

Michaelowa, K. (2000). *Returns to Education in Low Income Countries: Evidence for Africa*. Avalaible [Online]: http://www.hwwa.de/Projects/Res_Programmes/RP/Development_Processes/VfS_ EL_2000_Rev2.pdf

Mokgotho, R. F. (2010). *Problems affecting the sustainability of income –generating project at Hlatlolang ABET centre*. Polokwane: University of Limpopo (Dissertation – Master's Degree).

Moses, E. (2011). *Quality of education and the labour market: A conceptual and literature overview*. Stellenbosch Economic Working Papers: 07/11. Stellenbosch: University of Stellenbosch.

Mullis, I. V. S., Martin, M. O., Gonzalez, E. J. and Chrostowski, S. J. (2004). *TIMSS 2003 International Mathematics Report: Findings from IEA's Trends in International*

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Mathematics and Science Study at the Fourth and Eighth Grade. Chestnut Hill, MA: Boston College.

Mullis, I. V. S., Martin, M. O., Kennedy, A. M. and Foy, P. (2007). *PIRLS 2006 international report: IEA's progress in international reading literacy study in primary schools in 40 countries*. Chestnut Hill, MA: Boston College.

Naeem, T. (2013). Whither the public university: funding constraints. *International Journal Technology, Policy and management*, 13(4): 396 – 408).

Navaratnam, K. K. (1986). *Role of education in rural development. A key factor for developing countries*. Virginia, USA: Centre for Volunteer Development.

Njong, A. M. (2010). The effects of educational attainment on poverty reduction in Cameroon. *Journal of Education Administration and Policy Studies*, 2(1): 1-8.

Orazem, P., Glewwe, P. and Patrnos, H (2007). *The benefits and costs of alternative strategies to improve educational outcomes*. Working Paper, 07028. Department of Economics, Iowa State University.

Oxaal, Z. (1997). Education and poverty a gender analysis. *Bridge Development Gender*, 70: 8 – 21.

Page, M. E. (2010). Signalling in the Labour Market. In Brewer, J. D and McEwan, P. J. (ed) *Economics of Education*.

Palmer, R., Wedgwood, R., Hayman, R., King, K. and Thin, K. (2007). Educating out of poverty? A Synthesis Report on Ghana, India, Kenya, Rwanda, Tanzania and South Africa. *Researching the Issues*, 70: 5 – 102.

Patel, L. and Wilson, T. (2003). A perspective on the transformation of social welfare. *The Social Work Practitioner-Researcher*, 15(3): 219-232.

Pauw, K., Punt, C., Mohube, E., Gilimani, B., Rantho, L. and Leaver, R. (2003). Measures of poverty and inequality, a reference paper. *PROVIDE Technical Paper*, 4: 1-21.

Pauw, K., Punt, C. and Schoor, M. (2005). A profile of KwaZulu-Natal: Demographics, poverty, inequality and unemployment. *PROVIDE Project Background Paper*, 1(5): 1-15.

Pauw, K., Bhorat, H., Goga, S., Ncube, L. and Van Der Westhuizen, C. (2006). *Graduate unemployment in the context of skills shortages, education and training: Findings from a firm survey*. Development Policy Research Unit, Working Paper 06/115 University of Cape Town.

Perlman, R. (1976). *The Economics of Poverty*. New York: McGraw-Hill Book Company.

Perret, S. (2004). *Matching policies on rural development and local governance in South Africa: recent history, principles, and current challenges*. GTZ workshop on Local Governance and Rural Development. University of Pretoria.

Posel, D. and Casale, D. (2011). Relative standing and subjective well-being in South Africa: The role of perceptions, expectations and income mobility. *Social Indicators Research*, 104(2): 195-223.

Posel, D. and Rogan, M. (2012). Gendered trends in poverty in post-apartheid period: 1997-2006. *Development Southern Africa*, 29(1): 97-113.

Raffo, C., Dyson, A., Gunter, H., Hall, D., Jones, L. and Kalambouka, A. (2009). Education and poverty: mapping the terrain and making the links to educational policy. *International Journal of Inclusive Education*, 13(4): 341-358.

Ravallion, M. (1992). *Poverty comparisons: A guide to concepts and methods*. (Living Standards Measurement Study Working Paper 88.) Washington DC: World Bank.

Ravallion, M. (1994). *Poverty comparisons*. Harwood Academic Publishers.

Ravallion, M. (1998). *Poverty Lines in Theory and Practise*. Living Standards Measurement Study Working paper, 133. Washington D.C: World Bank.

Rosen, S. (1977). Human Capital: A Survey of Empirical Research, *Research in Labour Economics*, 1: 3 – 39.

Sahlberg, P. (2006). Education reform for raising economic competitiveness. *Journal of Educational Change*, 7(4): 259 – 287.

Schiller, B. R. (2008). *The Economics of Poverty and Discrimination*. 10th ed. New Jersey: Pearson Prentice Hall.

Schultz, T. P. (1999). Health and Schooling Investments in Africa. *Journal of Economic Perspectives*, 13(3): 67-88

Schuster, J. (2011). The same education for all? The South African school system 17 years after the end of apartheid. *Kas International Reports*, 7: 40 – 56.

Sen, A. K. (1985). *Commodities and Capabilities*. Amsterdam: North-Holland.

Sen, A. K. (1993). Capability and Well-Being. In Nussbaum, M.C. and Sen, A.K. (ed), *The Quality of Life*. Oxford: Clarendon Press.

Sen, A. K. (1997). *On Economic Inequality*. 2nd Edition. Oxford: Clarendon Press.

Sen, A. K. (1999). *Development as Freedom (DAF)*. Oxford: Oxford University Press.

Smith, M. (2011). *Connecting youth South Africans to opportunity. Literature review and strategy.* Available [Online]: http://www.dgmt.co.za/files/2011/05/Literature-Review-strategy.pdf

South African National Report Development (2008). *South African National Report on the Development and State of the Art of Adult Learning and Education.* Department of Education.

Statistic South Africa. (2007). *A National Poverty Line for South Africa.* Pretoria: Statistics South Africa.

Statistics South Africa (2007b). *A discussion note: Constructing comparable household survey data for the analysis of poverty in South Africa (1995–2000).* Pretoria: Statistics South Africa.

Statistics South Africa (2008). *Measuring poverty in South Africa.* Methodololical report in South Africa.

Statistics South Africa (2012). *Subjective poverty in South Africa: Findings of the Living Conditions Survey 2008/2009.* Pretoria: Statistics South Africa.

Tarababini A. (2010). Education and poverty in the global development agenda: emergence, evolution and consolidation. *International Journal of Educational Development*, 30: 204-12.

Taylor, N., Muller, J. and Vinjevold, P. (2003). *Getting Schools Working.* Cape Town: Pearson Education.

Taylor, S., Van der Berg, S., Reddy, V. and Van Rensburg, D. (2009). *How well does grade 8 performance predict Matric performance? Implications for social mobility.* Paper presented at the Economics Society of South Africa Conference, Port Elizabeth, September, 2009.

Thomson, A. (2008). *Exploring the relationship between higher education and development: A review and report.* Guerrand Hermes Foundation for Peace. Available [Online]: http://www.ghfp.org/Portals/0/documents/Thomson_HEI_Role_Dev.pdf.

Tilak, J. B. G. (2002). Education and poverty. *Journal of Human Development*, 3(2): 191-207.

Todaro, M. P. (1977). *Economics for a developing world: an introduction to principles, problems and policies for development.* London: Longman Press.

Todaro, M. P. and Smith, S. C. (2009). *Economic Development.* Tenth Edition. Harlow: Addison-Wesley.

Tosterud, R. (1996). Rural Entrepreneurship: Measuring the magnitude of the challenge. *Indicator South Africa*, 13 (2): 35-39.

Tshitangoni, M., Okorie, A. and Francis, J. (2010). Assessment of challenges facing poverty alleviation projects in Vhembe District of Limpopo Province in South Africa. *Scientific Research and Essays*, 5(17): 2375-2383.

UNESCO (2002). *Education for rural development in Asia: Experiences and policy lessons.* Available [Online]: http://www.unesco.org/iiep.

UNESCO (2009). *Overcoming inequality: why governance matters.* Paris and Oxford: United Nations Educational Scientific and Cultural Organization (UNESCO) and Oxford University Press.

United Nations (2010). *Analysing and Measuring Social Inclusion in a Global Context.* DESA 325. New York: Department of Economic and Social Affairs.

Van der Berg, S. (2002). *Education, poverty and inequality in South Africa.* Unpublished presentation at the Centre for the Study of African Economies on Economic growth and poverty in Africa, Oxford

Van der Berg, S. (2007). Apartheid's enduring legacy: inequalities in education. *Journal of African Economies*, 16(5): 849–880.

Van der Berg, S. (2008). How effective are poor schools? Poverty and educational outcomes in South Africa. *Studies in Educational Evaluation*, 34(3):145–154.

Van der Berg, S., Burger, C., Burger, R., de Vos, M., Du Rand, G., Gustafsson, M., Shepherd, D., Spaull, N., Taylor, S., van Broekhuizen, H. and von Fintel, D. (2011). *Low quality education as a poverty trap.* Stellenbosch: University of Stellenbosch, Department of Economics.

Veriava, F. (2013). *The 2012 Limpopo textbook crisis.* Available [Online]: http://www.section27.org.za/wp-content/uploads/2013/10/The-2012-Limpopo-Textbook-Crisis1.pdf.

Von Kotze, A. (2007). *Negotiating processes of educating, learning and livelihoods.* Paper presented at the December 2007 RWL5 Conference, Cape Town.

Walters, S. (2008). *Non-formal education and training opportunities for youth living in the rural areas of South Africa.* Conference paper, ADEA Bienale: Beyond Primary Education: Challenges and Approaches to Expanding Learning Opportunities in Africa.

Weber, B., Marre, A., Fisher, M., Gibbs, R. and Cromartie, J. (2007). Education's effect on poverty: the role of migration. *Review of Agricultural Economics*, 29(3): 437-45.

Weiss, A. (1995). Human Capital vs. Signalling Explanations of Wages. *The Journal of Economic Perspectives*, 9(4): 133-154.

Woolard, I (2002). *An overview of poverty and inequality in South Africa.* Working Paper prepared for DFID (SA).

Woolard, I. and Leibbrandt, M. (1999). Measuring poverty in South Africa. In Bhorat, H., Leibbrandt, M., Maziya, M., Van der Berg, S. and Woolard. I. (ed), *Fighting poverty: labour markets and inequality in South Africa.* Lansdowne: UCT Press.

Woolard, I. and Leibbbbrandt, M. (2001). Measuring poverty in South Africa. Bhorat et al (eds) 2001: 41-73.

Woolard, I. and Leibbrandt, M. (2006). *Towards a poverty Line for South Africa: Background note.* Cape Town: Southern Africa Labour and Development Research Unit, University of Cape Town.

World Bank (2001). *World Development Report 2000/2001: Attacking Poverty.* Washington, DC: World Bank.

World Bank (2012). *World Development Indicators.* Available [Online]: http://data.worldbank.org/sites/default/files/wdi-2012-ebook.pdf.

World Bank (2013). *World Development indicators.* Available [Online]: http://databank.worldbank.org/data/download/WDI-2013-ebook.pdf

Yu, D. (2010). *Poverty and inequality trends in South Africa using different survey data.* Stellenbosch Economic Working Papers, 4.
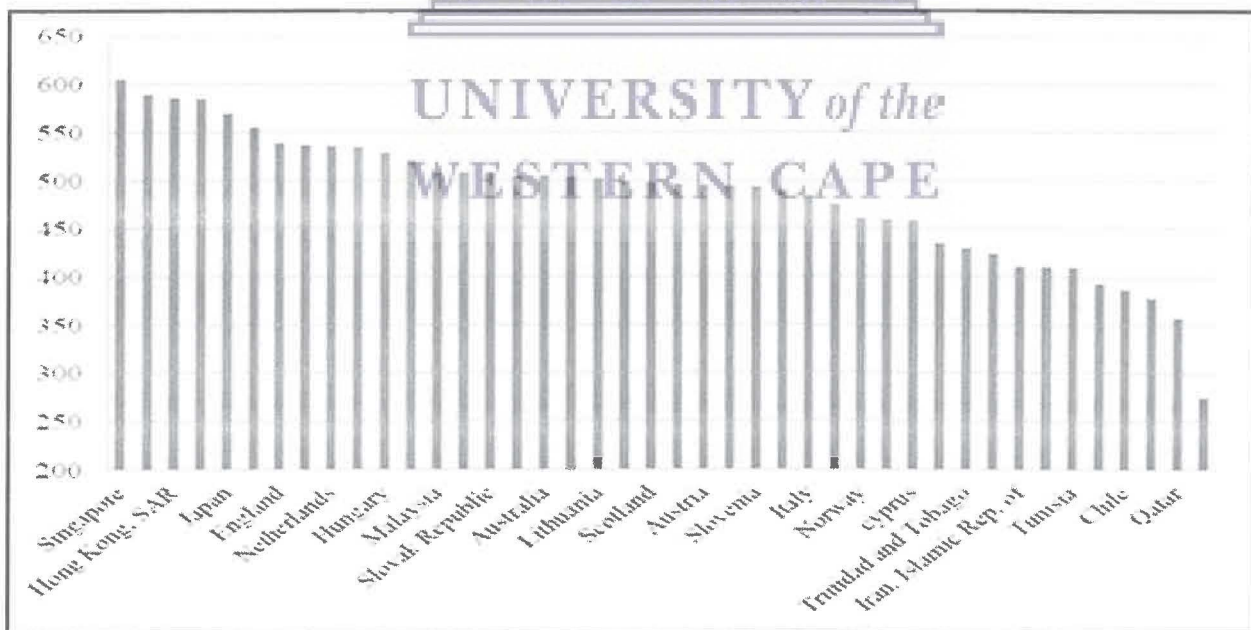
APPENDICES

**Figure A. 1: TIMSS 2003 average pupil Grade 8 Science score by participating country**
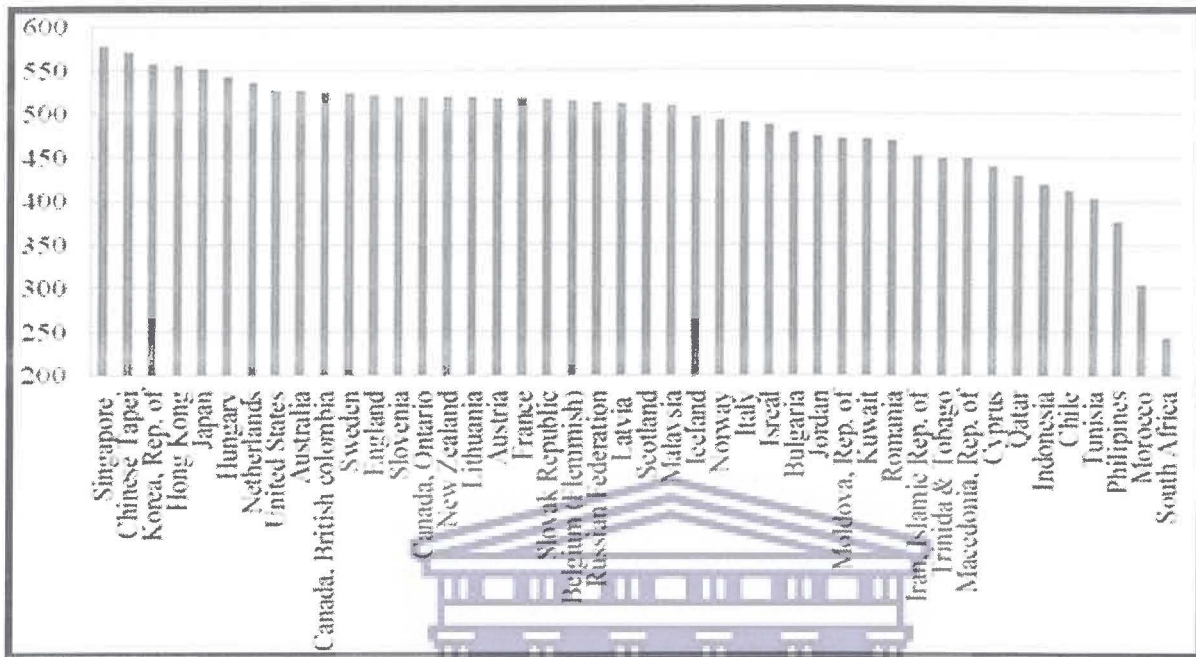
Source: Mullis, Martin, Gonzalez, Chrostowski (2004: 44-46)

Figure A. 2: TIMSS 2003 average pupil Grade 8 Mathematics score by participating country

Source: Mullis, Martin, Gonzalez, Chrostowski (2004: 42-44)

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Figure A. 3: PIRLS 2006 average pupil Grade 4 reading score by participating country
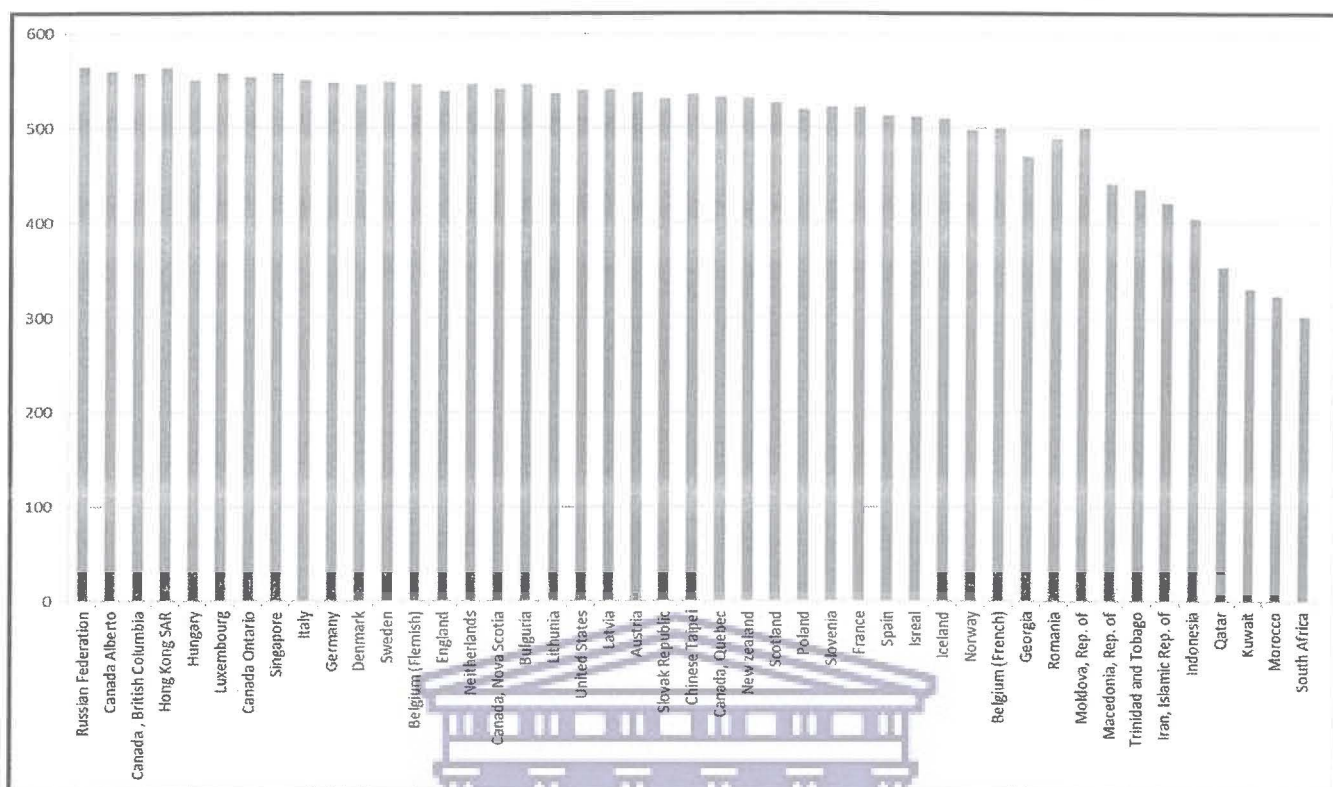
Source: Mullis, Martin, Kennedy, Foy (2007: 44 - 49)

Table A. 1: Mean Scores of Pupils on SACMEQ II Grade 6 Reading and Mathematics Tests by Country

Reading		Mathematics	
Seychelles	582.0	Mauritius	584.6
Kenya	546.5	Kenya	563.3
Tanzania	545.9	Seychelles	554.3
Mauritius	536.4	Mozambique	530.0
Swaziland	529.6	Tanzania	522.4
Botswana	521.1	Swaziland	516.5
Mozambique	516.7	Botswana	512.9
South Africa	**493.3**	Uganda	506.3
Uganda	482.4	**South Africa**	**486.3**
Zanzibar	478.2	Zanzibar	478.1
Lesotho	451.2	Lesotho	447.2
Namibia	448.8	Zambia	435.2
Zambia	440.1	Malawi	432.9
Malawi	428.9	Namibia	430.9
SACMEQ Average	500	SACMEQ Average	500

Source: Servaas Van der Berg (2007: 855)

Table A. 2: Trend in poverty rate and share by area type, race and gender in Limpopo Province in percentages

	1995		2000		2005		2010	
	Rate	Share	Rate	Share	Rate	Share	Rate	Share
Urban	28.8	4.8	41.8	7.5	34.4	6.4	26	5.4
Rural	60.1	95.2	81.3	92.5	67.8	93.6	64.3	94.6
Black	58.6	99.5	77.3	99.8	65.6	100	60.7	99.9
Coloured	51.4	0.2	54.3	0	0	0	52.4	0.3
Indian	0	0	32.3	0	0	0	21.6	0.1
White	6.3	0.3	1.4	0	0	0	1.6	0.0
Male	50	55	65.8	40.3	50.8	36	49.5	38.9
Female	69	45	84.8	59.6	75	64	68.5	61.1
Total								

Source: Researcher's own calculations using IES 1995, 2000 and 2005/06

Table A. 3: Trend in educational attainment by area type in percentages in South Africa

Household Heads	1995		2000		2005		2010	
Educational Attainment Category	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
None	10.4	32.7	10.3	34.9	9.6	32.1	6.6	24.2
Primary	14.7	26.7	18.2	30.4	16.8	29.9	15.7	30.4
Secondary	39.8	27.0	40.8	26.8	42.7	29.1	42.7	33.3
Matric	17.1	4.4	15.2	4.0	18.2	5.7	18.0	6.7
Matric + Certificate/diploma	6.9	2.6	6.4	1.7	7.3	2.1	8.8	3.1
Degree	4.9	0.9	6.7	1.0	5.1	0.9	7.5	1.6
Total	100	100	100	100	100	100	100	100

Source: Researcher's own calculations using IES 1995, 2000, 2005 and 2010