



# **The relationship between income inequality, economic growth and poverty in South Africa**

**M Ramudzuli**

 **orcid.org 0000-0002-6979-0667**

Dissertation submitted in partial fulfilment of the  
requirements for the degree  
*Master of Commerce in Economics*  
at the North-West University

Supervisor: Mr JJ de Jongh

Co-supervisor: Prof DF Meyer

Graduation ceremony: April 2019

Student number: 25822543

## **DEDICATION**

---

This dissertation is dedicated to my late grandmother Ms. SHONISANI SALPHINAH NETSIANDA (19/09/2017), my mother Mrs. RENDANI RAMUDZULI and my uncle Mr. TSHIFHIWA SINGO, who emphasized the importance of education from a very early stage. I am grateful to you and I hope I made you proud.

MUDUHULU WA VHAKOLOLO....Aaa!!!

## DECLARATION

---

I, Mpho Ramudzuli, declare that:

***The relationship between income inequality, economic growth and poverty in South Africa***

...is my own work with exception to sources and quotations that are recognised by means of complete references. All sources obtained and quoted have been precisely recorded and acknowledged by means of thorough reference, and I have not previously submitted this dissertation to any other institution of higher learning to obtain any form of qualification or degree.

Signature: \_\_\_\_\_

Date: 26 November 2018

## ACKNOWLEDGEMENTS

---

First and foremost, I thank the Almighty God for providing me with knowledge, strength and ability to pursue this graduate degree. Jeremiah 29:11 gave me strength to keep going.

- My deepest appreciation to my Supervisor, Mr J.J de Jongh for his support, direction and encouragement throughout my masters program. I am highly indebted and thankful to him for his constructive criticism and the enormous time he dedicated to the success of this dissertation and my entire graduate degree.
- I will also like to thank my Co-Supervisor, Prof Daniel Meyer for his constructive criticism and suggestions to make this dissertation a success.
- My profound thanks to the North-West University (Vaal triangle Campus) for the Teaching Assistant bursary.
- To the Singo, Netsianda, Makumbane, Ramudzuli, Netshifhefhe families, thank you for the love and Support.
- To my mother, brother, uncle and grandparents, thank you for being my pillars of strength, and for this, I will always be grateful and humbled. Your prayers knocked on heaven's door and the Almighty father God got me through this degree.
- Linda Scott, for the exceptional final language and grammatical editing.
- To the Kabini's and the soon to be Dr Chipeta, I appreciate the support, encouragement and for simply being my second family away from home.
- Last, but not least, to the ones I love, the ones who never left me when nights seemed a little longer with no direction, to the ones who remembered to say that everything will be okay. THANK YOU!!!

## ABSTRACT

---

Since gaining political liberation, the South African government has developed growth-focused policies, with the aim of reducing income inequality and poverty alleviation. However, given all that has been achieved, South Africa still remains one of the highest in the world in terms of income inequality. The Inequality is demonstrated through a two-tiered educational failing system; lack of access to natural resources; a dual health system; and other socio-economic dimensions. This increasing income inequality is an issue of concern to social scientists and policy makers.

The purpose of this study is to analyse the relationship between income inequality, economic growth and poverty in South Africa, which also serves as the primary objective of the study. Focusing on what has been achieved but identifying the gaps that remain, causality, as well as the short and long-run relationship between the aforementioned variables. In addition, policy options, consequences and recommendations are suggested. This study employed quantitative research to analyse the relations between the variables. Making use of secondary data from **IHS** Global insight 2018 database for the years ranging from 1997 to 2017. Data included economic growth (GDP), income inequality (GINIco), poverty (PVT) and the human development index (HDI) as a control variable.

The statistical tests and econometric models used to analyse the data included trend analysis, descriptive statistics, a correlation (multicollinearity) test first and second generation unit root tests. The panel mean group (MG) model, based on the panel Autoregressive Distributed Lag (ARDL) approach, was employed to test the cointegration among variables, and the error correction model (ECM) was used to determine the adjustment of the system to the equilibrium. Due to the presence of cross-sectional dependency, the common corrected effects model (CCEMG) was employed as an advanced technique of the MG estimator.

The findings of the study revealed that in the long-run, GDP growth and poverty have a negative relationship whilst income inequality and economic growth have a positive relationship. Furthermore, the human development index has a positive relationship

with income inequality and a negative relationship with poverty in the long-run. These results are an indication that since income inequality has a positive effect on growth, by implementing inequality- focused strategies/policies, in the long-run there will be economic growth which in turn impacts poverty alleviation. Literature has indicated that actions on reducing income inequality can be highly complementary to poverty reduction thus improving the standard of living of South Africans.

**Key words:** Economic growth, poverty, income inequality, South Africa, panel-ARDL, cross-section dependence.

## TABLE OF CONTENTS

---

<b>DEDICATION</b>	<b>ii</b>
<b>DECLARATION</b>	<b>iii</b>
<b>ACKNOWLEDGEMENTS</b>	<b>iv</b>
<b>ABSTRACT</b>	<b>v</b>
<b>TABLE OF CONTENTS</b>	<b>vii</b>
<b>LIST OF TABLES</b>	<b>xiii</b>
<b>LIST OF FIGURES</b>	<b>xiv</b>
<b>CHAPTER 1: INTRODUCTION AND BACKGROUND OF THE STUDY</b>	<b>1</b>
1.1 INTRODUCTION	1
1.2 PROBLEM STATEMENT	3
1.3 RESEARCH OBJECTIVES	5
1.3.1 Primary objective	5
1.3.2 Theoretical objectives	5
1.3.3 Empirical objectives	5
1.4 RESEARCH DESIGN AND METHODOLOGY	6
1.4.1 Literature review	6
1.4.2 Data and sample period	6
1.4.3 Statistical analysis	6
1.5 SIGNIFICANCE OF THE STUDY	7
1.6 ETHICAL CONSIDERATIONS	8
1.7 CHAPTER CLASSIFICATION	8
<b>CHAPTER 2: THEORETICAL AND EMPIRICAL OVERVIEW ECONOMIC GROWTH, POVERTY AND INCOME INEQUALITY</b>	<b>10</b>
2.1 INTRODUCTION	10
2.2 ECONOMIC GROWTH	11

2.2.1	Definitions and concepts .....	11
2.2.2	Determinants of economic growth.....	12
<b>2.3</b>	<b>POVERTY.....</b>	<b>13</b>
2.3.1	Definitions and concepts .....	13
2.3.2	Poverty lines .....	14
2.3.3	Poverty indexes .....	17
<b>2.4</b>	<b>HUMAN DEVELOPMENT INDEX.....</b>	<b>17</b>
<b>2.5</b>	<b>INCOME INEQUALITY .....</b>	<b>18</b>
2.5.1	Definitions and concepts .....	18
2.5.2	Income inequality measures .....	19
2.5.2.1	Gini coefficient index and Lorenz curve .....	19
2.5.2.2	Kuznets quintile ratio.....	20
<b>2.6</b>	<b>THEORIES OF ECONOMIC GROWTH, POVERTY AND INEQUALITY .....</b>	<b>20</b>
2.6.1	Economic growth theories.....	21
2.6.1.1	Solow's neoclassical growth theory .....	21
2.6.1.2	Endogenous growth theory .....	22
2.6.2	Poverty theories .....	23
2.6.3	Income inequality theories .....	25
2.6.3.1	The Kuznets hypothesis.....	25
2.6.3.2	Theory of stratification.....	26
<b>2.7</b>	<b>RELATIONSHIP BETWEEN ECONOMIC GROWTH, POVERTY AND INCOME INEQUALITY .....</b>	<b>27</b>
2.7.1	Bourguignon triangle.....	27
2.7.2	Mechanical relationships.....	30
<b>2.8</b>	<b>REVIEW OF EMPIRICAL LITERATURE.....</b>	<b>33</b>
2.8.1	Developed countries .....	34

2.8.2	Developing countries.....	37
2.8.3	African and Sub-Saharan Africa countries .....	42
<b>2.9</b>	<b>SUMMARY .....</b>	<b>43</b>
<b>CHAPTER 3: TRENDS AND POLICY ANALYSIS.....</b>		<b>45</b>
<b>3.1</b>	<b>INTRODUCTION.....</b>	<b>45</b>
<b>3.2</b>	<b>SOUTH AFRICA'S GENERAL ECONOMIC CLIMATE POST APARTHEID .....</b>	<b>45</b>
<b>3.3</b>	<b>TREND ANALYSIS OF SOUTH AFRICA'S SELECTED MACROECONOMIC VARIABLES .....</b>	<b>50</b>
3.3.1	Income inequality trends .....	50
3.3.2	Poverty trends.....	53
3.3.3	GDP growth trends.....	56
<b>3.4</b>	<b>REVIEW OF THE RURAL-URBAN MIGRATION IN SOUTH AFRICA .....</b>	<b>60</b>
3.4.1	Reasons for urban movement in South Africa.....	62
3.4.1.1	Employment opportunities.....	62
3.4.1.2	Industry difference in terms of economic sectors .....	63
3.4.1.3	Educational and health services .....	64
3.4.1.4	Wage distinction.....	65
<b>3.5</b>	<b>BRIEF OVERVIEW OF THE NINE PROVINCES .....</b>	<b>65</b>
3.5.1	Insight in South Africa's individual provinces .....	65
3.5.2	Provincial poverty levels.....	76
<b>3.6</b>	<b>REVIEW OF SOUTH AFRICA'S GROWTH-POVERTY-INEQUALITY POLICIES .....</b>	<b>79</b>
3.6.1	Reconstruction and Development Programme (RDP) .....	79
3.6.2	Growth, Employment and Redistribution (GEAR) .....	80

3.6.3	Accelerated and Shared Growth Initiative for South Africa (ASGISA)	81
3.6.4	New Growth Path (NGP)	81
3.6.5	National Development Plan (NDP)	82
3.6.6	ANC policy on wage inequality	83
<b>3.7</b>	<b>RELATED INTERNATIONAL GROWTH-POVERTY-INEQUALITY POLICIES</b>	<b>84</b>
3.7.1	Integrated Rural Development Program (IRDP)	84
3.7.2	China's poverty reduction and inclusive growth strategy	85
<b>3.8</b>	<b>SUMMARY</b>	<b>87</b>
<b>CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY</b>		<b>89</b>
<b>4.1</b>	<b>INTRODUCTION</b>	<b>89</b>
<b>4.2</b>	<b>DATA SELECTION, SAMPLE PERIOD AND VARIABLE DESCRIPTION</b>	<b>90</b>
<b>4.3</b>	<b>DESCRIPTIVE STATISTICS</b>	<b>92</b>
<b>4.4</b>	<b>CORRELATION ANALYSIS</b>	<b>93</b>
<b>4.5</b>	<b>FIRST GENERATION PANEL UNIT ROOTS</b>	<b>93</b>
4.5.1	Levin, Lin and Chu (LLC) test	95
4.5.2	Im, Pesaran and Shin (IPS) test	96
4.5.3	The Hadri (2000) Lagrange multiplier (LM) stationarity test	97
<b>4.6</b>	<b>COINTEGRATION TEST</b>	<b>98</b>
<b>4.7</b>	<b>DUMITRESCU-HURLIN PANEL CAUSALITY TEST MODEL</b>	<b>99</b>
<b>4.8</b>	<b>MODEL SPECIFICATION AND ECONOMETRIC MODELLING</b>	<b>99</b>
4.8.1	Panel ARDL modelling	100
4.8.2	Error correction model (ECM)	102
4.8.3	Pooled mean group (PMG) and mean group (MG) estimators	103
4.8.4	The Hausman test	104

<b>4.9</b>	<b>DYNAMIC ANALYSIS WITH CROSS-SECTIONAL DEPENDENCE</b>	<b>105</b>
4.9.1	Test for cross-sectional dependence .....	105
4.9.2	Second generation unit root test .....	105
4.9.3	Pesaran (2003) panel unit with cross-section dependence.....	106
4.9.4	Westerlund (2007) ECM panel cointegration test.....	107
4.9.5	Cross-sectional dependence estimators .....	107
4.9.5.1	Common correlated effects mean group estimator (CCEMG).....	107
4.9.5.2	The augmented mean group estimator (AMG).....	107
<b>4.10</b>	<b>NORMALITY TESTING</b> .....	<b>108</b>
<b>4.11</b>	<b>SUMMARY</b> .....	<b>109</b>
<b>CHAPTER 5: EMPIRICAL ESTIMATION AND DISCUSSION OF RESULTS</b> .....		<b>110</b>
<b>5.1</b>	<b>INTRODUCTION</b> .....	<b>110</b>
<b>5.2</b>	<b>DESCRIPTIVE STATISTICS</b> .....	<b>110</b>
<b>5.3</b>	<b>CORRELATION ANALYSIS</b> .....	<b>117</b>
<b>5.4</b>	<b>PANEL DATA ANALYSIS OF GROUPED PROVINCES</b> .....	<b>118</b>
5.4.1	First generation panel unit root test.....	118
5.4.2	Panel cointegration test.....	120
5.4.3	Panel model selection (AIC).....	121
<b>5.5</b>	<b>PANEL ARDL COINTEGRATION RESULTS</b> .....	<b>121</b>
<b>5.6</b>	<b>DYNAMIC ANALYSIS WITH CROSS-SECTIONAL DEPENDENCE</b>	<b>124</b>
5.6.1	Second generation panel unit root test, cross-sectional dependence and cointegration tests .....	124
5.6.2	ECM panel cointegration tests .....	125
5.6.2	Advanced MG estimators.....	126
5.7	Panel homogeneous causality .....	128

5.8	JARQUE-BERA NORMALITY TEST .....	130
5.8	SUMMARY .....	132
<b>CHAPTER 6: SUMMARY, RECOMMENDATIONS AND CONCLUSION .....</b>		<b>134</b>
6.1	INTRODUCTION .....	134
6.2	SUMMARY OF THE STUDY .....	135
6.3	REALISATION OF OBJECTIVES BY CHAPTER .....	136
6.4	RECOMMENDATIONS.....	141
6.4.1	Better targeting of social programmes .....	141
6.4.2	Prioritising urban and rural housing and tenure programmes .....	141
6.4.3	Addressing regional inequality .....	142
6.4.4	Legislative interventions aimed at reducing inequality .....	142
6.4.5	Developing policy packages.....	142
6.5	LIMITATIONS OF THE STUDY AND FUTURE RESEARCH.....	143
6.5	CONCLUSION .....	144
<b>BIBLIOGRAPHY.....</b>		<b>146</b>
<b>ANNEXURE A: LETTER FROM THE LANGUAGE EDITOR.....</b>		<b>175</b>

## LIST OF TABLES

---

Table 2.1:	Five theories of poverty.....	24
Table 2.2:	Empirical summary of literature on the relationship between income inequality, economic growth and poverty .....	38
Table 3.1:	South Africa's poverty lines.....	53
Table 4.1:	Variable specification .....	91
Table 4.2:	Panel unit root tests .....	94
Table 4.3:	Second generation panel unit root tests.....	106
Table 5.1:	Variable representation .....	110
Table 5.2:	National descriptive statistics .....	111
Table 5.3:	Provincial descriptive statistics (GDP rate) .....	112
Table 5.4:	Provincial descriptive statistics (GINIco) .....	114
Table 5.5:	Provincial Descriptive Statistics (PVT) .....	115
Table 5.6:	Provincial descriptive statistics (HDI) .....	116
Table 5.7:	Correlation analysis.....	117
Table 5.8:	Results of Levin-Lin-Chu and Im-Pesaran-Shin Unit Root Test (p-values) .....	119
Table 5.9:	Fisher (1999) panel cointegration test.....	121
Table 5.10:	Dumitrescu and Hurlin (2012) panel causality tests .....	129
Table 5.11:	Panel ARDL long-run and short-run estimates.....	123
Table 5.12:	Results of Pesaran (2003) cross-sectional ADF and Pesaran (2007) cross-sectional IPS (p-values) .....	125
Table: 5.13:	Common correlated effects (CCEMG) versus augmented mean group (AMG) .....	127

## LIST OF FIGURES

---

Figure 2.1:	Poverty line calculations.....	16
Figure 2.2:	The Human Development Index .....	18
Figure 2.3:	The Lorenz curve .....	20
Figure 2.4:	Solow’s neoclassical growth model.....	21
Figure 2.5:	Endogenous growth model .....	23
Figure 2.6:	The Kuznets curve .....	25
Figure 2.7:	Bourguignon triangle.....	28
Figure 2.8:	Changes in poverty due to economic growth and/or changes in the income distribution .....	31
Figure 3.1:	South Africa’s Gini coefficient trend (1996-2017).....	51
Figure 3.2:	South Africa’s poverty rate trend (1996-2017) .....	55
Figure 3.3:	South Africa’s average annual GDP growth (1997-2017) .....	57
Figure 3.4:	GDP growth trends using recession patterns since 1961.....	58
Figure 3.5:	Economic sector rural-urban gap concentration.....	63
Figure 3.6:	Western Cape province GDP growth, GINI coefficient and HDI trends .....	66
Figure 3.7:	Gauteng province GDP growth, GINI coefficient and HDI trends .....	67
Figure 3.8:	Northern Cape province GDP growth, GINI coefficient and HDI trends .....	69
Figure 3.9:	Free State province GDP growth, GINI coefficient and HDI trends ...	70
Figure 3.10:	Kwazulu-Natal province GDP growth, GINI coefficient and HDI trends .....	71
Figure 3.11:	North-West province GDP growth, GINI coefficient and HDI trends .	72
Figure 3.12:	Eastern Cape province GDP growth, GINI coefficient and HDI trends .....	73
Figure 3.13:	Mpumalanga province GDP growth, GINI coefficient and HDI trends	74

Figure 3.14:	Limpopo province GDP growth, GINI coefficient and HDI trends.....	75
Figure 3.15:	Number of people living below the poverty lines .....	77
Figure 5.12:	Westerlund (2007) ECM panel cointegration tests .....	126
Figure 5.15:	Normality test Model 1 .....	130
Figure 5.16:	Normality test model 2 .....	131
Figure 5.17:	Normality test Model 3 .....	132

## LIST OF ABBREVIATIONS

---

ADF	: Augmented Dickey-Fuller
AFDB	: African Development Bank
AIC	: Akaike Information Criteria
AMG	: Augmented Mean Group estimator
ANC	: African National Congress
ARDL	: Autoregressive Distributed Lag
ASGISA	: Accelerated and shared growth initiative for South Africa
CADF	: Cross sectional Augmented Dickey-Fuller
CCEMG	: Common Correlated Effects Mean Group estimator
CDLM	: Cross Dependence Lagrange Multiplier
CEC	: Crop Estimates Committee
CIPS	: Cross sectional Im-Pesaran-Shin
CPI	: Consumer Price Index
DH	: Dumitrescu and Hurlin (2012)
EAP	: East and pacific
EC	: Eastern Cape Province
ECM	: Error Correction Model
ECT	: Error Correction Term
EEA	: Employment Equity Act
EECA	: Eastern Europe and Central Asia
EU	: European Union
FEM	: Fixed Effects model
FPL	: Food Poverty Line
FS	: Free State province
GDP	: Gross Domestic Product

GIC	:	The Growth Incidence Curve
GINI	:	Gini coefficient
GIP	:	Growth-Inequality-Poverty triangle
GMM	:	Generalized method of moments
GNI	:	Gross National Income
GP	:	Gauteng province
GPR	:	General Poverty Reduction strategy
$H_0$	:	Null hypothesis
$H_1$	:	Alternative hypothesis
HC	:	Homogeneous Causality
HDI	:	Human Development Index
HEC	:	Heterogeneous Causality
HENC	:	Heterogeneous Non-Causality
HIV/AIDs	:	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
HNC	:	Homogeneous Non-Causality hypothesis
ILO	:	International Labour Organisation
IMF	:	International Monetary Fund
IPS	:	Im-Pesaran-Shin
IRDP	:	Integrated Rural Development Program
ITRISA	:	International trade institute of Southern Africa
JB	:	Jarque-Bera
JSE	:	Johannesburg Stock Exchange
K	:	Kurtosis
KPSS	:	Kwiatkowski-Phillips-Schmidt-Shin
KZN	:	Kwazulu-Natal province

L	: Labour force
LAC	: Latin American Countries
Lao PDR	: Lao People's Democratic Republic
LBPL	: Lower Bound Poverty Line
LLC	: Levin-Lin-Chu
LM	: Lagrange Multiplier
LP	: Limpopo province
MEC	: Member of Executive Council
MENA	: Middle East and North Africa
MG	: Mean group
MP	: Mpumalanga province
N	: Monotonic function
NC	: Northern Cape Province
NDP	: National development plan
NGP	: New Growth Path
NPC	: National Planning Commission
NW	: North-West province
OECD	: Organization for Economic Co-Operation and Development
OLS	: Ordinary Least Squares
OPPG	: Operationalizing Pro-Poor Growth
P	: Parameters
PMG	: Pooled mean group
PRS	: Poverty-Reduction-Specific strategy
PURT	: Panel Unit Root Test
PVT	: Poverty
RDP	: Reconstruction and development programme

REM	:	Random Effects model
RMSE	:	Root Mean Squared Error
S	:	Skewness
SA	:	South Africa
SAMPI	:	South African Multidimensional Poverty Index
SAS	:	South Asia
SASSA	:	South Africa Social Security Agency
SETAs	:	Sector Education Training Authorities
SLCC	:	State Level Coordination Committee
SSA	:	Sub-Saharan Africa
STATSSA	:	Statistics South Africa
T	:	Time
TFP	:	Total Factor Productivity
UBPL	:	Upper Bound Poverty Line
UNDP	:	United Nations Development Program
VAR	:	Vector Auto Regression
WC	:	Western Cape Province
Y	:	Level of output
ZAR	:	South African Rand

## CHAPTER 1

### INTRODUCTION AND BACKGROUND OF THE STUDY

---

#### 1.1 INTRODUCTION

South Africa has a long history of racial inequality and a persistent increase of income inequality (Reich, 2017:201). StatsSA (Statistics South Africa), (2017b:191) indicate that at 0.67, SA's (South Africa) Gini coefficient has the most elevated levels internationally and that inequality has worsened since 1994. The Gini coefficient is the measure of income disparities that range from zero to one, with zero indicating an equal society and one indicating an unequal society. In terms of the economic structure and the GDP (gross domestic product) per capita, the World Bank (2017:54) ranks South Africa as an upper-middle income country. SA's socio-economic indicators (infant mortality, education quality or life expectancy) contradict this ranking; they rather reflect that of a lower-middle income country and in some instances, that of a low-income country (StatsSA, 2017a:61).

South Africa's income disparities levels are one of the highest in the world (World Bank, 2017:109). Keeton (2014:26) contradicts this statement, stating that countries like the Seychelles and Namibia have higher Gini coefficients than South Africa. He believes that the measure of inequality (Gini coefficient) is limited and only focuses on income distribution and not wealth distribution. Without considering the value of property, share ownership in the JSE (Johannesburg stock exchange) and asset accumulation, it is impossible to fully comprehend the depth of income disparities in South Africa. The UNDP (United Nations Development Programme), (2013) states that severe economic disparities are often outlined as the cause when inequality is discussed (UNDP, 2013). However, much of the country's income inequality is rooted from the apartheid's effect on different races.

In recent years, South Africa's income inequality has been driven by a skill premium from technological advancement and the dominant poverty traps that limit the unskilled group of the population from getting proper education (Finn, Leibbrandt & Ranchhod, 2016:18). From this perspective, labourers struggle to enter the skilled labour force, and later the middle class (Harmse, 2013:9). Recent studies indicate how high-income disparities can induce debilitating low levels of skill accumulation, which then

consolidates the high levels of disproportionate income (Van der Berg, 2010:7; Keeton, 2014:29; & Dabla-Norris, Kochhar, Suphaphiphat, Ricka & Tsounta, 2015:5). The statement aforementioned is particularly observed when transitioning to tertiary education, StatsSA (2017a:83) stated that despite the high return on accumulated skills, the access to tertiary education remains stagnant. Tregenna and Tsela, (2012:37) stated that, the opportunity costs of sending a child to university and the inability to access credit markets has proven to be a hindrance to low-income families that cannot overcome the skills gap and income inequality amongst households.

There has been an improvement in the poverty levels since the transition in 1994, nevertheless they are still considered high for an upper middle-income country (StatsSA, 2018:20). In previous years, notably between 2012 and 2016, South Africa's business cycle had been spiralling downwards (StatsSA, 2017b:16). This was a result of international fluctuations as well as domestic factors such as an anaemic economic growth, a persistently high unemployment rate, high consumer prices (especially for food and energy), greater household dependency on credit, low commodity prices, low investment levels and policy uncertainty (Akanbi, 2016:184). The economic pressure led to a decline in the financial health of South African households and, in turn, pulled more households down into poverty (Reich, 2017:194).

In South Africa, economic growth does not translate to an improvement in the economic well-being of its population (Bhorat & Van der Westhuizen, 2012:13). Economic growth rates have improved substantially since South Africa's transition in 1994, but the standard of living and the well-being of its people has not improved as expected (Bhorat & Van der Westhuizen, 2010:144). To improve the microeconomic stabilities and growth prospects, South Africa has implemented various policies over the last 20 years. This includes the Accelerated and shared growth initiative for South Africa (ASGISA), the Reconstruction and Development Programme (RDP), the New Growth Path (NGP) and the most recent being the National Development Plan (NDP) (ITRISA (International trade institute of Southern Africa), 2016:328). Despite the implementation of these plans, economic opportunities have not been made available to all members of society (Bhorat & Van der Westhuizen, 2010:306). Therefore, it is necessary for this study to be conducted to better understand better the relationship between income disparities, growth and poverty in a South African context. Not only

can this add to the body of knowledge but can likewise possibly add to the comprehension or part of future policy makers.

## **1.2 PROBLEM STATEMENT**

After South Africa become a democratic country in 1994, racial and income inequality were expected to decrease while economic growth development, and poverty reduction were expected to accelerate. Yet following the apartheid era, the gap between the wealthy and the impoverished has intensified (World Bank, 2018:112). The literacy quality for most black pupils is still not up to par (Finn *et al.*, 2016:24). The legacy of apartheid continues to be the determining factor of life opportunities for many South Africans and in provinces like the Eastern Cape, Kwazulu-Natal and Limpopo; it continues to dominate (Tregenna & Tsela, 2012:49).

The wealthiest 10 percent of the population in South Africa owns more than 90 percent of all wealth and more than 55 percent of the income (StatsSA, 2017a:93). The next 40 percent (the group that is often considered to be the middle class) earn about 30 percent to 35 percent (less than 50 percent generally elsewhere) of all income and the most impoverished 50 percent earn about 10 percent of all income and own little to no measurable wealth (StatsSA, 2017a:94). Additionally, a large pool of the population not only earn low incomes, they have limited access to basic needs such as quality education, health care and high income-inequality (Magruder, 2010:71). This can also be attributed to the high corruption rate of the South African government and the misallocation of resources (Akanbi, 2016:167).

Extreme income inequality leads to economic inefficiency and is characterised by behaviours such as a depressed political engagement and an upsurge in crime rates (Kriegler & Shaw, 2016:251). An increase in income inequality tends to limit the number of people who qualify for loans or other credits (May & Govender, 1998:55). Magruder (2010:68) described South Africa as economically having two worlds, where poor provinces like the Eastern Cape and Limpopo have a Human Development Index (HDI) equivalent to the HDI of countries such as Swaziland or Pakistan. Whereas provinces such as the Western Cape and Gauteng have comfortable HDIs equivalent to that of countries such as Mauritius or the Seychelles. Westaway (2012:119) best describes these rural provinces as places where most people survive on an income

below the poverty line, household income is made up primarily of social grants, while the contribution of employment and agriculture is insignificant. The disadvantaged areas are the homelands, where black people resided during apartheid (Hoogeveen & Ozler, 2006:62), making certain geographic locations dominant markers of poverty (Kriegler, & Shaw, 2016:98).

There is a generalised view that economic growth is essential for implementing poverty reduction measures, in other words “the poor benefit from growth” (Bhorat & Van der Westhuizen, 2008:16; 2012:12). This view is justified and would appear to be simplified when an increase in economic growth is measured effectively by rising per capita income as it results in a decrease in poverty levels due to an increase on economic growth (Bhorat & Van der Westhuizen, 2012:12). Seekings and Nattrass (2005) contradicts this view, stating that the decrease in poverty levels is not guaranteed, it differs from country to country.

Research by Orsetta, De Serres and Ruiz (2014:241) and most recently StatsSA (2018:138) indicate that policies that only focus on stimulating growth or reducing inequalities do not yield the desired results to stimulate SA’s economy. This is partly attributed to the fact that the economy has a very low growth to poverty elasticity, which is all attributed to an extremely high level of income inequality. For a country like South Africa, the theories of economic growth are not as clear and simple as they are interpreted in other developing countries (StatsSA, 2017c:48). Furthermore, whilst it may seem that these relationships are clear, various studies (Kakwani, 1993; Wilkinson & Pickett, 2010:151; Akanbi, 2016:172), indicated that the relation between economic growth and changes in poverty have not been analysed thoroughly. The contradicting views amongst researchers especially in the SA context and the lack of consensus regarding which policy path to take to accelerate poverty reduction increase economic growth and combat the high-income inequality necessitates further inquiries and retrospect. Henceforth, this particular study seeks to add to the body of knowledge regarding this matter.

## **1.3 RESEARCH OBJECTIVES**

### **1.3.1 Primary objective**

The study's primary objective is to analyse the relationship between income inequality, economic growth and poverty in South Africa.

### **1.3.2 Theoretical objectives**

To achieve the primary objective, the following theoretical objectives are pursued:

- To conduct a literature review on concepts relating to poverty, GDP growth and income inequality measures.
- To review theories relating to the relationship between income inequality, poverty and economic growth.
- To conduct a literature review on the relationship between income inequality, economic growth and poverty.
- To review the empirical literature in the form of case studies from previous studies.
- To review the empirical literature on the rural-urban migration in South Africa with a focus on economic growth, poverty, income inequality and the overall implications it has on the economy as a whole.
- To provide a review of South Africa's economic growth, poverty and income inequality policies.

### **1.3.3 Empirical objectives**

The following empirical objectives are formulated:

- To conduct a post-apartheid trend analysis between economic growth, income inequality and poverty in South Africa
- To determine if there exists cointegration and causality between poverty, HDI, income inequality and economic growth in South Africa.
- To determine whether there is a long and/or short-run relationship between poverty, income inequality and economic growth in South Africa.
- To provide recommendations on how to better improve the outlook in South Africa regarding poverty, income inequality and economic growth.

## **1.4 RESEARCH DESIGN AND METHODOLOGY**

The study will comprise of a literature review and an empirical study. It will follow a functionalist theoretical view and is based on a quantitative approach. Secondary data were obtained from the IHS Global Insight (2018) data base. The methodology includes a descriptive analysis of the variables, panel unit root tests, panel causality test as well as a cointegration test. A panel ARDL (Autoregressive Distributed Lag) dynamic model will be employed.

### **1.4.1 Literature review**

The literature review and theoretical background will be accessed using secondary sources such as books, journal articles, newspaper articles and internet sources. These sources provide a theoretical and empirical background to the relationship between income inequality, economic growth and poverty within South Africa's nine provinces.

### **1.4.2 Data and sample period**

The study focuses on the nine provinces in South Africa. It is based on time series annual data ranging from 1997 to 2017, which resulted in 21 observations for each province. The data was pooled in a panel, resulting in 189 observations. This sample period refers to the period after the apartheid era, which was selected based on the availability of data. The study therefore investigates the relationship between income inequality, economic growth and poverty in South Africa. Variables include GDP growth rate representing economic growth, poverty measured using the lower-bound poverty line, Gini coefficient as a measure of income disparities and HDI representing life expectancy, mortality rate and literacy. The data collected are reliable as they are directly obtained from a globally recognised institution.

### **1.4.3 Statistical analysis**

In order to evaluate the set objectives regarding the different variables in this study, an econometric analysis was conducted involving the analysis of descriptive statistics of the set variables, correlation analysis, as well as the short and long-run relationships by means of employing the dynamic panel ARDL model. To test for cointegration, the

Fisher-type Kao (1999) residual-based panel co-integration test statistics was conducted on the basis of capturing the linear interdependencies of the set variables. The Dumitrescu Hurlin (DH) panel causality model, was used to analyse the homogeneous causal relationship and direction of the variables.

## **1.5 SIGNIFICANCE OF THE STUDY**

Tregenna and Tsela (2012:58) state that even though fiscal policy has had some success in poverty alleviation and income inequality reductions in South Africa, the policies progress has become stagnant, especially the fiscal sustainability of such policies. For poverty and income disparities to be meaningfully reduced, SA must generate and implement new policies that will boost economic growth and increase the speed in which labour is absorbed. Therefore, this subject topic is important to be studied, analysed and improved so that it can serve as the basis for future studies on this topic or related topics as SA's income disparities continue to accelerate.

The policies put in place by the government are not producing the desired results to improve the standard of living of South African citizens (StatsSA, 2017b). In fact, over the past 20 years the socio-economic climate has only deteriorated. Henceforth, this study seeks to add value in four ways. First, it adds value by embracing a policy focused study due to the missing bulk of existing literature on poverty and income disparities in South Africa. Secondly, the recently completed South African poverty and inequality assessment report 2018 by Stats SA and the Living Conditions Survey 2015 create a platform to provide an up-to-date analysis of poverty and income disparities. Thirdly, by focusing on income inequalities in addition to the number of people living below a certain poverty line, it brings a new perspective. Lastly, by making use of panel data sources, the study will frame the whole discussion dynamically. It will also add to empirical understanding on the topic, whilst enhancing the literature on the barriers and engines of reducing poverty and income disparities in the South African economy. Based on the results of the study, it seeks to assist policy makers in identifying possible areas of intervention and direction their policies should take to achieve the NDP vision 2030 goals.

## **1.6 ETHICAL CONSIDERATIONS**

In conducting the study, secondary data was derived from databases available to the public; therefore, ethical clearance from the data provider (IHS Global insight) was not required. However, the study was subject to any ethical considerations proposed by the North-West University.

## **1.7 CHAPTER CLASSIFICATION**

This study comprises of the following chapters:

### **Chapter 1: Introduction, problem statement and objective**

The chapter provides a brief overview of what the study entails, highlighting the study's problem statement, its objectives, contribution and scope of the research.

### **Chapter 2: Literature review**

This chapter evaluates the theoretical and empirical aspects of the relationship between income inequality, economic growth and poverty as well as a discussion on socio-economic issues within South Africa's nine provinces.

### **Chapter 3: Trends and policy analysis**

This chapter analyses comparative trends in growth and poverty as well as government policies that have been implemented with the aim of combating income inequality and poverty reduction.

### **Chapter 4: Research design and methodology**

This chapter provides an explanation on the sample period, data collection and statistical methods used to achieve the empirical objectives of the study.

### **Chapter 5: Results and findings**

This chapter presents the findings and results of the study. It elaborates further on the empirical analysis of the study in accordance with basic theories and recent studies.

## **Chapter 6: Conclusions and recommendations**

Lastly, chapter 6 entails a summary of the study, concludes on major findings, provides recommendations and suggests future research possibilities on the topic under investigation.

## CHAPTER 2

### THEORETICAL AND EMPIRICAL OVERVIEW ECONOMIC GROWTH, POVERTY AND INCOME INEQUALITY

---

#### 2.1 INTRODUCTION

All countries have set goals and policies on the effective distribution of wealth to promote growth and this is believed to encourage the government to further invest within different industries of the economy namely infrastructure, education and health care. This stimulates economic growth and assists in poverty reduction (Khemili & Belloumi, 2018:9). The theoretical literature on the linkages between poverty, income inequality and economic growth with regards to the relationship between the concepts and the conclusions on causality have been somewhat controversial over the years. The relationship between poverty, income inequality and economic growth stands out amongst the most challenged and discussed topics in modern economics (Michalek & Vybostok, 2018:2). Yet, in recent years, various studies have attempted to examine the relations between the three concepts. Providing various contesting views and insight.

Increased income disparities induce various significant issues affecting every country and its people (Michalek & Vybostok, 2018:1). Fosu's (2016) study concluded that, to improve people's standard of living and remove them from poverty, economic growth is most efficient mainly because it delivers on peoples' objectives for a better life. When there is growth in an economy, virtuous cycles of prosperity and opportunity are generated. Strong growth rates creates better employment opportunities, which then creates means in which parents can invest in their children's literacy. This result encourages entrepreneurship, which then puts pressure on better governance. This leads to the conclusion that strong economic growth advances human development (Thirtle, Lin & Piesse, 2003:1961).

Under different conditions, extremely low economic growth can have a devastating effect on human development indicators, employment prospects of the poor and poverty. The extent to which poverty is mitigated by growth relies on the participation of the poor in growth processes as they share in the proceeds (Guiga & Rejeb, 2012:471). Thus, the pattern and pace of growth should be taken into account when

addressing poverty-reduction (Ravallion, 2007:12). Adams (2002:1989) stated that a correlation between economic growth and poverty alleviation is clear. Nevertheless, whether higher inequality is associated with reduced levels of poverty remains a daunting issue. With the aforementioned in mind, the relations between poverty and growth, as well as inequality and poverty, cannot be definitively conclusive (Guiga & Rejeb, 2012:472). Henceforth, this leaves significant room for further investigations into the matter.

As such, Chapter 2 expounds on the interrelations between economic growth, poverty and the income disparities. This consists of the theoretical background and empirical findings of the literature underlying the study. Particularly, it addresses the first four theoretical objectives of the study, which firstly pertains conducting a literature review on concepts relating to poverty, GDP growth and income inequality measures. Secondly to review theories associated with the interrelations surrounding poverty, economic growth and income disparities. Thirdly, to provide a review of literature pertaining to the contributing factors of poverty and income disparities. Lastly, the chapter reviews the empirical literature in the form of case studies from previous studies.

## **2.2 ECONOMIC GROWTH**

### **2.2.1 Definitions and concepts**

Prior to assessing the conceptual understanding of economic growth, it is important to highlight the objective and function of economic growth in an economy. Angelsen and Wunder (2006:2) define economic growth on the basis of the fluctuations of inflation-adjusted market value of the goods produced over an economic cycle. The IMF (International Monetary Fund) (2012:20) quantifies economic growth as a percentage upsurge in real GDP more often than not in per capita terms. Economic growth is not only thought of as an increase in the productivity of an economy but also an improvement in the standard of living for a country's population. Adamopoulos (2010:83) describes economic growth as an idea concerned with an increase in productivity levels.

Economic growth gauges the variations in an economy's capacity to produce goods and services, between two periods (Ravallion & Chen, 2003:94). Smith (1904) defined

economic growth as an increase in adjusted GDP for inflation, stating that numerous elements contribute to economic growth processes, making it a complex issue. Levine (1997) states that for economic growth to take place, there need an upsurge in labour productivity, the size of the workforce and improved technology. In other words, all aspect of growth must increase to stimulate economic growth. The fundamental bases of economic growth are not entirely centered on materialism, rather, nobel laureate Amartya Sen (1999) further expounds on economic growth as an essential mechanism for stimulating the fundamental freedoms valued by people. Such freedoms are greatly related with the improvements in the overall living standards, these include enhanced opportunities for increasing peoples' health, and their life expectation.

### **2.2.2 Determinants of economic growth**

According to economic literature, there are several factors that drive economic growth. Romer (1986:1012) showed that human capital is regarded as an essential element in numerous endogenous studies as well as a key addition in neoclassical models, this was further supported by (Bloch & Tang, 2004:248). In terms of human capital, previous studies show established evidence proposing that an educated population is a vital factor of economic growth (Barro, 1996). The theoretical contribution of Romer (1990) indicates that human capital is an important aid to research and development that promotes technology. Its role in productive activities, both ordinary and intellectual, stimulates economic development (Mankiw *et al.* 1992).

The main determinant of a country's GDP, as indicated in the Harrod-Domar model is investment. Under neoclassical models, investment affects the transition period, while endogenous models argue for more durable effects (Marx, 1867; Rostow, 1960; Weber, 1905; Pagano, 1993:618). Trade openness is the third predictor of economic growth and permits the manipulation of technology transfer, diffusion of knowledge and comparative advantage (Lewis, 1980; Chen & Feng, 2000:12). This increases scale of economies and stimulates a competitive system.

## **2.3 POVERTY**

### **2.3.1 Definitions and concepts**

Predominant definitions of poverty have traditionally fixated on the lack of money or material possessions, or wealth and income. The consequent definition of poverty within the underlines of the “lack of income”, which was prevalent until the 1960s following the fixation of development policy concerning monetary income expansion, originated from the economists such as Adam Smith and David Ricardo who are key thinkers of the Classical economy (Angelsen & Wunder, 2006:3).

Poverty however is multidimensional in nature and constantly evolving, which makes it difficult to define, let alone measure (Bhorat & Goga, 2013:830). Poverty has been defined in various ways and to fully comprehend what constitutes a poor person has evolved over the years (Townsend, 1993:31). In instances where one is unable to afford certain predetermined needs for consumption, poverty can be defined as a deprivation of basic human necessities (Dunga, 2014:33). An alternative conception in the evolution of poverty is understanding the principle of subsistence life styles, with a focus on housing, clothing, access to basic needs in terms of food and relative deprivation (Rio group, 2006:17). The eradication of extreme poverty and scarcity, was considered by a myriad of economist, such as Smith (1776) and Marx (1973) to be resolved by the accumulation of capital.

According to the Global Report of Human Development (2003), countries with low economic growth find it difficult to combat monetary poverty than those with respective growth rates (Guiga & Rejeb, 2012:471). Several years ago, Guiga and Rajeb (2012:470) stated that development policy are now centered on poverty alleviation. A set of countries (191 United Nations member states) in the international community came together, exclusively dedicated to the fight to alleviate poverty in its monetary dimension and education. Their main objective of the “Millennium Development Goals” was based on reducing poverty levels by half from 1990 to 2015 and the share of the impoverished people surviving on below \$1 per day (Guiga & Rajeb, 2012:470).

More often than not, impoverished people do not lack only in monetary terms, it can be societal exclusion, lack of basic needs, shelter, employment or addiction (World Bank, 2005:1). Dunga (2014:34) stated that poverty is a related more to the state of

powerlessness, vulnerability, low education level or access to health care, as opposed to quantifiable resources. Nallari and Griffith (2011:16-17) contradict this view stating that poverty is the incapability to function in society or lack of access to assets. A household was considered to be in poverty if income minus rent was found to be below a decided poverty threshold (Rowntree, 1918:86).

Related to the definitions of poverty is the concept of inequality and vulnerability (World Bank, 2005:1). Although very similar, poverty is different from inequality and vulnerability. These concepts are different in the sense that disparities focus more on the distribution, rather than the consumption of income, but considering the population as a whole. There would be a significant difference if the distribution aspect of inequality went as far as to look at shares at household level as the equivalence scales attempt (UNDP, 2005:1). In terms of poverty analysis, the consideration of inequality is important if it regards the welfare of an individual to depend to a greater extent on economic positions virtual to others in society (Dunga, 2014:35).

However, as a crucial element of welfare vulnerability is often described as the associated with poverty likelihood. Jitsuchon and Richter (2007:2) stated that measuring vulnerability is difficult, which is why vulnerability is excluded from most poverty measures. Because poverty is difficult to quantify, various measures were introduced. One thing that was clear when deciding on poverty measures, was the consideration of housing and food. Different poverty measures are discussed below ranging from poverty lines, indexes as well as specific South African measures.

### **2.3.2 Poverty lines**

Economist call the poverty line a normative concept, as opposed to what is really measured. The line speaks to the aggregate value of the essential goods and services considered as standard to a person's basic needs satisfaction (Dunga, 2014:45). Different countries use different poverty measures, but there are three basic approaches that can be identified in the processing of deriving a poverty line.

The most commonly used approaches are the relative poverty line, absolute poverty line and the nominal poverty lines (Rio group, 2006:35). The first approach to be considered is the absolute poverty line.

The absolute poverty line is founded on the basis that the money needed to acquire basic needs can satisfy the absolute minimum (Dunga, 2014:45). The absolute poverty line is considered to be one of the most important measures of poverty lines as it represents a measure that can be used in comparison scenarios. The definition of minimum is contestable as arbitrary choices of the same can be misleading (Ravallion *et al.*, 1991:1).

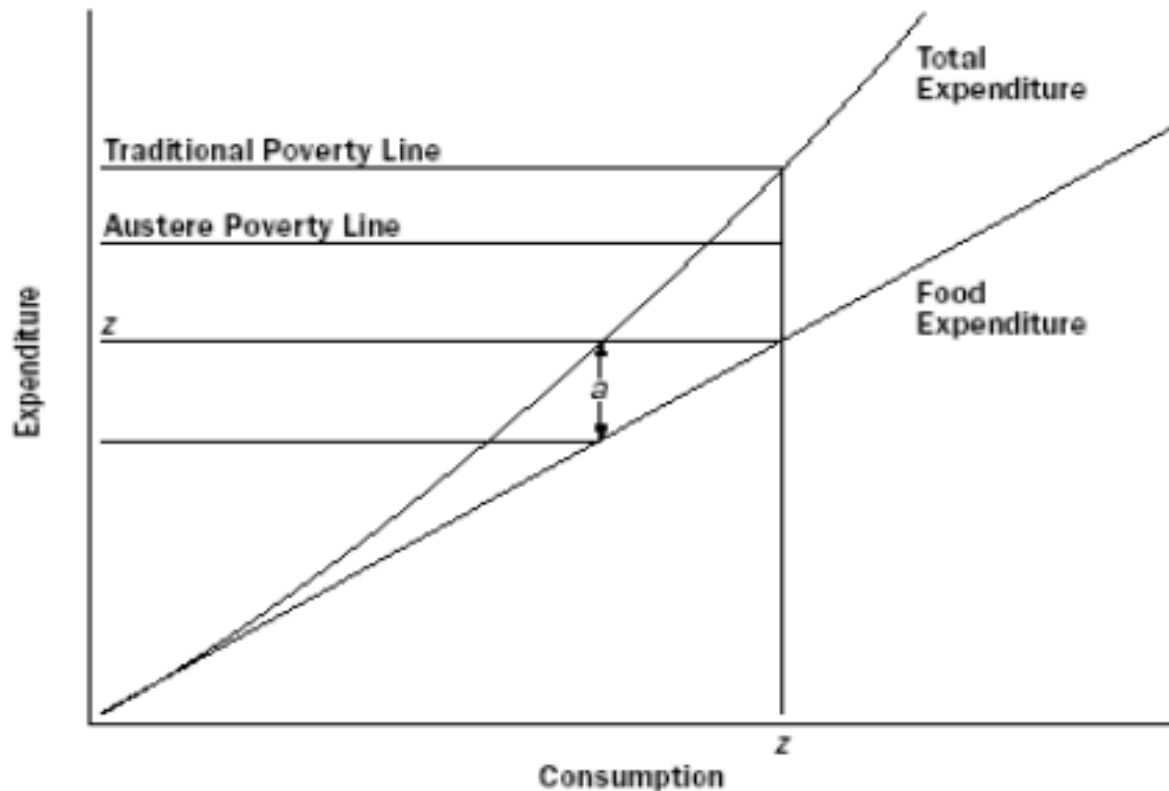
The absolute poverty line is static over a period so that poverty analysts can assess the impact of antipoverty policies over time and equate poverty rates across nations (Chen & Ravallion, 2008). The World Bank (2008) uses a dualistic absolute poverty lines, consumption of less than \$1.25 a day and consumption of less than \$2 per day. These measure were estimated in 2005 on the basis of purchasing power parity (Datt *et al.*, 2000:1; Ravallion *et al.*, 1991:1).

Besides the absolute poverty line, the relative poverty line can be considered as the second line. To enable the development of targeted programs and for them to reach the impoverished segment of the population, the relative poverty line is centered around the poorest segments (Rio group, 2006:36). The relative poverty line is revised in ascending order together with increases in per capita consumption. The only difference between relative poverty lines and nominal poverty lines is that nominal poverty lines can fluctuate over time based on changes in prices caused by inflation (Angelsen & Wunder, 2006:7). When constructing the poverty lines, consumption equivalence and the economies of scale have to be taken into account. The poverty line can be constructed in the food poverty line, where consumption equivalence are considered to be more relevant than economies of scale. For non-food poverty line, an Orshansky multiplier can be calculated which distinguishes items using economies of scale (Kakwani & Sajaia, 2004:1).

From SA's perspective, in 2012, StatsSA introduced three national poverty lines as the new measurement for poverty in South Africa (StatsSA, 2015:79). These poverty lines have since been used as the official measures of poverty in a number of official researches on poverty in South Africa. The poverty line consists of three measures namely the upper bound poverty line (UBPL), the food poverty line (FPL), as well as the lower bound poverty line (LBPL) (StatsSA, 2017b:20). The LBPL and the absolute poverty line are the most commonly used in the growth-poverty-inequality nexus

literature. Figure 2.1 below is a graphical presentation of the poverty line calculations, followed by an interpretation based on a South African scenario.

**Figure 2.1: Poverty line calculations**



Source: Woolard and Leibbrandt (2006:22)

To illustrate this for the South African scenario: StatsSA indicated that those households that spend R211 per capita monthly are spending R111 on non-food items (StatsSA, 2017b:24). Therefore, the LBPL was calculated as  $R211 + R111 = R322$ . This is referred to as the “austere” poverty line (Hoogeveen *et al.* 2004; May, 2003).

Both approaches are illustrated in Figure 2.1 above, Utilizing the StatsSA discoveries, ZAR ( $z$ ) = R211. In the event that the vertical line is drawn at R211, one would then be able to read off the total level of household expenditure spent on food. This gives the “traditional” poverty line of R593. On the other hand, the horizontal line can be drawn at R211 and perceive how much money households spend on non-food items at this level of total per capita expenditure. This amount ( $a$ ) is then added to the R211 food poverty line to achieve the poverty line “austere” (Woolard & Leibbrandt, 2006:22). These mentioned poverty lines are regularly updated together with the CPI (StatsSA, 2017b:23).

### 2.3.3 Poverty indexes

The second common measure used are poverty indexes, they are based on per capita consumption and poverty lines, and a number of total poverty measures have been calculated. The Headcount index is by far broadly employed total poverty measure (Ravallion, 1996:1330). It essentially measures the percentage of the population regarded as be poor, easy to build and simple to be understood. The prevalent weakness of the headcount index is that it does not capture depth of poverty (Dalton, 1920:1). For example, if a poor household were to give a very impoverished household part of its wealth, the headcount index remains unchanged, even if poverty in general had decreased. Additionally, poverty can be measured using the poverty gap index which summarizes the gap between where the person poor fall in consideration to poverty line and states the “*sum as a percentage*” of the poverty line (Dunga, 2014:56). The poverty gap index works in conjunction with the headcount index (Rio group, 2006:96). The limitation of the index is that the index cannot capture disparities among the poor (Jitsuchon & Richter, 2007: 5).

## 2.4 HUMAN DEVELOPMENT INDEX

In the 1970s, there was a shift in the emphasis of the development debate from hardcore economics to poor people’s basic needs. This was accompanied by fluctuations in the well-being measurement. The concept of poverty was subjected to an “*extension of human development*”, meaning that growing attention was paid to indicators relating to nutrition, health and education (UNDP, 2005:1). The most popular indicator that emerged from this shift was the Human development index (HDI) (Angelsen & Wunder, 2006:4).

When the longevity, literacy level and the GDP per capita is higher an economy scores a higher index. It is a complex of performance in the key dimensions of human development (UNDP, 2017:2).

The health dimension is assessed on the basis of life expectancy at birth, the educational dimension is measured on the basis of the average of school years for adults aged 25 and over, and expected school years for school-age children. The HDI uses the income logarithm to reflect the decreasing value of income with increased GNI (gross national income) (Ravallion, 1997). Angelsen and Wunder (2006:4)

indicated that the index was created to emphasize that the ultimate criteria for assessing a country's development, not economic growth alone, should be people and their capabilities. Table 2.1 below shows a graphical presentation of the dimensions, indicators and dimensional indexes that make up the human development index.

**Table 2.1: The Human Development Index**

<b>DIMENSIONS</b>	<b>Long and healthy life</b>	<b>Knowledge</b>		<b>Decent standard of living</b>
<b>INDICATORS</b>	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GINI per capita (PPP R)
	↓		↓	↓
<b>DIMENSION INDEX</b>	Life expectancy index	Education index		GINI index
		↘	↓	↙
<b>Human Development Index (HDI)</b>				

Source: Authors compilation

## **2.5 INCOME INEQUALITY**

### **2.5.1 Definitions and concepts**

There have been different opinions on whether the unequal distribution of income has a positive or negative impact on country's development (Nallari & Griffith, 2011:67). According to Barkley, Rosser and Ahmed, (1999:170) income inequality is positively correlated with the share of output produced in an economy and is the uneven distribution of household income through several participants of an economy. Krueger (2012) defines income inequality as the uneven distribution of an individual or household income across several members of an economy. It is presented as the

“percentage of income” related to a percentage of the populace. Guiga and Rejeb (2012:472) define inequality in terms of the phenomena as the element that minimizes economic growth in the poverty reduction process.

## 2.5.2 Income inequality measures

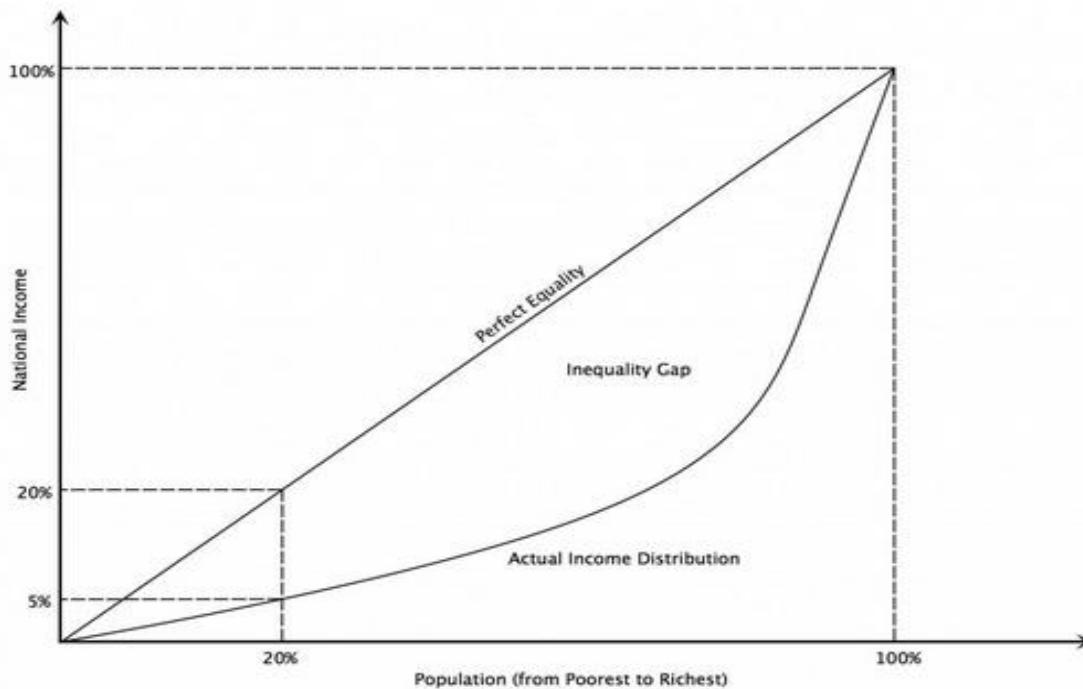
Various measures of income inequality exist, with the most popular ones being the Gini coefficient, Lorenz curve, Kuznets quantile ratio and Palma ratio. There are also others less commonly used, such as the Theil index, Robin Hood index, Atkinson index, the variation coefficient, the generalised entropy index and the Sen Poverty index. Each of these indices are accompanied by their own advantages and limitations (Niyimbanira, 2017:256). This study made use of the Gini coefficient.

### 2.5.2.1 Gini coefficient index and Lorenz curve

The Gini coefficient index is the most common measure of income disparity and it was coined following the “*Italian statistician Corrado Gini*” (1912). The coefficient is recognized internationally as a measure of disparity, calculated by classifying income per capita from household stating from the lowest to the highest, and by further calculating the household cumulative percentages. These percentages are thereafter plotted using Lorenz curve. The Lorenz curve is derived from the Gini coefficient and indicates the economic development of a nation. The coefficient estimates the level of “*income equality*” in a populace. It ranges from zero “*(perfect equality)*” to one “*(perfect inequality)*” and a coefficient of one speak to a solidary individual getting all the pay.

Figure 2.2 below illustrates a Lorenz curve, it is a graphical presentation of wealth established by Lorenz (1906). It demonstrates the amount earned by any given percentage of the populace. The area labelled perfect equality is presented by a 45-degree line, when it is further away from the diagonal then the size of the income distribution is more unequal (Bosch, Rossouw, Claassens & Du Plessis, 2010). (Niyimbanira, 2017:256).

**Figure 2.2: The Lorenz curve**



Source: Agarwal (2017:1)

#### 2.5.2.2 Kuznets quintile ratio

The Kuznets ratio is another commonly measure of income inequality. This measure provides the difference between average income for poorest people and the richest ones. It focuses on the averages of the bottom and top quintiles, this is why it is sometimes referred to as the quintile ratio (Cingano, 2014:22). For example, looking at the richest 40 percent and the poorest 40 percent. This process possesses an unambiguous intuitive connotation: it indicates how much richer are the rich in comparison to poor. The Kuznets ratio varies from between 5 for egalitarian European to greater than 30 in some of Latin American countries (Angelsen & Wunder, 2006:3) in comparison to Gini coefficient. The Kuznets measurement also scientific yet less satisfactory, because some income changes in the middle range are ignored.

## 2.6 THEORIES OF ECONOMIC GROWTH, POVERTY AND INEQUALITY

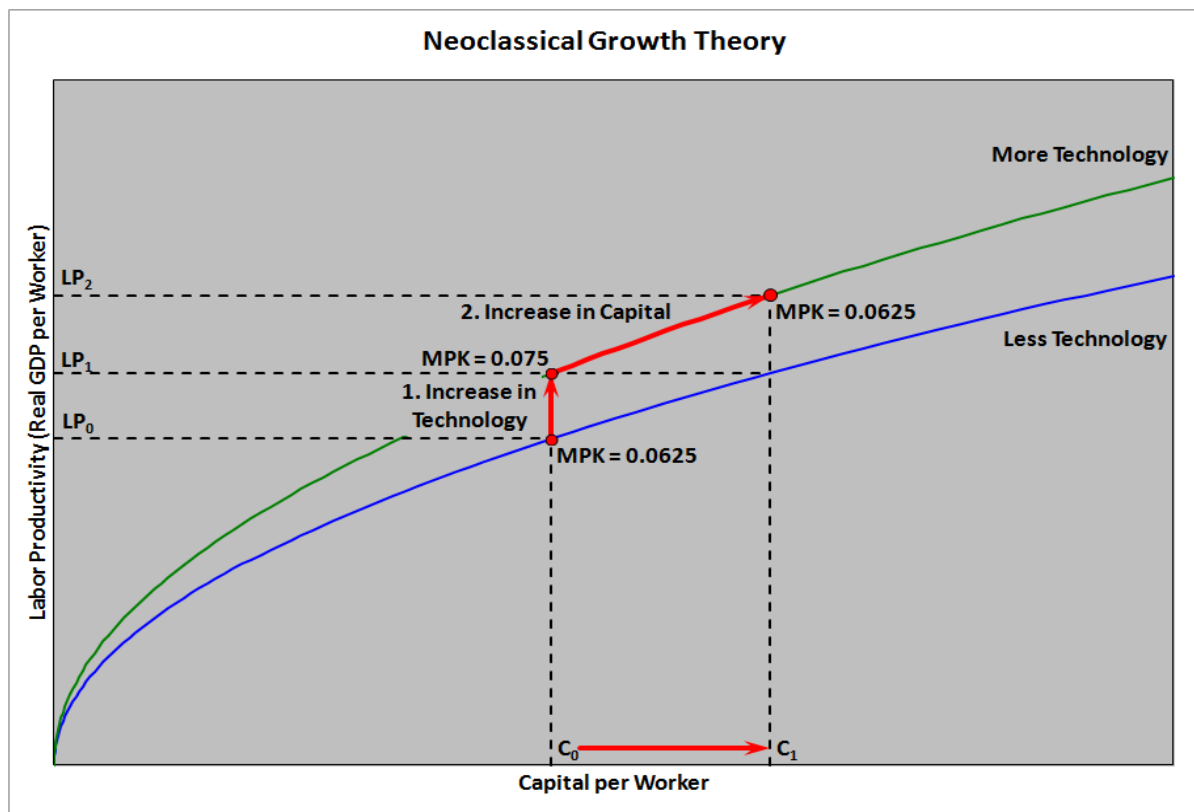
Smith (1904) used growth models and related tools to comprehend why some countries have developed rapidly over the past few centuries, whilst others have not improved. Similarly, various ideologies and views have come to acknowledge the presence of inequalities and poverty. This section reviews and elaborates on these theories, thriving to satisfy the second theoretical objective outlined in Chapter 1.

## 2.6.1 Economic growth theories

### 2.6.1.1 Solow's neoclassical growth theory

Earlier theories of economic growth argued that economic growth is an innovation process in which innovative interactions in both financial and real sectors take place to drive dynamic economic growth (Smith, 1904). Figure 2.3 below illustrates the Solow's neoclassical growth model and indicates that technological growth befitted the remaining factor in elucidating the level of long-term growth presumed by Solow (1956) and academics growth to be resulted exogenously. That is, self-reliantly of the rest of other factors. With regards to the Solow growth model, the driving force is labour productivity, which entails the average output a worker can produce. The output per worker is calculated by means of taking the economy's level of output  $Y$  and by dividing it with the economy's labour force  $L$  (Solow, 1956). The output per worker,  $Y/L$ , is a substitute for the living standard and prosperity levels in the economy (Solow, 1956). Neoclassical theories argue that governments should not intervene in the economy (Stiglingh, 2015:13).

**Figure 2.3: Solow's neoclassical growth model**



Source: Stein (1969:154)

The Solow neoclassical growth model stated that to sustain long term growth, there must be technological growth in a country and a commitment of building quality labour forces (Solow, 1956:71). Solow (1956) argued that the speed of positive changes in technology can only be determined by scientific processes that are autonomous to economic forces. The theory proposes that academicians ought to take the rate of long-term growth as it is given exogenously from external forces caused by the economic system. The endogenous growth theory illustrated in Figure 2.5 below contradicts Solow's neoclassical view by introducing networks through which the speed of technological progress and economic growth can be subjected to economic factors in the long-run (Aghion & Howitt, 1998).

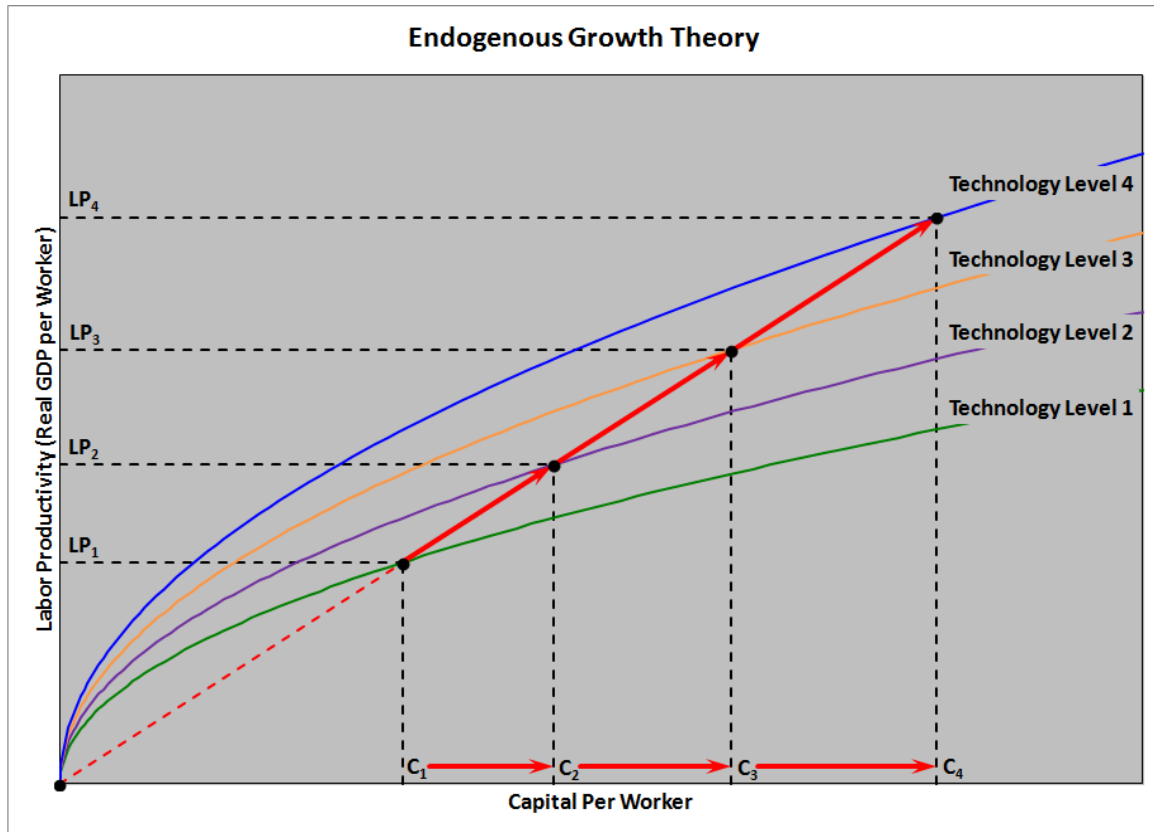
#### 2.6.1.2 Endogenous growth theory

The endogenous growth theory alleged that sources of economic growth are endogenous which contradicted with Solow's model (Freeman, 2002:205). Smith (1904) described economic growth as an endogenous phenomenon (Chang & Caudill, 2005). He indicated that the growth rate depended on decisions made and activities by the agents (Romer, 2011:136). Additional emphasis was placed on the endogenous conception of new knowledge. New technical knowledge is treated as a good which becomes a public good in the long-run (Ray, 2010:58). Figure 2.4 illustrates the endogenous growth model and is mainly dependent on the constant returns to scale. This is mainly to accrue factors of production and to produce on-going economic growth (Stiglitz, 2015:15). Higher output will be the results of production increases (Dornbusch *et al.*, 1998:81).

Gore (2007) pointed out that new endogenous growth and neoclassical theories are centered on cumulative function of production and that the general equilibrium conditions for the poor are not good. The study emphasized this because their theoretical configuration does not provide necessary explanation of the relations between poverty and growth. Alternatively, theories on growth consider the technological competences and institutional matrix of economic agents, the dynamics of production configurations and the effect of demand are noble for the poor in this sense (Aghion & Howitt, 1996). Henceforth, bridging the gap between technological advancement policies and poverty reduction policies, and the increase of productive

job opportunities centered on a fusion of these theories of growth substitutes (Krugman, 1991).

**Figure 2.4: Endogenous growth model**



Source: Stiglitz (2015:16)

### 2.6.2 Poverty theories

Theories of poverty emanate centrally from the differences in the definitions and the perceptions of what the root causes of poverty are and the understanding on how to deal with poverty (Goldsmith & Blakely, 2010:2). As argued in Section 1.1, poverty remains a major problem that countries all over the world have over the years put together their efforts to fight against (Dunga, 2014:36). There are a number of theories that exist in the literature but these theories are different depending on how poverty is defined. Dunga (2014:37) indicated that poverty theories stem from individual shortcomings, cultural belief that support poverty subcultures, geographical disparities, political-economic misrepresentations and circumstantial origins, which is line with Bradshaw (2005:1) five theories of poverty illustrated and explained in Table 2.2 below.

**Table 2.2: Five theories of poverty**

Theory	Causes of poverty	Explanation
1. Individual	The individualist theory of poverty, is centered on the supposition that poverty is caused by people's laziness, ignorance, or inferior in one way or another. (Laziness, choice, incompetence) (Rose, 1972:20)	Winners are rewarded from competition, however, losers are punished (Wilson, 1996:413).
2. Cultural	Subculture adopts values which are not productive and which run counter success standards. Lewis introduced the culture of poverty theory, in which he argued that poverty is a culture passed on from one generation to the next. Bradshaw (2005:1) believed that people are marginalized, inferior and helpless, so they have a living attitude for the present. Many households are characterized by child headed families, divorce and abandoned children. People that fall under this poverty theory, participate less in community activities, and make little use of banks. According to Lewis <i>et al.</i> (1985), the culture tends to perpetuate itself as it affects the next generation (children).	Using the community to benefit the impoverished, acculturation and value a diverse culture.  However, the model is only applicable to "third world countries" (Lewis, 1980; Carmon, 1985).
3. Political-economic structure	Structural theory of poverty, is centered on the supposition that people are poor due to economic system traps that they find themselves in. systematic barriers that prevent poor people from accessing achievements in in terms of education, employment and healthcare (Bruenig, White & Young, 2014:685).	Selection criteria exclude certain groups of person on the basis of inappropriate criteria either directly or indirectly.
4. Geographic	Different regions, come with different social pros and cons. An agglomeration economy refers to the benefits that a particular location gains when firms and people cluster near one another. Agglomerations (concentrations) of economic activity tend to attract more economic activity based on dynamism, while in poor areas, productive factors deteriorate (Warf & Warf, 2010:243).	Agglomeration, distance, economies of scale, and resource distributions reinforce differences. According to Warf and Warf (2010:243), location theories such as those of Von Thünen, Alonso and that of Christaller can build a foundation on which economies can be built upon. Weber's Industrial Location Model consists of three steps. Step one was to consider the least transportation cost location, the second being labour costs and the third, agglomeration economies.
5. Cumulative and cyclical	Poverty spirals, individual problems (earnings, self-confidence, health, housing, education) are codependent and are strongly linked to community deficiencies.	Factors have a complex interaction. Crises at community level lead to Individual crises and vice versa, and each cause spirals of poverty (Yun & Weaver, 2010:175).

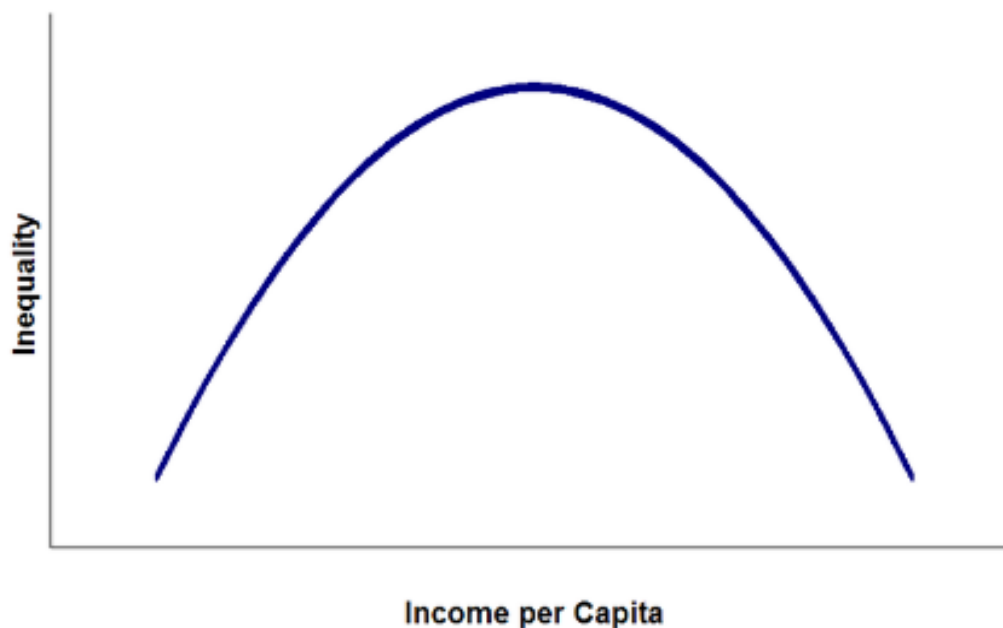
Source: Bradshaw (2006:10-11)

### 2.6.3 Income inequality theories

#### 2.6.3.1 The Kuznets hypothesis

The Kuznets' hypothesis (1995) was centered on the curvilinear relations of growth and income disparity. The hypothesis stated that through an inverted "U" shaped function, the relations between economic growth and inequality is established. The logic behind the null hypothesis is that if income inequality is increased by economic growth, then the growth effect on poverty would be weak. Nevertheless, several empirical studies have rejected the Kuznets hypothesis mainly because the relations between inequality and economic growth were derived using cross sectional data, meaning that the countries used for the study were at different points of development (Ravallion, 1995:412; Deininger & Squire, 1998; Adams, 2002). They believe that the hypothesis was supposed to be conducted using time series data (Enders, 2004). Figure 2.5 presents a graphical illustration of the Kuznets curve.

**Figure 2.5: The Kuznets curve**



Source: Abbet (2010:9)

There is a consensus in literature regarding the effect of economic growth on income disparity and this is mainly attributed to the lack of fluctuations in income distributions over time (Bloch & Tang, 2004:248). In the long run, economic growth is less likely to be sustainable due to the extremely high-income inequalities (Barro, 2000). Generally

speaking, data on the time-series of income distribution are somewhat poor to solve the Kuznets controversy completely. In some cases, disparity increases and decreases in others (Fields 2001). This is supported by Piketty (2006: 3) who stated that the argument of Kuznets' is based on very limited empirical observations, as data on distribution were still rather rare in 1955. For the United States, Kuznets based his argument primarily on the US 1913-1948 series.

### 2.6.3.2 Theory of stratification

The theory of stratification was the brain child of Marx (1973) and was later modified by Weber (2009). Marx (1973) theory was based on the belief that modern society includes only two classes: namely bourgeoisie who own the factors of production and the proletariat, who are the workers. According to Marx (1973), in capitalist societies, workers were exploited by the bourgeoisie. The landlords pay them sufficient to afford their basic needs, so they do not realize that they are being exploited, which creates a mistaken sense that they're actually well off. To their knowledge, their capitalist bosses had their best interests at heart. Marx (1973) predicted the workers' revolution, hypothesizing that as the wealthy grew wealthier, workers would develop a sense of common identity based on their common exploitative experience. In a global revolution, the workers would unite and rise. After the revolution, workers would possess production means and the world would become communist. No one class would control the wealth (Wright & Perrone, 1977; Lenski, 2013).

Most modern theories of inequality stem from either the conservative tradition view also referred to as the functionalist theories or the radical tradition also referred to as the conflict theories. Van den Berghe (1963) published a paper indicating that the Marxian and Functionalist theory present partial but complementary views of reality. Weber (2009) is one of the pioneers that still embrace conservative tradition but with a modern twist. Although Weber (2009) never developed a systematic theory of stratification, he often dealt with various aspects of the distributive process. Weber (2009) criticized Marx's approach to stratification, stating that it is too simplistic. Weber (2009) argued that owning property or means of production is only part of what defines an individual's class. Beside property or wealth, Weber (2009) included prestige and power. Weber (2009), believed that wealth and prestige are intertwined. His argument

was centered on the fact that property can indeed bring prestige, since societies incline to hold wealthy people in such high rank (Lenski, 2013).

Sociologists Davis and Moore (1945), creators of the Davis-Moore theory (also known as the “*functionalist Davis-Moore hypothesis*”) believed in the importance of social stratification, maintaining that an unequal distribution of benefits of society is necessary to encourage people to undertake the more complex and important work that requires many years of training (Cullen & Novick, 1979; Hauhart, 2003). Tumin (1953) challenged the Davis-Moore’s theory of social stratification. He disagreed with their supposition that the relative importance of a given job can always be measured by the amount of money or prestige given to the people doing the work (Hauhart, 2003:5). Scholars such as Davis and Moore merged the functionalist and the conflict tradition unlike Weber and Marx.

## **2.7 RELATIONSHIP BETWEEN ECONOMIC GROWTH, POVERTY AND INCOME INEQUALITY**

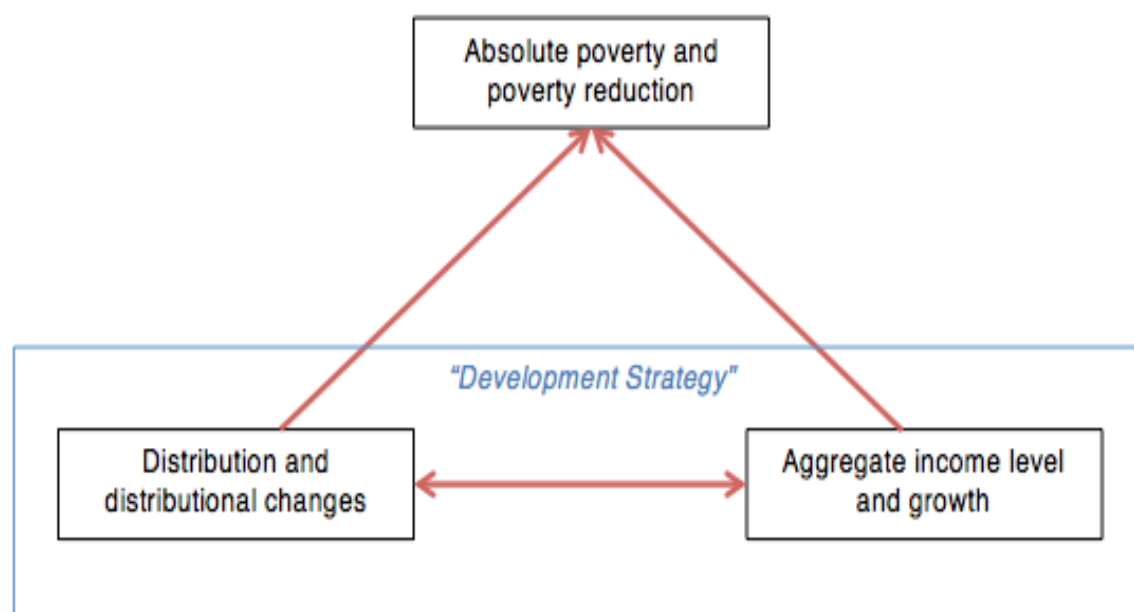
Over the last few decades, there have been numerous theoretical and empirical inquiries attempting to determine whether economic growth, income inequality, and poverty have a negative or positive relationship (Datt & Ravallion, 1992; Kakwani, 1993; Adams, 2004; Borat & Van der Westhuizen, 2008; Seven & Coskun, 2016; Akanbi, 2016). The relationship between these concepts is still arbitrary. Poverty is closely linked to economic growth, while economic growth is closely linked to income disparity and the same or unequal nature of distribution (Guiga & Rejeb, 2012:472). The study of Gelaw (2009:2) noted that poverty is measured by income, indicating the correlation between the two variables. Gelaw (2009:3) believed that an increment in the income of poor workers will contribute to poverty reduction. In this context, various studies were developed to sightsee the complex correlation between income inequality, poverty and economic growth, which generate much debate in developing countries. This section provides a brief overview of previous theoretical works with the aim of achieving the third theoretical objective of the study.

### **2.7.1 Bourguignon triangle**

Theoretical and empirical research conducted to discover the relations between inequality and economic growth, and to determine how they affect poverty levels have

led to the development of different models. The Bourguignon triangle “(*Poverty-Growth-Inequality triangle*)” is an important example, it is also referred to as the Growth-Inequality-Poverty (GIP) triangle (Bourguignon, 2004:4). This model emphasizes the interaction between the three variables, such as inequality and economic growth and their connection towards alleviation. The model depends on the competence that elevated amounts of monetary development in particular conditions, for example, in regards to the improper convergence of obtained results (growth effects), can prompt an expansion in disparity and subsequently to an expansion in poverty. This framework was centered on the seminal works of Datt and Ravillion (1992) and Kakwani (1993). Changes in the levels of poverty can be influenced by changes in income and disparity. Under to the model, a development approach should focus on increasing income or wealth and reducing the inequalities between them (Bourguignon, 2004:5). Figure 2.6 below illustrates the Bourguignon triangle model.

**Figure 2.6: Bourguignon triangle**



Source: Bourguignon (2004:4)

The model above illustrates the upper part representing poverty, or the reduction of poverty. The bottom-left corner represents inequality or its distribution. The bottom-right corner of the triangle represents growth, expressed as a rate of economic growth by aggregate population income and GDP. An interrelationship exists between both growth and inequality in this model. Bourguignon (2004:6) describes vicissitudes in

poverty level as a function of growth and inequality distribution as depicted by equation 2.1:

$$\Delta \text{ "Poverty} = F(\text{growth, distribution, changes of distribution}) \text{ " } \dots\dots\dots (2.1)$$

An imperative favorable position of the model is that the model screens the associations between economic growth and poverty (Bourguignon, 2004:10). According to Bourguignon both phenomena are considered as determinants of a “*development strategy*”.

The model showed evidence that growth and the elasticity of the distribution of poverty are subjected to the degree of inequality and development level. The aim of optimal growth-distribution strategies, in this regard, remain poverty reduction (Bourguignon, 2004:11). For example, the priority for middle-income countries may be to reduce inequality and for low-income countries the priority may be to stimulate growth. In addition, the aforementioned statement suggests that effective redistributive policies can actually produce a double dividend: the first is current poverty reduction and the second is acceleration of poverty reduction in the future.

The model shows that development strategies which only address one such phenomena are unable to reduce poverty. The model also demonstrates that excess inequality in a redistributive democracy results in high redistribution yet leading to less accumulation of capital. Otherwise, excess inequality can become the source of social problems such as tension and violence (Bourguignon, 2004:17). As a result, the growth policy that disregards income distribution will not be able to achieve the goal of poverty reduction.

A number of development strategies have been proposed in the past three decades involving different “mixes” of growth and distribution, such as and pro-poor growth policies and growth redistribution (Bourguignon & Morrisson, 1998; Rodrik, 2003). The triangle of Bourguignon become a subject for scholars’ discussion. His opponents argue that the Bourguignon model is too simplistic and overlooks the processes that generate the phenomena. They further suggest that important factors that determine poverty are ignored in his model (Chemli & Smida, 2013).

Bourguignon (2003) showed that the poverty trends are not systematically linked to economic growth because they can also be linked to inequality in the economy. This explanation based on the mechanical link between the phenomena of growth, inequality and poverty.

Bourguignon (2004:20) indicates that growth alters income distribution, which determines growth, nature and its impact on poverty in part. The study emphasizes the idea of maintaining redistribution as a complement to growth in order to achieve a significant reduction in poverty rate in the short and long run (Skoufias, 2001; World Bank, 2003). Hypothetical work has provided mechanisms to support both conceivable outcomes, and the extensive empirical literature attempting to distinguish between these mechanisms has been largely inconclusive (Cingano, 2014:10).

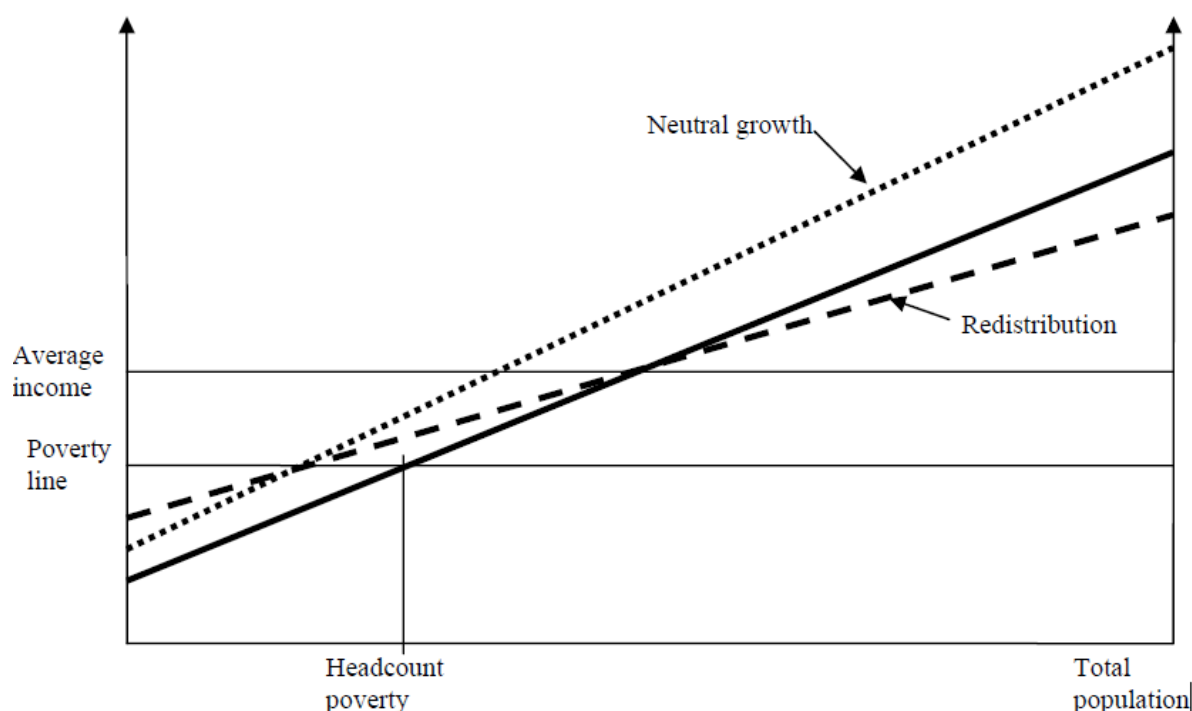
### 2.7.2 Mechanical relationships

In view of the aforementioned discussion of growth, poverty and inequality definitions, a modest association between changes in headcount poverty, changes in income distribution and economic growth (Ravallion & Chen, 2002). This is graphically illustrated in Figure 2.7 and expressed in equation 2.2.

$$\text{Poverty reduction} = \text{Growth} + \text{Distributional change} \dots\dots\dots (2.2)$$

According to these views, all persons are classified as indicated by the solid bold line. The people who fall below a predefined absolute poverty line gives absolute headcount poverty. There are two ways of reducing poverty. Firstly, poverty can be reduced through redistribution. This is indicated by the stacked line. Secondly, the average income is able to grow in a way that does not “*change the distribution of income*”, for example, everyone receives the same relative increase in income (measured in percentages) the same relative (percentage). This is shown by the dotted line in Figure 2.7, also referred to as the neutral growth line (Angelsen & Wunder, 2006:9).

**Figure 2.7: Changes in poverty due to economic growth and/or changes in the income distribution**



Source: Angelsen and Wunder (2006:9)

According to Khemili and Belloumi (2018:9) the relations between income inequality and GDP growth is very complex and can be either positive, negative or absent. In extreme cases it can lead to political instabilities and social unrest which brings with it harmful consequences for economic growth (Aghion & Howitt, 1998:11). Alternatively, high income inequality can also increase economic growth whereby, savings are aggregated which leads to capital accumulation due to the rich having a lower propensity to consume (Fields, 2003:8). Incentives to work harder, invest and take risks to take advantage of high return rates (Fields, 2003:12), for instance, if highly educated people are more productive, there is a greater difference in return rates can encourage more citizens to seek education. The empirical contributions of Persson and Tabellini (1994); and Alesina and Rodrik (1994) were the first to indicate that initial inequality appeared empirically linked to lower growth rates.

In earlier years Perotti (1993:755) indicated that there is a tradition following Kaldor (1956) that accentuates the causal capital accumulation effects of income distribution and therefore on growth. The prevalent development economic conceptual writings surrounding 1960s and 1970s, subsequent to the works Kuznets (1955), primarily

focused on the direction from growth to income distribution or the opposite causal link. Subsequently, various papers were presented relating to the growth-to-inequality causality of Kaldor (1956) and Kuznets' (1955) tradition. For instance, the Solow-based models introduced by Stiglitz (1969) and then Bourguignon (1981; 1990) debated the conditions for finding a Kuznets curve and the hypotheses whereby growth could generate or absorb income inequality (Cogneau & Guenard, 2002:4).

During the 1990s, economic scholars shifted their focus from inequality to growth, to the inverse causal relationship. A new stylized fact of an inverse relationship between long-run growth and the initial inequality was produced in 1991 by growth econometrics (Person & Tabellini, 1994; Alesina & Rodrik, 1994; Bourguignon, 1993; Birdsall, Sabot & Ross, 1995; Clarke, 1995, Perotti, 1996; Galor & Zang, 1997). Several theoretic models were put together to expound on such regularity, whose strength was taken as read for a while (further explained in Clarke, 1995). Moreover, according to Fishlow (1996) and Barro (1991), the "new curve", just as the Kuznets curve, shortly proved to be fragile, even with cross-section data. A converse relationship was suggested by the longitudinal analysis presented by Forbes (2000). For example, income inequality was indicated as advantageous to economic growth. It was suggested by Banerjee and Duflo (2000) that the change in inequality, exhibited a negative growth effect.

Alternative arguments on the negative association between income inequality and economic growth were put forward. The study of social stratification and local externalities by Bénabou (1994; 1996) and Durlauf (1994; 1996) were particularly estimated in detail. Moreover, Murphy *et al.* (1989) suggested a new clarification founded on market-size impacts amid increasing returns on scale. Income inequality influences on fruitfulness was additionally regarded as an extension of Becker *et al.* (1990). A positive relationship between fertility and inequality was found by Perotti (1996), which may expound on how income inequality relates to economic growth by the slowdown in the demographic transition (Cogneau & Guenard, 2002:5). Bourguignon (2003) conveyed the variations in poverty as an aggregate of the changes in the inequality level and changes in average income level. The manner in which increasing inequality of a single country could hamper the prospects for growth

induced poverty decreases, increased inequality of developing countries may impede the overall decrease in poverty (Ravallion, 2001:1807).

Anderson (1964) postulated that overtime, there is a weak elasticity of poverty to economic growth, and the government therefore requires new policies to reduce poverty. The study emphasized that a large share of the poor is constituted of the disabled, children and elderly people not capable of working full-time. This group (the vulnerable) is basically not impacted by the effects of economic growth in reducing poverty (Cappellari & Jenkins, 2002:61). Years later, López (2004) challenged this hypothesis stating that on the other hand, economic growth can decrease poverty as it increases the poor's incomes through taxation. Studies on a cross-country basis have established that the foremost factors of reduced poverty include the speed of economic growth. Previous empirical studies indicated that income inequality is essential for the well-being of households so it is crucial to understand the impact of these two variables (Wilkinson & Pickett, 2010:151).

## **2.8 REVIEW OF EMPIRICAL LITERATURE**

In the early 1990s, most empirical studies commonly regress economic growth based on the prime level of income as well as a combination of a set of controlling variables comprising of a measure of income inequality based on the pooled ordinary least squares (OLS) estimator (Barro, 2000). One of the main shortcomings of the empirical findings acquired from the pooled OLS regression is that the estimated findings may be partial owing to the probable omitted variable concern (Chen & Vujic, 2016:7).

Such bias on inequality, according to Forbes (2000), can be obtained from absent variables which are country specific and have substantial influences on and income inequality and economic growth concurrently, but in the differing directions, for example, fertility and corruption rates. Additionally, Deininger and Squire (1998) also suspect that preceding studies on cross-country are implicated by the bias of the omitted variable based on the finding that the impact of coefficients of income inequality may be intensely destabilised upon the inclusion of the regional dummy variables. Following the introduction of Deininger and Squire's (1998) high-quality dataset, heightened levels of empirical research examined the relation of inequality and growth based on panel data estimations in the likes of fixed effects and random

effects models in order to take observable country-specific effects into account (Chen & Vujic, 2016:7).

Numerous scholars have revealed that the relationship between inequality, growth and poverty and inconsistent by country (Funke & Strulik, 1999; Dollar & Kraay, 2002; Adams, 2004; Khan *et al.*, 2013; Leitner & Stehrer, 2014; Michalek & Vybostok, 2018:2). In some *countries*, matters related to poverty growth are mainly driven by inequalities growth and economic development (Michalek & Vybostok, 2018:1). The inconsistencies in previous empirical results aggravate the importance of this section. Countries are classified according to similar development attributes in order to provide logical means of facilitating the examination of the relationship between income inequality, poverty and economic growth. It will include economic growth concepts as well as inequality and how they have impacted poverty across the globe. This section henceforth seeks to satisfy the fourth theoretical objective which entails reviewing the empirical literature in the form of case studies from previous studies.

### **2.8.1 Developed countries**

The growth-poverty-inequality nexus does not only affect developing countries but also affects the world's leading economies. Perotti (1994) found that in developed countries, high levels of income allow the government to allocate more tax in different sectors in the likes of social welfare, health and education. This has a substantial effect on poverty reduction. Krueger (2012) on the study of the United States' upsurge and consequence of inequality emphasized that income inequality was the main cause of stagnant economic growth. In contrast, Chang and Caudill (2005) defied this hypothesis, indicating that economic growth increases income inequality. This was supported by Alesina and Rodrik (1994), Persson and Tabellini (1994) and Perotti (1996). These scholars highlighted a negative impact of the growth effects of various measures of inequality. However, Forbes (2000), Li and Zou (1998) all found evidence of positive growth effects of income inequality.

Increased income inequality levels alongside increased economic growth as pertains to some EU nations have resulted in heightened occurrences and levels of relative poverty. In such a case, lowering the number of individuals living beneath the threshold of the at-risk-of-poverty signifies one of the Europe 2020 strategic primary goals

(European Commission, 2010). The European Cohesion Policy (European Commission, 2011) moreover holds the alleviation of both social exclusion and poverty as amongst its primary aims on a long-term basis, and it has also been featured in the contemporary programming period of 2014-2010. It was suggested by Ravallion (2001) that the mitigation of inequality induces increased reduction in poverty. Based on an econometric model, the study showcased that countries characterized by increased average income per head, registers lowered poverty levels ranging from 1.3 percent towards a heightened income inequality level, whereas such a decrease is 10 percent to a low income level of inequality.

Perotti (1993) introduced a model on developed countries pertaining to the dynamics of income distribution, political equilibrium and growth. The model suggested an inverted-U shaped relationship between income levels and inequality in cross-sections, and not particularly in time series, these findings are seemingly consistent with Kuznet's (1955) empirical study. Previous empirical findings indicated non-existent relationships between economic growth and income inequality, however, a sustained level of economic growth has more impact on the poverty rate as it increases majority of the populations' income (Forbes, 2000:878; Cingano, 2014:11 & Halter, Oechslin & Zweimuller, 2014:94). Weak evidence of a positive association between income inequality and economic growth was revealed by the study on the endogenous fiscal policy channel by Aghion and Howitt (1998). Whereas, Berg *et al.* (2012:158) found that the relationship between income inequality and economic growth is negatively weakly or even positive. Cingano (2014:16) suggested a negative relationship surrounding economic growth and income inequality. Nevertheless, Deininger and Squire (1996), by means of a comprehensive cross-country dataset, suggested that economic growth is generally favored by income inequality. For both relative and absolute measures, the relationship between reduced poverty and economic growth seems to be upheld (López, 2004). As much as the inequality-poverty-growth nexus is a problem in developed nations, it is an increasingly threatening problem in developing countries.

Stevens and Sessions (2008:6) estimated the effect of economic growth towards levels of poverty in the case of the United States during the period 1959 to 2004. The study made use of the error correction model to examine the dynamic long run

relationship amongst the two variables. Results from the study indicated that increases in economic growth is greatly associated with reduced poverty levels for all households. Based on the study, there is a more pronounced effect of economic growth on the level of poverty through expansionary periods. This is due to workers, especially the poor, who relatively witnessed increased job opportunities amid periods of increased and sustained growth levels compared to periods of economic slowdowns (Agyemang, 2014:16).

In 1994, Alesina and Rodrik (1994) highlighted, based on a panel dataset of over 40 countries, that income inequality negatively hampers economic growth and the growth effects on poverty reduction. Kraay (2004) presents evidence based on a panel of countries suggesting that growth in average terms can explain almost a half of the variation of changes in poverty in the short-run. The findings indicated that during the encompassing the medium to the long run, about 66 to 90 per cent of the differences in poverty alterations can be accounted for the average income growth. Dollar and Kraay (2002) used a simple OLS estimation of 92 countries' pooled sample across the last four decades and concluded that different samples and different econometric techniques yield mixed results.

Likewise, Fosu (2010) revealed evidence of reduced poverty induced by increased economic growth for developing countries during the period 1981-2005. This was the case for regions such as South Asia (SAS), Latin American Countries (LAC), sub-Saharan Africa (SSA), the Middle East and North Africa (MENA). For these regions, poverty decreased in the case of both the \$1.25 and \$2 a day poverty lines. Nevertheless, this was not the case for Eastern Europe and Central Asia (EECA). Fosu (2010:47) also revealed that all regions, except the MENA region, showed heightened poverty reduction during the mid-1990s to 2005 sub-periods. Since primitive years of the 1990s, growth has been substantial largely because of the different structural reforms established by the majority of developing economies dating from the early 1980s. In this study it is explained that while poverty levels are largely influenced by growth, income inequality is however a crucial factor due to its effects on most countries' poverty patterns. This can be explained by the understanding that economic growth drastically facilitates reduced poverty in the face of favorable income distribution (Agyemang, 2014:17-18).

## 2.8.2 Developing countries

The study of Guiga and Rejeb (2012:470) on poverty, growth and inequality in developing countries indicated suggested that poverty can favorably be reduced by economic growth. This narrative is founded on empirical and theoretical evidence from Ravallion and Chen (1996; 2004), who exhibited that poverty elasticity towards economic growth is a negative phenomenon for diverse poverty lines. On the same accord, Kraay (2006) exhibited that the correlation of average income and poverty indicators is negative. Conclusively, this mirrors the assertion by Dollar and Kraay (2000) who asserted that “any increase in the average level of income in a country contributes to benefit indirectly to its weakest member.” A consensus is identified of a positive relationship between developing countries’ income inequality and economic growth. Despite this, little consideration has been offered towards poverty aspects in providing theoretical and empirical explanations as well as the justification of policies centered on achieving increased growth and reduced inequality (Gelaw, 2009:2).

Previous data advocate for a little or lack of relationship between growth and changes in income inequality across countries. The same can be said for determinants of growth encouraging policies for which substantial correlations have rarely been found, one way or another. This is supported by Dollar and Kraay (2000) and Ravallion (2001) on their study of developing countries, who find insignificant linkage between changes in inequality and indicators of policy reform, together with greater openness. The study of Cogneau and Guenard (2002) examined how income inequality and economic growth are related at a macroeconomic country level. The study revealed no robust relationship from income inequality to economic growth. However, Aghion and Howitt (1996) as well as Forbes (2000) found a positive relationship between these two variables.

In the 1970s and 1980s, cross-sectional data collected from developing countries appeared to validate the Kuznets curve (Adelman & Morris, 1973; Papanek & Kyn, 1986). Nevertheless, in the 1990s it progressively became clear that the assessments were sensitive to tested functional forms and the content of the sample (Cogneau & Guenard, 2002:4). However, when making use of cross-section data, the Kuznets curve presented a certain amount of resistance on the stimulus of other demographic variables, human capital and dualism had been accounted for (Barro, 1999; Higgins &

Williamson, 1999; Bourguignon & Morrisson, 1998). Additionally, the analysis did not pass the longitudinal data test as easily (Fields & Jakubson, 1994; Li & Zou, 1998). Theoretical models are based on this curve (Galor & Tsiddon, 1997; Dahan & Tsiddon, 1998). Table 2.3 below illustrates an empirical summary of literature on the association between income inequality poverty and economic growth.

**Table 2.3: Empirical summary of literature on the relationship between income inequality, economic growth and poverty**

Author(s)	Method or approach	Sample country(s)	Period	Traditional approach	
				Positive relationship between the variables	Negative relationship between the variables
Kakwani (1993)	Living standards survey, Lorenz Curve	Cote d'Ivoire	1985	Positive relation between poverty and growth only if income inequality decrease.	Poverty is highly sensitive to economic growth
Barro (2000)	Neoclassical growth model	100 countries	1960-1995	Weak Positive relation between income inequality and economic growth in rich countries.	Negative relation between income inequality and economic growth in poor countries.
Angelsen & Wunder (2006)	Comparative empirical approach	SAS, SSC, LAC and MENA	-	Positive relation between economic growth and income poverty in poor countries.	In LAC and MENA, these a negative relation between poverty and economic growth due to high income inequality.
Fosu (2010)	Analysis-of-covariance model	16 SSC, EECA, SAS, LAC, MENA.	1981-2005	For poverty reduction, reducing income inequality is more effective than growth.	None
Agyemang (2014)	SYS-GMM (Generalized method of	76 countries (Sub-Saharan Africa, South	1990-2010	Positive relation between growth and poverty in developing	Economic growth increases income

	moments) estimator	and East Asia, Latin America and OECD region).		countries. Weak positive in countries with high income inequality. Economic growth significantly reduces income inequality in SSA.	inequality in LAC and OECD regions.
Akanbi (2016)	VAR model, Dumitrescu & Hurlin panel causality test.	South Africa (all nine provinces)	1995-2012	Bi-directional causality between income poverty and growth, income inequality and growth in the short and long-run. Unidirectional causality between income poverty and income inequality, PVT→GDP.	None
Fosu (2017)	Random Effects model (REM), Fixed Effects model (FEM), GMM	East and pacific (EAP), LAC, EECA, MENA, SAS and SSA.	1977-2007	Modest growth leads to relatively large poverty reduction.	Income inequality has a large effect on poverty reduction. In EECA, rising inequality tends to increase poverty. SSA require large growth levels to stimulate poverty reduction, whilst income inequality hinders poverty reduction.
Niyimbanira (2017)	Pooled regression model, FEM and REM.	South Africa (Mpumalanga province)	1996-2014	Under pooled regression, Economic growth is positively related to income	Under pooled regression, Economic growth is negatively related to

				inequality. Under FEM and REM, all three variables positively related.	poverty. Negative relationship between the Gini coefficient and poverty.
Burns, Tomita & Lund (2017)	The South African National Income Dynamics Study (SANIDS) panel survey with STATA 14	South Africa (all nine provinces)	2008, 2010 and 2012	None	Negative relation between income inequality and poverty based on depression levels.
Khemili & Belloumi (2018)	ARDL model	Tunisia	1970-2013	Positive relation between income inequality and poverty, economic growth and poverty in the long-run.	Negative relation between income inequality and poverty, economic growth and poverty in the short-run.
Michalek & Vybostok (2018)	Bourguignon model (PGI) and The Growth Incidence Curve (GIC)	28 EU countries	2005-2015	Economic growth stimulates poverty reduction.	Negative relation between income inequality and poverty. Economic growth and income inequality hinders poverty rates.

Source: Authors' compilation

A study by Deininger and Squire (1996), estimated using panel data, resulted in the conclusion stipulating the absence of significant relationship between income inequality and economic growth which led authors to investigate the relationship of reverse causality, moving from income inequality to growth. Several arguments arose in the study of Ravallion (2001:1808) investigating why greater equality can be good for growth contradicts the assumption of an aggregate compromise. An apparently reasonable argument suggests that there are credit market failures such that people are unable to exploit growth-promoting opportunities for investment in physical and

human capital that promote growth. Even if inequality increases in conjunction with growth, impoverished people will not necessarily benefit, only that they will benefit less from growth than other households (Ravallion, 2001:1809). Kakwani and Pernia (2000) study focused on Lao PDR, Thailand and Korea, in which they found growth to be pro-poor if accompanied by a decrease in inequality.

Janvry and Sadoulet (2000) investigated the connexion between income inequality poverty and economic growth among Latin American countries. The study analysed how economic growth impact on poverty levels in both rural and urban areas in Latin America from 1970-1994. Findings of the study revealed that exceptionally higher income disparities exist in those analysed countries than other regions with a similar average income per-capita. The study also found that economic growth significantly affected poverty reduction when income inequality was low. Income inequality is therefore associated with high costs (Agyemang, 2014:16). Janvry and Sadoulet (2000) asserted that, for economic growth to significantly impact on absolute poverty in a region, income inequality should be sufficiently low and countries should strive for higher education levels.

López (2004), showed that a 1 percent rise in GDP per capita brings down poverty by 1.7 percent in countries experiencing an upsurge in economic growth between the year 1990 and 2003 (11 out of 14 studied). The reduction was spectacular in some countries such as Vietnam as it halved the poverty rate from 58 percent to 29 percent (or nearly eight percent per year). In line with the positive relations between growth and poverty reduction, incomes of the impoverished appear to increase proportionately with average incomes (Cappellari & Jenkins, 2002:63). The results from Guiga and Rejeb (2012:475) analyzed poverty, growth and inequality in developing countries, showing that an upsurge in income per head is pro-poor. This was supported by previous studies of Ravallion and Chen (1996); Dollar and Kraay (2000), who indicated that economic growth plays a key role in poverty reduction.

Adam (2004) examined the relationship between poverty and economic growth a sample of 60 developing countries. The study revealed that while economic growth translates to reduction in poverty, particularly in developing countries, the degree of this effect is subjected to more the definition of economic growth. In the study, two measures of economic growth are defined; the survey mean income and changes in

GDP per-capita. The study outcome indicated that the level of poverty does not really depend on the level of economic growth. However, poverty is reduced more by means of average income than by using GDP per-capita (Agyemang, 2014:15).

### **2.8.3 African and Sub-Saharan Africa countries**

The poverty-growth-inequality nexus is more evident in places such as Sub-Saharan Africa, Asia and Latin America. As such, the study of Guiga and Rajeb (2012:470) indicated that 47 percent (approximately 501 million people) of the population in sub-Saharan Africa survived on \$1.90 a day or less, an indicator of a widespread hunger crisis. About 233 million of these people were estimated to be undernourished. Between 1993 and 2002, countries like Ghana, Tunisia and Uganda reported an impressive reduction in poverty, with declines in poverty rates ranging from three to six percent per year (OPPG (Operationalizing Pro-Poor Growth), 2005). According to Guiga and Rajeb (2012:471), Sub-Saharan Africa has prospered in poverty reduction only in 1990 and 2004 despite the policies adopted. The World Bank report (2016) on poverty in Africa indicated that, even though poverty across the sub-Saharan region has decreased, there has been a significant upsurge in the number of people living in extreme poverty. The study of Bourguignon (2003) on the growth elasticity of poverty reduction concluded that for countries like Cote d'Ivoire, Senegal and Zambia, the growth elasticity of poverty was three, two and two respectively. All three countries are poor and have higher levels of inequality.

Previous studies from López (2004) stated that when wealth increases leisure, economic growth will decline. Smaller economies grow faster than larger economies, especially those that have reached their 'peak' and start consuming wealth rather than producing it (Stevens & Sessions, 2008:9). Squire (1993:378) indicated that a 10 percent upsurge in economic growth reduced the poverty rate by 24 percent. A similar study undertaken by Bruno, Ravallion and Squire (1998), showed that a 10 percent upsurge in economic growth was accompanied by a 21.2 percent reduction in poverty, which also yielded results indicating that income disparity fluctuations impact on poverty variations. Similar to this study, Bruno *et al.* (1998) found a "positive and statistically significant elasticity estimate of 3.86 on the inequality variable (Gini coefficient)", which led to the conclusion that even the smallest change in the overall

distribution of income inequality can result in considerable variations in the poverty rate (Stevans & Sessions, 2008:6).

The results of Fanta and Upadhyay (2009) study suggests that in Africa, economic growth tends to reduce poverty growth. The achievement of economic development empowers countries to improve the living standard, which led to the recommendation that policies should aim for economic development and reducing income inequality in Africa (Agyemang, 2014:15). Barro (2000) presumed that the impact of income disparity on economic growth can either be positive or negative contingent upon the level of economic development. Income disparity in impoverished countries hinders economic growth, whereas income disparity in well off countries stimulates growth (Agyemang, 2014:14). The study of Niyimbanira (2017) analysed the relationship between economic growth, income inequality and poverty in South Africa, the study revealed that economic growth is a powerful mechanism for poverty reduction. However economic growth does not reduce inequality.

## **2.9 SUMMARY**

This chapter explored the literature and theories of income inequality, economic growth and poverty. So far literature has shown that firstly, both GDP growth and income distribution can be useful when reducing poverty and hence should be regarded at the outset as policy alternatives. Secondly, economic growth will reduce poverty unless it goes hand in hand with a significant increase in the distribution of income. Figure 2.7 indicated that neutral growth “(no distributional changes)”, or growth that slightly exacerbates income distribution will upsurge the income of the impoverished and thus reducing poverty.

The analysed empirical studies, provided contrasting results. Some highlighted the effect of economic growth on poverty reduction while others found the level of poverty to be independent from income and economic growth levels. From econometric point of view, methods and approaches used were rather crude until recently. Therefore, empirical analysis is subject to two classical econometric prejudices: selection prejudices and endogeneity prejudices. This is due to the limitations of the data available. The justification for these thresholds is that international data on income disparity are far from complete and still differ in quality today. As a result radical

samples were selected. Data from various countries from developed and developing countries were analysed and the finds differed depending on individual.

Most of these empirical studies revealed that an inverse relationship exists between population living below LBP and economic growth. Additionally, economic growth is associated with poverty level. The correlation between income disparity and economic growth remains rather inconclusive. Majority of the results in the literature imply that, there is no significant relationship between income disparity and economic growth. Different empirical methods were used in studies which attempted to assess the relationships, although in isolation. Empirical studies have presented contrasting results on the relations between income inequality, economic growth and poverty in the long and/or short-run. The long-run and short-run relationships in this study will be analyzed using a dynamic panel ARDL model. This will assist in tackling measurement errors and autoregressive equations

If a strong inverse relationship appears between poverty and economic growth; and poverty from a policy viewpoint, there is no need for government policies aiming poverty. Regardless the main focus of development strategies income inequality is a recurrent issue in development discussion. Prior to establishing the methodological framework and empirical estimations, the study analyses and explains the trends and policies of South Africa's income inequality, poverty and economic growth in the next chapter.

## CHAPTER 3

### TRENDS AND POLICY ANALYSIS

---

#### 3.1 INTRODUCTION

This chapter presents a historic overview and trend analysis of South Africa's selected macro-economic variables with the aid of graphical presentations, tables and figures. The chapter additionally provides an assessment of South Africa's rural-urban migration and a snapshot of the socio-economic climate of the South African provinces. In so doing, the study reviews related variable trends and policies to the fulfilment of the fifth theoretical objective. This entails an evaluation of empirical studies on the rural-urban migration in South Africa, besides a review of South Africa's economic growth, poverty and income inequality policies in an attempt to address the sixth theoretical objective. Additionally, the study addresses the first empirical objective, which entails a post-apartheid trend analysis between economic growth, income disparity and poverty in South Africa.

#### 3.2 SOUTH AFRICA'S GENERAL ECONOMIC CLIMATE POST APARTHEID

This section analyses South Africa's general economic state of income inequality, poverty, economic growth and other contributing factors. It reflects on the changes that occurred over the past two decades since South Africa gained political liberation in 1994.

According to StatsSA's report (2006; 2015), there has been a great debate amongst researchers about the relationship between economic growth, income disparity and poverty in post-apartheid South Africa (SA) (Bhorat & Van der Westhuizen, 2008:1; StatsSA, 2017b:104). Typically, the economic growth pursuit is intertwined with the issues of improving the population welfare and the standard of living. There has been contradictory evidence regarding the link between growth and welfare gains (World Bank, 2018:70). For a country like South Africa, this contradiction is clearer than in most economies as the economic growth record has not necessarily enhanced the economic welfare of many citizens (Bhorat & Van der Westhuizen, 2008:2).

Since gaining political liberation in 1994, the newly elected government implemented policies that were explicitly put in place to overturn the patterns of privilege (Van der Berg, 2010:3). The World Bank (2018:20) indicated that based on economic structure and GDP per capita, South Africa is ranked as an upper-middle income country but a more in-depth look at South Africa's social indicators (for example, quality of education or life expectancy), they reflect that of a low-income country (Van der berg, 2010:3). Since the transition, South Africa has been experiencing economic growth, and yet has not achieved the expected benefits in welfare that was hoped for (Bhorat & Van der Westhuizen, 2008:1). This is mainly attributed to the country's high and increasing inequality, attributing an inadequate distribution of opportunities and resources in the country (Van der berg, 2010:3).

Inequality is one of the major causes of social problems. The National Planning Commission (2011) and StatsSA (2017b:104), highlights the likelihood of threats associated with inequality high levels, social exclusion, corruption and crime. Furthermore, social inequality is the potential of political instability.

The most notable cause of income disparity in South Africa's history was characterised by the differences in racial groups, nowadays income disparity is also experienced among people from the same ethnic group especially within black South African groups (Khosravi & Karimi, 2010:431). In point of fact, growing conflict within the African National Congress (ANC) reflects dissatisfaction and disappointment between the party's subdivisions of the membership, specifically the youth, due to the deficiency of economic opportunities (Ravallion & Chen, 2003:96). On A broader view, if the income inequality continues unchecked, it can result into instability as lately evinced in Arab countries.

South Africa's income disparity has continued to increase regardless of the governments' effort in regard to income redistribution (IMF, 2012:162). Arguably, South Africa is currently regarded as one of the countries with the best advanced social protection schemes among entire middle income economies (StatsSA, 2017b:104). Van der Berg *et al.*, (2005) and Meth (2006) have emphasised the significance of the social grant system as a social care in South Africa. It was implemented with the aim to reduce poverty and help helpless households handling the unexpected changes into the economy (ILO (International Labour Organisation), 2014). This system assists

about seventeen million low-income citizens who could not satisfy their daily basic needs. Additionally, in 2015, social assistance transfers were projected to reduce the deficiency levels by nearly eight percent and also reduce the poverty gap by thirty percent (SASSA (South Africa Social Security Agency), 2016). Piketty (2014) stated that despite the stagnantly high income disparity, the inequality-reducing influence of social assistance has been substantial when inequality estimates are considered overlooking the transfers.

According to Van der Berg (2014:199), in 2015 around 10.5 percent of Gini coefficient was reduced true social assistance transfers and the introduction of land reduction policy and wealth management could be the key to further reduce income inequality (Ray, 2010). There has been progress in creating an efficient social protection system in South Africa, but a persistently low economic growth, lack of employment and financial constraints threaten its sustainability (ILO, 2014). The creation of jobs and efficiency in service delivery can help solve or decrease the challenges of high income inequality (StatsSA, 2018:75).

During the first quarter of 2017, the unemployment rate reached its high rate of 27.7 percent (World Bank, 2018:76). The growing level of unemployment rate in South affects mostly poor households and, unless otherwise, job creation or employment growth is the only solution towards income growth and quality of life improvement (ITRISA, 2016:330). Under the NDP, one of the South African government goals is to halve aims to cut the unemployment rate, maintaining a maximum of fourteen percent by 2020 (Senkal, 2017:23).

The implementation of a fiscal system has been of essential policy to reduce poverty and income inequality. The existing sluggish economic growth experienced in South Africa and other associated decline in the fiscal balance generate questions in regards to the sustainability of the social wage-oriented interferences against income inequality and poverty (Khosravi & Karimi, 2010:421). In the view of the World Bank (2014), in spite fiscal policies in the aim of reducing poverty and income inequality these two economic issues keep growing. Consequently, the main challenge remains how to boost economic growth and increase income for poor households (Bhorat, Kanbur & Stanwix, 2014:1406). The premise of sustainable and inclusive growth for broad-based growth within economic sectors has anchored its way as a viable solution

towards the country's high rates of poverty, inequality, and unemployment. National policies such as the NGP have thereby identified the latter to be a key economic driver and thus envisaged a GDP target of seven percent which is set to bolster faster and greater inclusive growth (World Bank, 2014:15).

South Africa's labour force is categorised by discouraged job-seekers and low participation due to the high levels of unemployment (Piketty, 2014). The spatial and geographical distinctions of the country together with lack of access to jobs for the jobless people in rural areas created a generation of discouraged work-seekers (Magruder, 2010:79). Employment has increased since the transition to democracy, but the number of jobs created did not match that of the population growth. Thus, a disparity between labour demand and labour supply (MacLeod & Rankin, 2016). Subsequently, a decline of labour force participation was experienced between 2000 and 2015 (World Bank, 2018:76).

South Africa being one of the countries with a higher disparity rate in the world (StatsSA, 2018:93), the theories of economic growth are not as clear and simple as they are interpreted in other developing countries. Economic growth and income inequality are often intertwined, suggesting a linear relationship between the two factors in a country with low income inequality (Brunori, Ferreira & Peragine, 2013:184). This is not necessarily true in terms of South Africa, where an increase in income inequality reduces the benefits from economic growth for the poor. This indicates that even though economic growth is necessary for an economy to thrive, it is not a sufficient solution in reducing poverty for a country like South Africa (Ravallion & Chen, 2003:96).

Accelerating poverty reduction and inequality will require the government to unlock the full potential of the South African labour markets and promote inclusive growth through skill creation (Finn, 2015:2). The goal of the NDP to eliminate poverty by 2030 is mainly dependent on GDP growth and income inequality reduction (ITRISA, 2016). South Africa holds a very low growth-to-poverty elasticity and it's mainly due the extremely high levels of income inequality (Department of National Treasury, 2018a:21). This indicates that the degree of poverty reduction, therefore, is dependent on both income inequality reduction and economic growth. Slow economic growth with better access to education amongst the poor is anticipated to "slightly reduce inequality and poverty

in the coming years” (IMF, 2012:162). Poverty rates (LBPL) are anticipated to decline from 40 percent in 2015 and reach 33 percent in 2030, and in spite of the slow economic growth, income inequality should decline with a Gini coefficient falling from 62.8 in 2017 to 59.5 in 2030 (National Treasury, 2018a:289).

Recent research indicates that interventions aimed to concurrently encourage economic growth and decrease inequalities are more likely to have significant effect than those stimulate economic growth only or reduce inequalities alone (National Treasury, 2018b:46). An analysis conducted on existing policy interventions, such as the national minimum wage and the employment tax incentive, recommends that their influence on disparity, and poverty, is very diffident (MacLeod & Rankin, 2016:02). To impact more on income inequality and poverty, government must aim to create good jobs for the poor (SASSA, 2016). Higher fiscal revenue is needed from growth would economic growth to boost fiscal space and maintain social support to the poor and the helpless, and furthermore invest in the acquisition of skills (Bhorat *et al.*, 2014:1412).

To summarise, South Africa’s socio-economic climate is characterised by: steadily economic growth since 1994 assisted towards healthy revenue base for government. The government has the ability to use this revenue as social grant and to support vulnerable citizens. Comparing the household with income from social grants and those with income from elsewhere, on can conclude that in the absence of social support, the level of inequality should be higher than in the presence of income grand or social support. Consequently, the social grant plays and important role to reduce the level of inequality. Nonetheless, poor people are not the one who benefit more from economic growth. Critically, it remains a dilemma whether this cycle, from economic growth towards revenues redistribution, is sustainable as the country still struggles with a highly impoverished population, subdued growth and investments.

### **3.3 TREND ANALYSIS OF SOUTH AFRICA'S SELECTED MACROECONOMIC VARIABLES**

#### **3.3.1 Income inequality trends**

Inequality is a historically problem in the South African economy, Since Dutch colonization in 1600 up to the arrival of apartheid regime in 1990s (Bosch *et al.*, 2010). Political and economic sanctions imposed on the apartheid regime that lasted for lasted for 50 years impacted more on the South African social and economic life especially for black south African (Akanbi, 2016:172). Amid the day and age of democracy, whites and blacks were bound to various regions of the country and compelled to utilize distinctive services. Blacks were deprived from their lands and consigned to the Bantustans while the whites were sold the fertile land at reduced costs (Bhorat & Van der Westhuizen, 2008:14). Infrastructure, tidiness, and general quality of life differed greatly between the two groups of the country (May 1998:2). The black South African population is more likely to remain at the bottom and less likely to be upwardly mobile (Brunori *et al.*, 2013). However, the race is not the only reason for low mobility. Spatial segregation, education, migration and labour markets also have an impact on the chances of upward mobility (Bosch *et al.*, 2010). For intergenerational mobility, skills and education matter in both whites and blacks. Scarce skills are more likely to give rise to greater mobility, so does the higher levels of education (StatsSA, 2018:75).

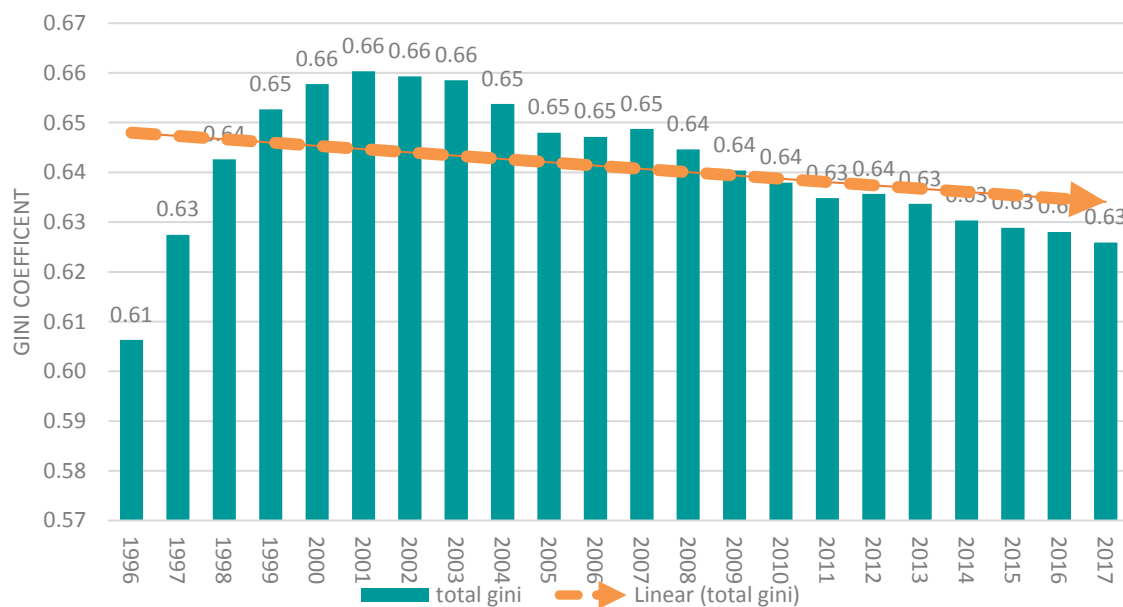
In South Africa, income disparity is measured using the Gini coefficient, it determines how much an economy deviates from perfect equality meaning whether everyone has the same income (Bhorat, Naidoo, Oosthuizen & Pillay, 2015:24). The income distribution structure of each country differs, and it includes taxes, transfers like social security, welfare and unemployment insurance. This structure can determine how severe the distinction or gap between the poor and rich is (Cappellari & Jenkins, 2002:65).

The main drivers of income disparity in South Africa are household size, race, education, and location (Deininger & Squire, 1996). Since transitioning, the influence of education and race seems to decrease whilst the other factors remain comparatively constant or have even worsened (StatsSA, 2018:91). Within the education

department, the biggest contributing factors to income inequality at the higher end are the completion of high school education and obtaining a university degree (Bhorat *et al.*, 2015:12). In terms of inequality of opportunity, race has remained the main factor (Brunori *et al.*, 2013). Fields (2003:27) indicated that education, race and the labour market are dominant features that explain total inequality.

Inequality of opportunities is the most significant determinant of inequalities in South Africa (Brunori *et al.*, 2013). Magruder, (2010:84) stated that low intergenerational flexibility creates a pessimistic scenario, which suggests that current levels of income disparity are likely to persist in the future. Income inequality appears to be generational, denoting little change in disparity over time and perhaps even a worsening of the situation (for example, a child from a poor household, with uneducated parents can be more interested in doing more farm work than focusing on school) (Department of Labour. 2016:24). An empirical analysis of important movements and variation in wage levels and wage disparity in the labour market indicated additional polarity of income (Duclos, Esteban & Ray, 2004:1764). Figure 3.1 below illustrates the overall income inequality of South Africa from 1996 to 2017.

**Figure 3.1: South Africa’s Gini coefficient trend (1996-2017)**



Source: Own compilation (Data obtained from IHS Global Insight, 2018)

In theory, the Gini constant is a statistic summary of income disparity, which differs from zero to one and it measures the degree to which the distribution of proceeds

among persons within an economy deviates from an impeccably equal distribution (IMF, 2012:162). If the Gini constant is equal to zero it implies that incomes are “*distributed in a perfectly equal*” manner, with all workers earning equal income. If, on the other hand, the Gini coefficient is equal to one, income is completely prejudiced (StatsSA, 2015:9). In this case, one individual in the population earns income, whilst everyone else earns nothing. Figure 3.1 above represents South Africa’s overall income inequality and it confirms that income inequality in South Africa has remained strongly unequal over the past 20 years.

South Africa encountered an increase from 0.61 in 1996 to 0.65 2004. In other words, during this period, “*economic growth was enjoyed by a declining share of the population, making poverty reduction gains harder to realize*” (Bhorat & Van der Westhuizen, 2008:1). Van der Westhuizen (2012:33) indicated that had inequality levels stayed constant since 1995, it by estimate that economic growth would have resulted in a 29 percent point drop in household poverty, instead of the five percent point decrease. Even with the decline from late 2004 to 2006, the global financial crisis impacted South Africa’s Gini coefficient negatively, resulting in an increase in 2007. Van der Westhuizen (2012:33) argued that from a broader perspective, South Africa may be the most “*consistently unequal country in the world*”. The illustration indicates a decreasing trend line in orange but income inequality is not decreasing fast enough to positively impact growth and poverty.

However, high income inequality is accompanied with decrease in poverty rates (Krueger, 2012). This might be the outcome of a “burst” in industrial alteration that would generate wealth for entrepreneurs which then improves the wages of those who used to be paid low gages. This resulted from the Industrial Revolution in Britain and enhancement of information technology (IT) in the United States. Furthermore, skilled labour required by technology growth generate a demand for highly education and trained people (SASSA, 2016:116).

In addition to racial inequality and income inequality, Leibbrandt, Wegner and Finn (2011:3) indicated that the upsurge in income inequality in South Africa amongst other factors is driven by geotype (rural versus urban). This factor will be further reviewed in Section 3.4.

### 3.3.2 Poverty trends

Over the years, poverty has been stubborn in SA and the economy is highly divided (Duclos et al., 2004:1748). In South Africa, absolute poverty is measured in terms of poverty lines. According to the AFDB (African Development Bank) (2017), the official thresholds below which people are considered impoverished are the poverty lines. SA has three distinct poverty lines which encompass the diverse degrees of poverty and permit the country to monitor and measure poverty at different levels (StatsSA, 2017b:19). Poverty lines used in SA are presented in Table 3.1 (in South African Rand) ZAR below and the calculations are illustrated in Figure 2.1. The UBPL and LBPL take the cost of basic food into consideration in addition to the cost of other basic living needs (StatsSA, 2015:9).

**Table 3.1: South Africa's poverty lines (ZAR)**

Period	Food poverty line	Lower-bound poverty line	Upper-bound poverty line
2006	219	370	575
2007	237	396	613
2008	274	447	682
2009	318	456	709
2010	320	466	733
2011	335	501	779
2012	366	541	834
2013	386	572	883
2014	417	613	942
2015	441	647	992
2016	498	714	1077
2017	531	758	1138

Source: StatsSA (2017b)

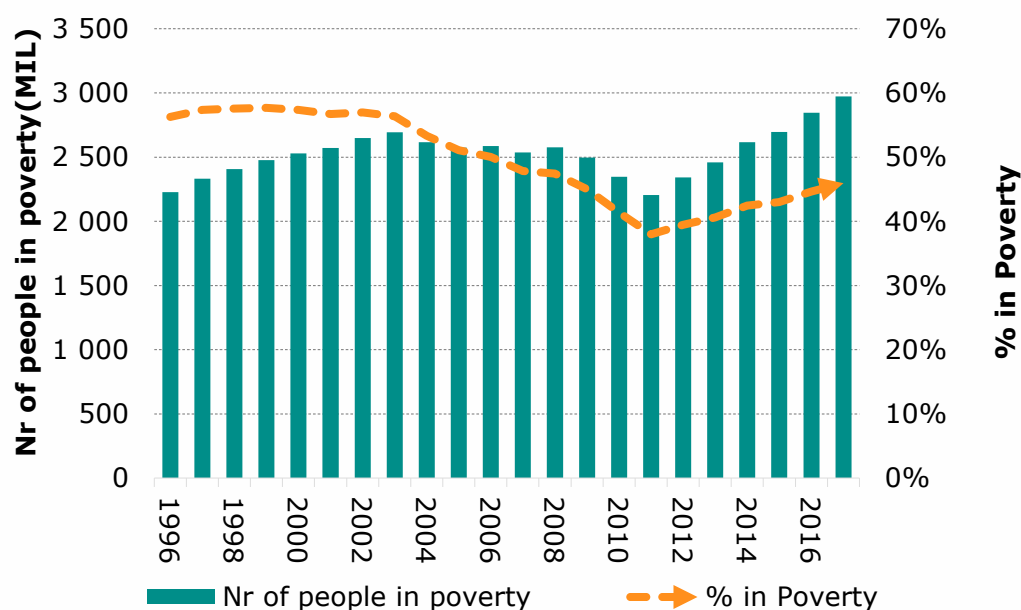
The poverty lines are based on expenditure and consumption data from the “2000 *Income and Expenditure Survey*”. This assists Statistics South Africa to have a better reflection on a household's genuine living standard and aptitude to meet basic needs (Van der Westhuizen, 2012:34). The poverty lines were first reported in 2014 and

recalculated in 2010/11. The latest poverty report was released in 2017 using estimates for 2006 to 2015 (StatsSA, 2014:26).

Poverty lines can appear self-assertive at times, for instance, in 2015 an individual that spends R991 per month was considered to be living in poverty while an individual that spends R993 was not. Scholars assert that a line has to be drawn if the extent of “*poverty is to be measured and tracked*” (Woolard & Leibbrandt, 2006:21). At the UBPL of R992 per person per month in 2015 prices indicates that almost half of the populace is chronically poor, (StatsSA, 2015:84). The cause of chronic poverty is mainly a low labour force participation which is linked to low levels of education, demographic factors and increase of a low-skilled generation which is contributing to South Africa’s brain drain (Duclos *et al.*, 2004:1729).

In South African, one person out of four can be classified as middle class or elite, while the rest are considered to be classified as poor or risking to fall in that category of poor people (Calvo & Dercon, 2009:36). The middle class size (of twenty percent) is considerably small compared to other developing countries and growth has been dawdling (StatsSA, 2017a). A more educated household head, has access to a stable labour market income which can then stabilise South Africa economy (Department of Labour, 2016:92). The poverty overview chart in Figure 3.2 provides an illustration of the number of people and percentage of people living in poverty in South Africa.

**Figure 3.2: South Africa's poverty rate trend (1996-2017)**



Source: Own compilation (Data obtained from IHS Global Insight, 2018)

The bars in green represents the absolute number of individuals in poverty, whereas the trend line in orange represents the percentage of people in poverty. The higher the fraction of impoverished people there is in the economy, the lower the growth rate (Ravallion, 2001:1808). This measure allows for economies of scale within larger households.

Figure 3.2 indicates that there has been growth in the aggregate number of impoverished people over the years. Employment does not guarantee that poverty will be reduced in South Africa, because close to thirty-five percent of employed citizens are in households living below the LBPL. Even with the financial crisis looming, Poverty reduction has had a positive trend between 2006 and 2015 also attributed to the 2010 soccer world cup that created jobs for most South Africans. Between 2011 and 2015, 2.5 million South Africans fell into poverty despite a positive overall trend (MacLeod & Rankin, 2016). Various poverty measures have been used over the years, with the absolute poverty line being the most prominent one, which currently stands at R17.48 per person a day (StatsSA, 2017b). According to StatsSA (2017a), 13.8 million people in South Africa are living below the FPL and survive on R441 or less per month

(2015 prices). Currently, the trend line is increasing indicating that the percentage of people in poverty is increasing.

The StatsSA poverty trend report additionally demonstrates the significance and positive outcome of the social grants particularly, in controlling starvation levels, together with government-subsidised housing and access to free basic services, for example, electricity and water (StatsSA, 2017c).

### **3.3.3 GDP growth trends**

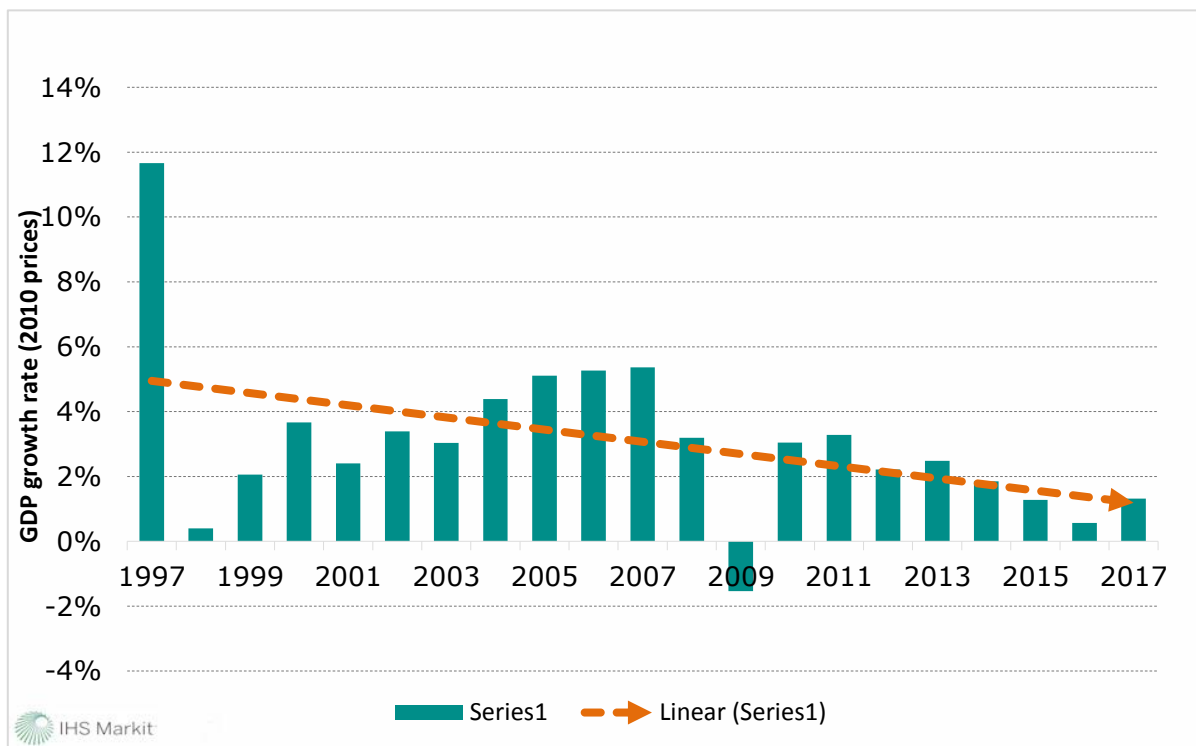
The economic growth rate in South Africa is too low to create adequate jobs and remains the core task for the government's far-reaching development plans (Piketty, 2014). According to the World Bank (2018:140), 3.5 million people have entered the labour force but only 1.6 million additional jobs were created. The rate of unemployed people is nearly 6.2 million people, when including those who have stopped looking for work, the rate increases to 9.3 million. Nearly 3.5 million (57%) people of those looking for employment have not worked in the past five years. These statistics have amplified by nearly 34 percent since 2008 (StatsSA, 2018:77).

There is a generalized view that economic growth is essential for implementing measures that can reduce poverty, in other words *"the poor benefit from growth"* (Bhorat & Van der Westhuizen, 2008:16 & 2012:12). This view is justified and would appear to be simplified when an increase in economic growth is measured effectively by rising per capita incomes as it results in a decrease in poverty levels due to an increase on economic growth (Bhorat & Van der Westhuizen, 2012:12).

Government has kept up its policy progression, routinely faulting the international economic crisis for the country's economic burdens and more than once requiring a social compact with businesses and labour to tackle the long-standing needs of joblessness, poverty and disparity. This line has been kept up in the two years since the period to 2015 covered by StatsSA (2017b:49), as the nation, amid developing political unrest, the governing ANC's infighting, and widespread state capture reports has led to a downgrade by the global credit ratings agency. Consequently, South Africa found itself in a technical recession, whilst experiencing the most severe drought in over a century, as well as water shortages, plunging businesses and consumer confidence to all time lows (Alexander, 2010:31).

The official narrative of South Africa’s economic growth is characterised by being at the receiving end of universal economic and financial consequences. Even though the rest of the world is slowly recovering, South Africa is being left behind by the international environment (Niyimbanira, 2017). South Africa has encountered eight recessions since 1961, the longest ran over two years, from 1991 and 1992 (StatsSA, 2017c:62). this will be further discussed in Figure 3.4. Below Figure 3.3 graphically illustrates South Africa’s GDP growth trend from 1996 to 2017.

**Figure 3.3: South Africa’s average annual GDP growth (1997-2017)**



Source: Source: Own compilation (Data obtained from IHS Global Insight, 2018)

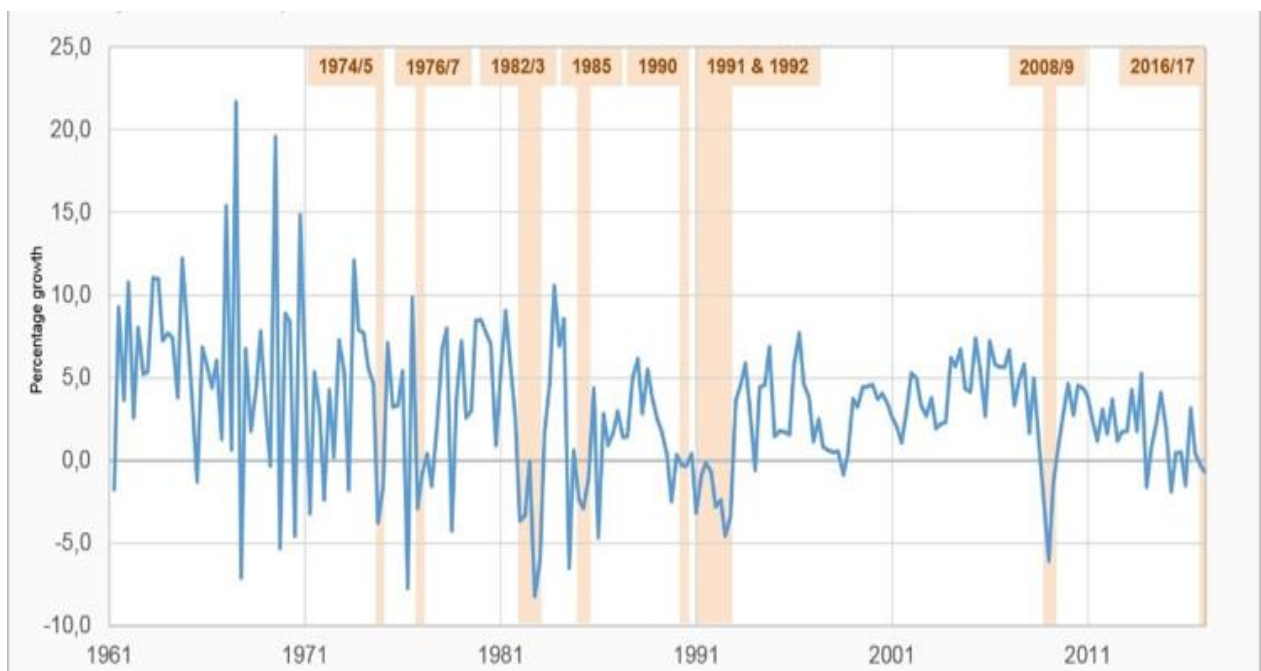
The bars in green represents the total national economic growth, whereas the trend line in orange represents the direction in which GDP is moving. Based on the average annual growth illustration, South Africa encountered an average, annual growth rate of approximately 3.7 percent from 1998 to 2004, this was mainly due to the capital reallocation and labour expansion. Between 2005 and 2007, economic growth further accelerated due to significant foreign investments, access to credits, an increase in wages which lead to private consumption and resilient commodity prices, which accounts for 60% of South Africa’s exports (Bhorat *et al.*, 2014:1419). The economic

growth was associated with decline in the poverty rate from 2009 to 2016 as indicated in Figure 3.2.

The period between 2008 to 2009, however illustrates that economic growth decreased by 1.6 percent which was widely influenced by the global financial crisis, growth reached an all-time low of -6.10 percent in the first quarter of 2009 (StatsSA, 2018:1). However, economic disparities such as income inequality continued to worsen as indicated in Figure 3.1. The global financial crisis severely affected South Africa and did have a negative effect on both social and economic progress. Between 2009 and 2017, economic growth averaged only 1.6 percent and has continued to decline from an erratic high in 2011 to only 0.3 percent in 2017 (StatsSA, 2017a:68). Furthermore, high HIV/AIDS prevalence, the low quality of education, and poor government service delivery to rural areas compromises efforts to reduce unemployment, poverty, and income inequality (MacLeod & Rankin, 2016).

Figure 3.4 below illustrates the eight major recessions experienced by South Africa, their causes and the impact they had on economic growth, poverty, job creation and the South African economy. The literature below is based on the two most recent recessions since South Africa gained political liberation, specifically pertaining to the 2008/9 recession and the recession experienced in 2016/17.

**Figure 3.4: GDP growth trends using recession patterns since 1961**



Source: StatsSA (2017c)

Utilizing the broadly acknowledged measure of ‘recession’ as (at least two) sequential quarters of negative growth, South Africa has encountered “*eight economic recessions since 1961*” (StatsSA, 2017c:4). Between 1991 and 1992, South Africa experienced the longest recession, mainly as an aftereffect of a worldwide economic downturn (StatsSA, 2017c:2). In 2009, South Africa once more, fell into a recession caused by the global financial crisis that crippled the banking sector. The after effects of this crisis were felt all over the world. In any case, now that global growth is recouping, South Africa still struggles to recover to pre-crisis levels.

In both 2016 and 2017 the South African economy experienced economic recession. During 2016 recession, economic growth declined by 0.3 percent, and in 2017 the south african GDP decline by 0.7 percent. That is an oddity and it suggests that the issues that South Africa faces are peculiar and not due to weak global growth (World Bank, 2018). StatsSA (2017b) stated that unless the government is looking at these numbers as policy-makers, they are not tackling the underlying driver of jobless growth. The numbers are there, but South Africa lacks a framework that unites them so that policies can react in a practical manner (StatsSA, 2017c:3).

In the first quarter of 2017, the South African secondary and tertiary sectors experienced negative growth rates. Manufacturing and trade and industries were the real heavyweights that smothered production. Production in trade declined by 5.9 percent while manufacturing underwent 3.7 percent decline (StatsSA, 2017b:192). The tertiary sector experienced its first quarter of decline since the second quarter of 2009, when South Africa was in sluggish state of economy. Some solace, nonetheless, can be drawn from the horticultural industry, this is the first time since the fourth quarter of 2014 that the industry demonstrated any kind of growth contributing two percent to GDP in 2016. In the first quarter, an increase of production in field crops and agricultural products lifted the industry in the first quarter. This was an indication of economic recovery from one of the hardest droughts in recent history (Baudoin, Vogel, Nortje & Naik, 2017:129). Mining’s growth was for the most part an aftereffect of an ascent underway of gold and ‘other’ metal minerals, including platinum. On the positive side, the horticulture and mining industries both positively contributed to growth in the first quarter, however insufficient to maintain a strategic distance from another recession (StatsSA, 2017a:45).

The South African experienced two major economic recessions since 1994. The first one was experienced in 2008/9 and during this recession the country was caught up in the global financial crisis. The latest was experienced in the fourth quarter of 2016 and the first quarter of 2017. By the second quarter, South Africa economy was out of recession, with the agricultural sector being the prominent industry aiding recovery, prompted on by increased crop production after the drought (Baudoin *et al.*, 2017:134). Other outstanding highlights of the second quarter include growth of 1.5 percent in manufacturing after three consecutive quarters of decline, and a solid bounce back in electricity, gas and water of 8.8 percent.

The mismanagement of government funds, corruption and political instability are huge contributors to South Africa's economic growth. More often than not, recessions in the country are caused by internal factors particularly the latest recession in 2017.

### **3.4 REVIEW OF THE RURAL-URBAN MIGRATION IN SOUTH AFRICA**

Despite the lack of sustainable growth, South Africa's urban population is expected to grow at a frightening rate and further widening the rural-urban gap. The gap between the poor and the rich fuels the migration from rural areas to urban areas (StatsSA, 2018:96). This section outlines a compendium of relevant literature on rural-urban migration in South Africa, its causes as well as the implications it has on the economy's growth, income inequality and poverty.

The United Nations projects that by 2030, around 71.3 percent of the South African people will be living in more urbanised areas and by 2015, the number would have increased to a staggering eighty percent (World Bank, 2018). From an outside perspective, this is a welcomed statement as it portrays the development of South Africa, but it also paints a worrying picture about the future of South Africa's rural areas, as rural-urban migration becomes more and more prevalent. These areas will lose skilled and innovative people, which will further prolong the cycle of poverty and underdevelopment which will surely have significant implications for rural development and growth (Angelopulo, 2017:67). The massive migration of people from countryside has exercised tremendous pressure on cities around the country and as a result the policies implemented by government to combat poverty, income inequality and boost growth are counteractive.

Shezi (2013:111) notices that contrary to popular belief, not all individuals who engage in rural-urban migration are incompetent individuals. Throughout the years, skilled professionals working in rural areas have also started to favour working in predominantly urban places mainly because of working and living conditions and this has progressively concerned authorities as it has serious ramifications for rural provinces, particularly in terms of the provision of skills and ensuring the effective rendering of services by the government (Shezi (2013:112). Migration is a response to the disequilibrium within a country's economic setting (IMF, 2012:40). Increasing inequality and economic disparity within South Africa, poverty and economic hardships further fuel rural-urban migration in the country.

After gaining political liberation, the transitioning phase began in South Africa, there was structural transformation that resulted in the primary sectors declining and an expansion in the tertiary sector (Mellet, 2012). In 2016, economic growth was mostly led tertiary sector by the services sector such as transport, trade, finance and social services and this tertiary sector accounted for 70 percent of all GDP which was an increase from 60 percent in 1994 (IMF, 2012:39). The primary and secondary sectors lost their shares towards GDP, with agriculture, fisheries and forestry decreasing from three percent in 1994 to two percent in 2016 (National Treasury, 2018b:162). Manufacturing, mining and construction also lost market share, from 37 percent in 1994 to 28 percent in 2016. Mining was the backbone of the South African economy, but it is increasingly losing GDP share to services (Senkal, 2017:5). The lack of a competitive and productive manufacturing sector remains a significant economic growth challenge (StatsSA, 2018:3).

The legacy of politically-sanctioned racial segregation in SA has accentuated the escalation in rural-urban migration since certain groups of citizens were prohibited from travelling to certain areas in the past. Since the abolishment of politically-sanctioned racial segregation, this means that people have unrestricted movement and subsequently has brought an increment in internal migration in the country (Martine, 2012:10). South Africa is now characterised by a high rate of short-term migration, where people moves around cities seeking employment and then send their wages money back home. Short-term migration comprises of a large proportion of the movement among the black people (Zuma, 2018:3-6).

Between 2001 and 2011, there was an increment of the South African urban populace from 57 to 63 percent, and cities such as Cape Town, Durban and Johannesburg have seen a huge increment inflow of individuals from across the country (Angelopulo, 2017:65-69). Furthermore, because rural areas lack the critical infrastructure needed for rapid development, they are largely disconnected from development that happens in urban areas, hence with limited development, people opt to go in search of opportunities (Angelopulo, 2017:67).

The government has been prioritising rural development and empowerment in its recent policies, however, it remains to be seen whether these policies and mechanisms will be able to reduce the increasing rates of rural-urban migration in South Africa. Gauteng's transport MEC, Dr Ismail Vadi, expressed that there are approximately 12.9 million people in the province and that consistently more than 20 000 people per month come to the province to seek better life opportunities mainly for employment purposes (Wakefield, 2015).

### **3.4.1 Reasons for urban movement in South Africa**

Migration as a rule is constantly spurred by ones' desire to economically grow and develop through the pursuit of economic opportunities, subsequently this is dependably the main consideration urging individuals to engage in migration (Martine, 2012:11). Be that as it may, these elements vary from economy to economy and from region to district. The sub-sections below highlight and explain the main considerations responsible for urban movement within South Africa.

#### **3.4.1.1 Employment opportunities**

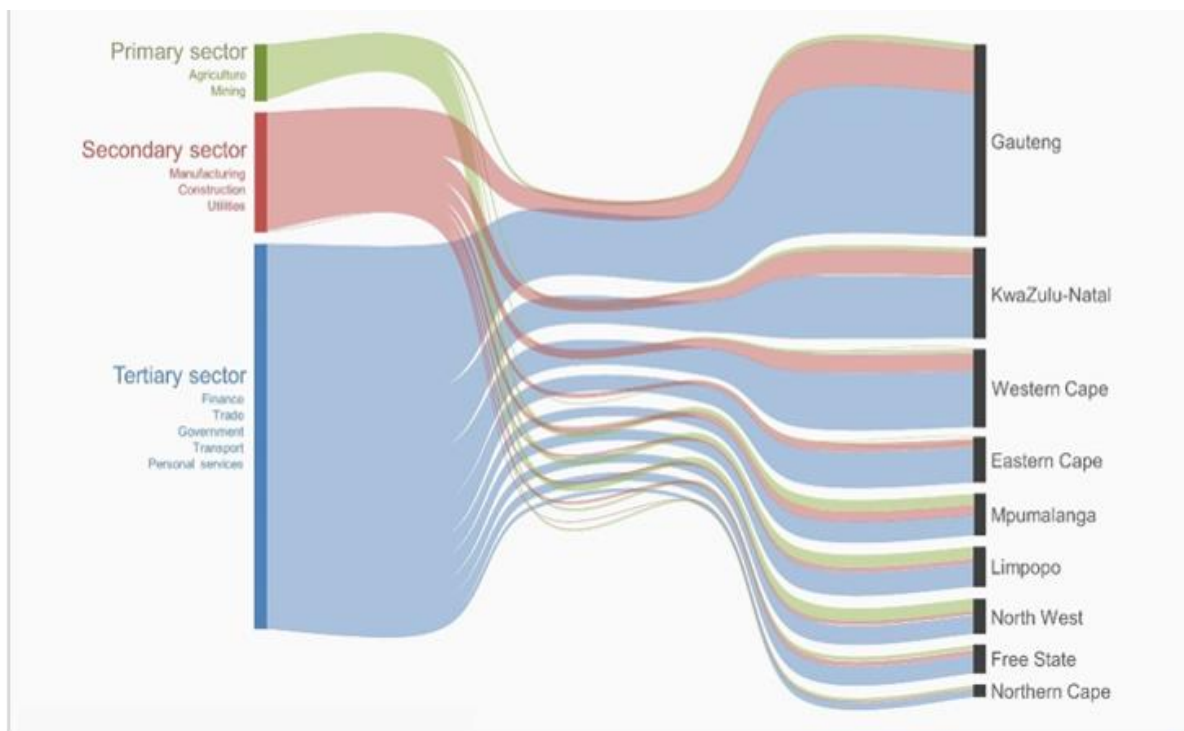
The Organisation for Economic Co-operation and Development (OECD) (2011:80) specifies that rapidly developing provinces such as Gauteng and Western Cape, witness a gigantic inflow of people from across South Africa who are in search of employment opportunities. Gauteng and the Western Cape are characterised by fast-developing economies and mass industrialization, and there are practical objectives for people who seek employment (Shezi (2013:112). Rural-urban migration in South Africa is spurred by economic reasons as rural regions can't give adequate employment, people opt to venture into cities in search of opportunities. Without a

doubt, the main factor responsible for rural-urban migration in South Africa is the availability of employment opportunities.

### 3.4.1.2 Industry difference in terms of economic sectors

Figure 3.5 below provides a perspective on the rural-urban gap in South Africa, the size of the country's three sectors together with each provincial economies. The green represents the primary sector, which includes agriculture, mining and fishing. The secondary sector is illustrated in red, which includes construction, utilities and manufacturing. The tertiary sector in blue at present, contributes the bulk of South Africa's economic production, this comprises of business, finance, trade, government, personal services and transport.

**Figure 3.5: Economic sector rural-urban gap concentration**



Source: World Bank (2018)

From Figure 3.5, it is clear that the tertiary sector activities dominate the national economy and are concentrated in the most urban provinces namely, Gauteng, KwaZulu-Natal and Western Cape. These three provinces are the niche and host the bulk of the secondary sector activities. The primary sector is the smallest and is more concentrated in rural provinces such as Mpumalanga, Limpopo, North West and

Northern Cape where mining and agriculture are the dominant industries (OECD, 2011:76). Gauteng is the largest economy, having “*contributed R34 for every R100*”, KwaZulu-Natal comes in second (R16), followed by Western Cape (R14) of national economic production in 2015.

When making decisions about the economy, it is important to consider the effect of geographical location. Although the mining sector does not appear to be the top four largest industries in South Africa, contributing only eight percent to the total GDP, it is rather the dominant industry in four provinces and the lifeblood of many small towns (StatsSA, 2017a:67). As mentioned before, the services industry plays an important role and contributes for around 73 percent of GDP. Considering services industry, finance, real estate and business services are the most important they contribute 21.6 percent whilst the rest contribute as follows: wholesale, retail and motor trade, catering and accommodation (15%); government services (17%) and transport, storage and communication (9.3%). Mining accounts for approximately 8.3 percent, manufacturing for 13.9 percent and agriculture for only 2.6 percent (World Bank, 2018).

Although economic structures might not appear so vital at a national level, on a regional or local level they may have serious consequences for the living of many people contingent on the smaller industries (Ray, 2010). The gap in the industries (economic sectors) increases the rural-urban gap amongst provinces and further widens the gap in inequalities (World Bank, 2018:119).

#### 3.4.1.3 Educational and health services

The countryside in South Africa are characterised by the insufficient provision of educational and health institutions (Spaull, 2013:54). Services in rural areas are in disarray and are characterised by debasement (corruption), nepotism and poor accountability and service delivery, such problems entice people to seek places which are characterised by better services. While they may not migrate to cities, people will ultimately seek places such as developing towns which are characterised by the efficient provision of services, which further compounds government struggle against rural-urban migration (Page, 2013).

#### 3.4.1.4 Wage distinction

Wages and salary differ in countryside and the urban areas. It is more like to earn high wage in cities than in rural areas, thus becoming a motivating factor for one to migrate to an urban area (Leibbrandt *et al.*, 2007:21). Kok and Collinson (2006) state that numerous individuals from northern KwaZulu-Natal travel to Gauteng to look for better compensation as northern KwaZulu-Natal is described as a rural setting and thus can't compare with urban areas in Gauteng as far as wages. Eastern Cape, Limpopo and KwaZulu-Natal are predominately rural provinces and the immense distinction in wages amongst urban and rural areas influences people to migrate to urban areas (Bhorat & Van der Westhuizen, 2012:13).

### 3.5 BRIEF OVERVIEW OF THE NINE PROVINCES

From a South African perspective, economic growth has its contribution to the income levels and income inequality. For instance, if economic growth resulted in an increase in income disparity, the benefits from economic growth to the poor may in fact be compacted (Bhorat & Van der Westhuizen, 2012:14). Higher income inequality levels stimulated by economic growth through their adverse influence on income distribution, dilutes the influence that economic growth has on poverty. With that said, the critical view is that economic growth may be essential, but not a sufficient requirement for reducing poverty in a country like South Africa (Van Der Berg, 2010). This section adds to the discussion of income disparity, poverty and economic growth in South Africa focusing on addressing provincial aspects and insights.

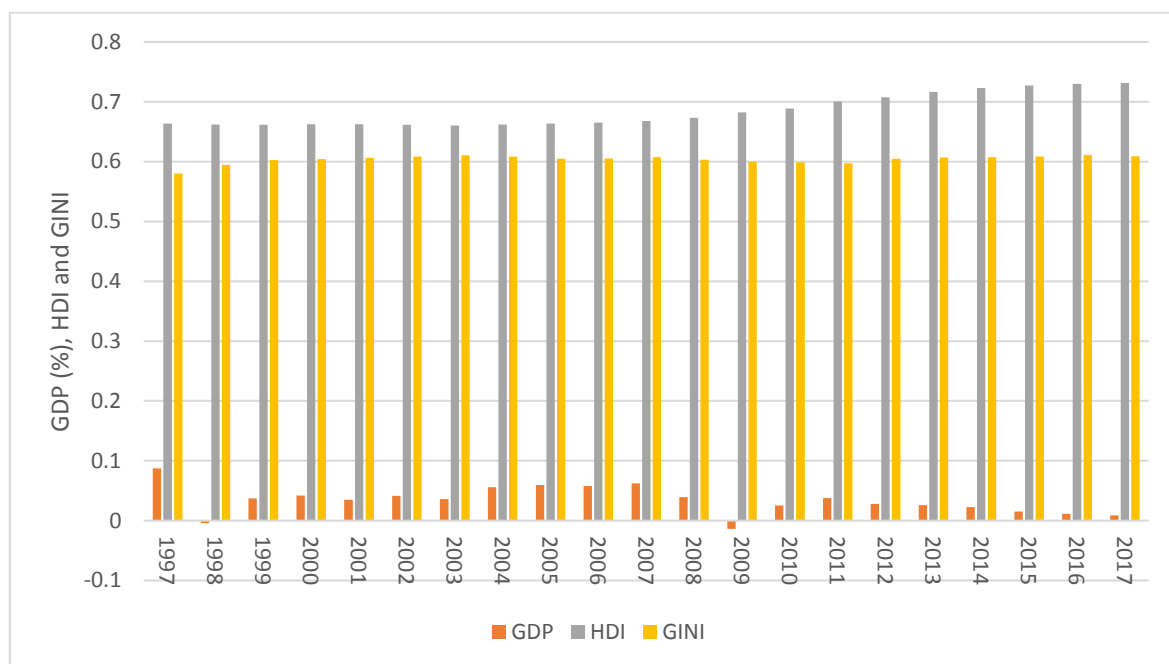
#### 3.5.1 Insight in South Africa's individual provinces

According to Leibbrandt, Woolard and Woolard (2007:19), literature indicates an agreement on the direction of post-apartheid income inequality, growth and human development index trends even if there are disagreements about the precise levels at any point in time. The total inequality persisted at a high level and may even expand. This is being driven by expanding intra-race inequality. In the acclimations to South African culture going with the appearance of the post-apartheid period, such dynamism is not unforeseen and not essentially bad (World Bank, 2018:119). The high level of income disparity, notwithstanding, that the approach of the post-apartheid period adds an unpropitious note to this trend and given the skewed distribution of

human and physical resources that undergirds this, has not dramatically improved in money-metric terms.

There is awareness in South Africa that economic growth makes conceivable outcomes for the private sector to make advances into poverty and income inequality (Leibbrandt *et al.*, 2007:20). Joblessness significantly affects household wage inequality, particularly black African households (Leibbrandt *et al.*, 2007:25). Figure 3.6 above illustrates the relations between the average annual GDP growth, Gini coefficient and human development index in the Western Cape Province.

**Figure 3.6: Western Cape province GDP growth, GINI coefficient and HDI trends**

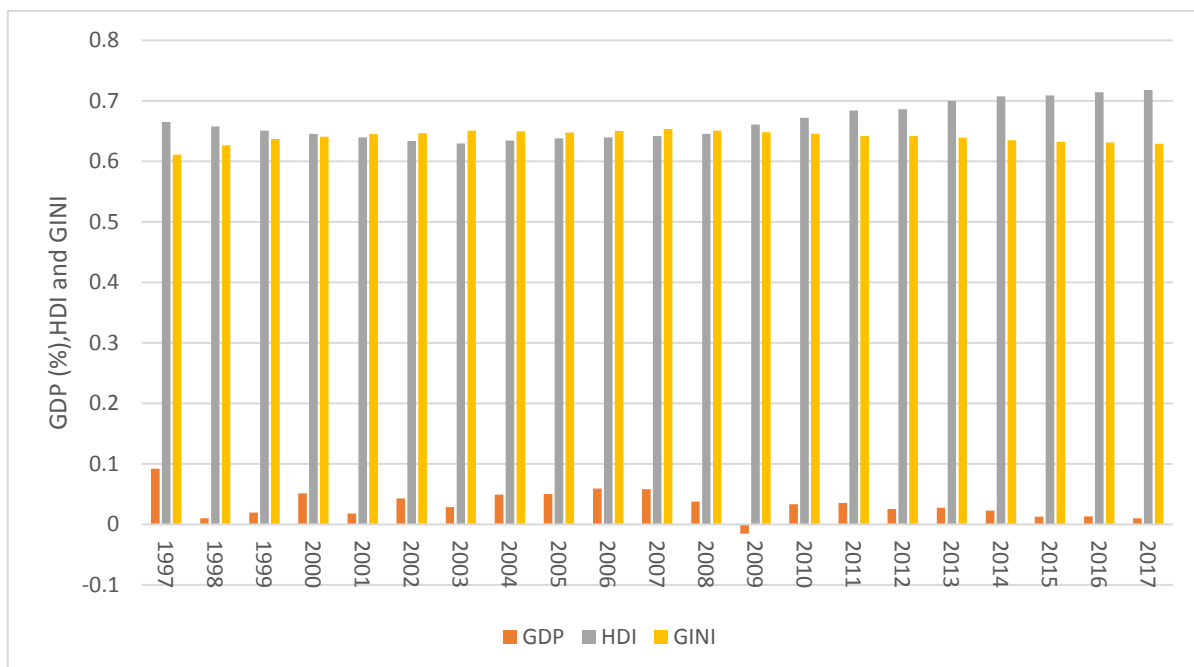


Source: Own compilation (Data obtained from IHS Global Insight, 2018)

The Western Cape province is characterised by having the highest human development index in South Africa as presented by the grey bars. This is a reflection of the literacy levels in the province, mortality rate and standard of living. There is high standard of living, low mortality rate and people are more educated. The average household income in the Western Cape is R143 000, second after Gauteng. When the average annual growth decreases, income inequality remains relatively stable but the human development index increases. This is due to the rural-urban migration, people will unquestionably continue to engage in migration, essentially looking for better economic opportunities in provinces such as the Western Cape.

If the government neglects to quickly prioritise rural development, South Africa will continue experiencing immense volumes of individuals moving from rural regions to urban zones. This will leave the developmental aspects of rural areas in shreds and provinces like the Western Cape will continue to develop rapidly even in times of low growth (Mlambo, 2018:66). Cross (2009) indicate that rural-urban migration in South Africa is portrayed by two fundamental corridors, firstly those from Kwazulu-Natal and Eastern Cape streaming the Western Cape resulting in a convergence of more than 300 000. The second corridor is discussed further in Figure 3.7. Figure 3.7 below illustrates the relations between the average annual GDP growth, Gini coefficient and human development index in Gauteng Province.

**Figure 3.7: Gauteng province GDP growth, GINI coefficient and HDI trends**



Source: Own compilation (Data obtained from IHS Global Insight, 2018)

This province has the second highest human development index in the country with 0.72 in 2017 after the Western Cape. Even with the high literacy rate, standard of living and low mortality rate, the Gauteng province has one of the highest income inequality in the country mostly due to the rural-urban migration mentioned in Section 3.4. Gauteng has the highest average household income at more than R156 000 a year (StatsSA, 2018:15).

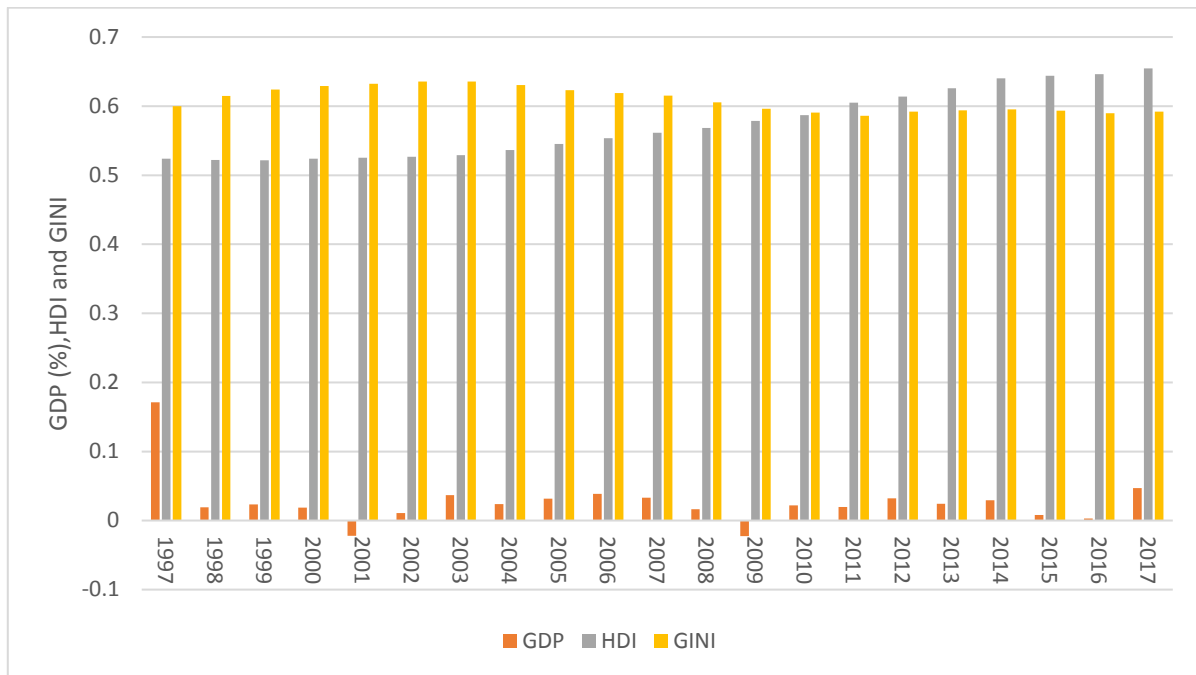
Gauteng is the smallest province geographically, yet it is the economic heartland of the country and the most populated (Meyer & De Jongh, 2018:6). Kok (2006:8-12) suggests that the 1886 revelation of gold in Johannesburg was responsible for introducing an influx of internal migration. Since the discovery, the city has turned into a colossal fascination for migrants from all over Africa as it is viewed as a city with tremendous potential and conceivable outcomes. The second rural-urban migration corridor is mainly from Limpopo, Free-State, northern KwaZulu-Natal and Mpumalanga provinces all streaming into the Gauteng province. In 2001, Gauteng had the greatest convergence of more than 1 million people (Donnelly, 2012). According to Wakefield (2015), the increase in rural-urban migration has already strained the provision of housing services in cities like Cape Town and Johannesburg. Surely the continuous influx of people will put cities under severe pressure to accommodate the increase in population, thus creating housing infrastructure backlogs (StatsSA, 2018:15). Traffic congestion will also be problematic to manage, as more and more people migrate to cities, there is a high probability of vehicle congestions as people purchase automobiles.

Ultimately, people perceive Gauteng as the area of opportunities, consequently it has the highest number of people from all over the country. However, while the development of Gauteng has been welcomed, its rapid development has resulted in a significant population increase, which has led to an increase pressure on government resources (Todes, Kok, Wentzel, Van Zyl & Cross, 2010:332). Kollamparambil (2017:12), states that the economic inequality between provinces in South Africa will continue to contribute to the inflow of people to Gauteng. The increase in people is straining government resources as the provisional government will have to cater for an increased population, which will to some extent impact the effectiveness of serviced delivery.

Additionally, the influx of more and more people into cities may contribute to the increase in crime level. As people migrate, not all of them find employment and make a living, some may venture into crime, and surely, increased crime rates have been prevalent in cities like Johannesburg and Cape Town (Singh, 2016). Mlambo (2018:67) supported the statement stating that, while this is not to conclude that an increase in rural-urban migration results in increased crime in cities, there is a strong

correlation. Whilst these provinces account largely for economic activity more rural provinces such as NC (Northern Cape) show a contrasting picture. Figure 3.8 below illustrates the relations between the average annual GDP growth, Gini coefficient and human development index in the Northern Cape Province.

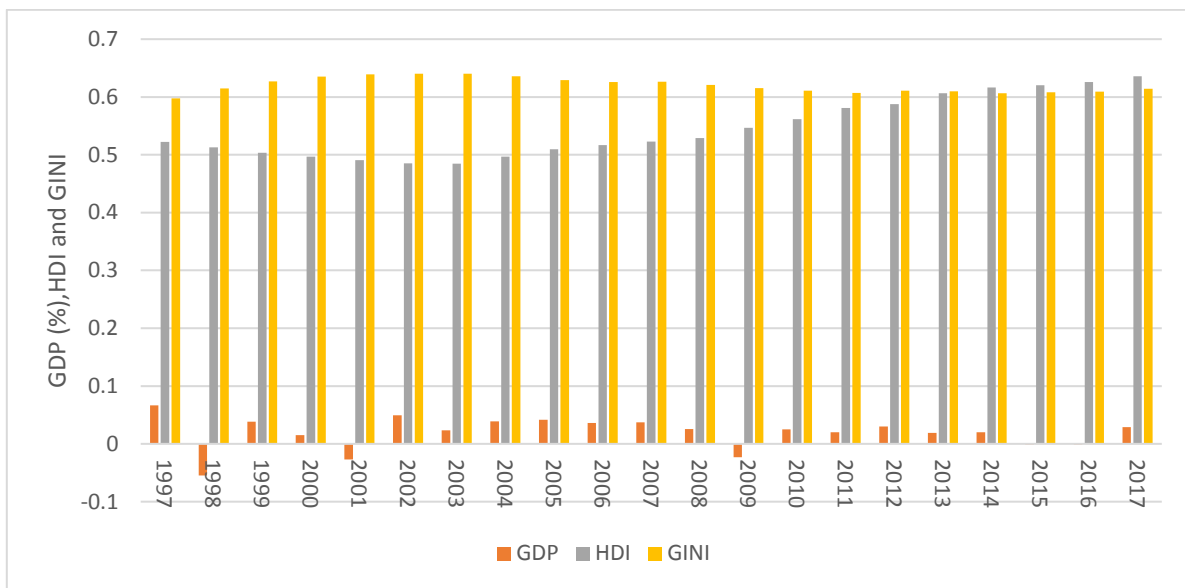
**Figure 3.8: Northern Cape province GDP growth, GINI coefficient and HDI trends**



Source: Own compilation, (Data obtained from IHS Global Insight, 2018)

The Northern Cape came into existence in 1994 after the apartheid era has ended (StatsSA, 2012). It has predominantly Afrikaans speaking people. The province is characterised by an archaeological landscape that resulted from the copper mines and diamond rush in Kimberly (Morris & Beaumont, 2004). It has the lowest income inequality at 0.59 and the human development index has been increasing over the years. Geographically, the largest province in South Africa is the Northern Cape, however it has the lowest growth improvement rates. This is due to the distances between towns as the province is sparsely populated. Figure 3.9 below illustrates the relations between the GDP growth rate, Gini coefficient and human development index in the Free State Province.

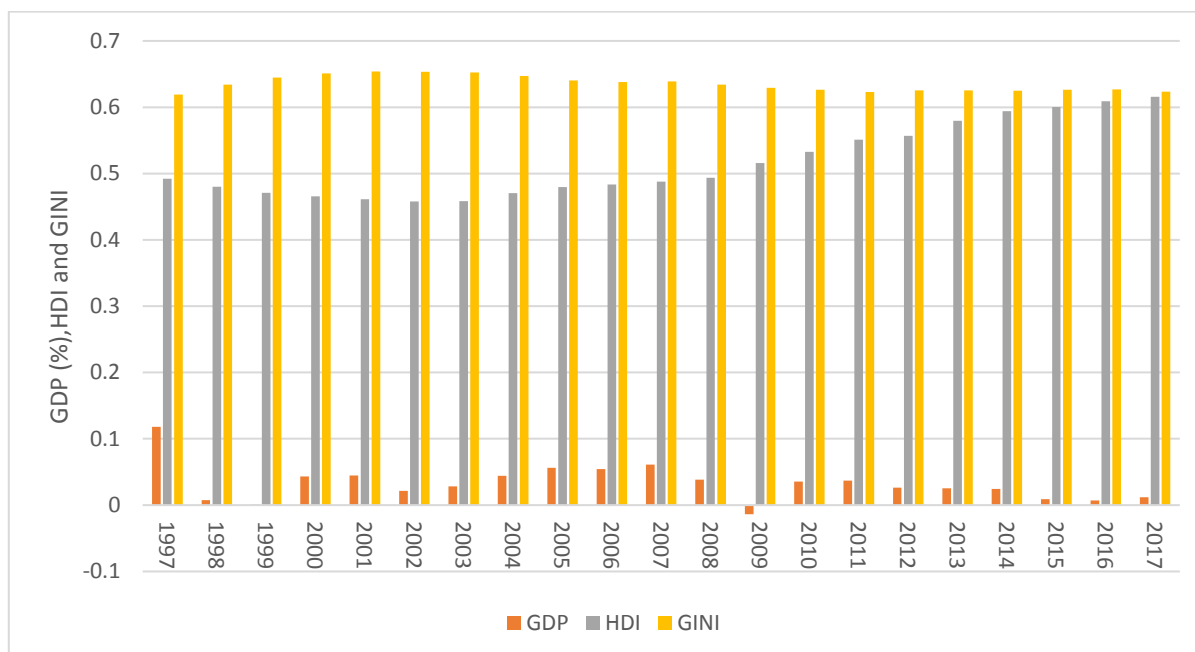
**Figure 3.9: Free State province GDP growth, GINI coefficient and HDI trends**



Source: Own compilation (Data obtained from IHS Global Insight, 2018)

The Free State province has predominantly Sotho speaking people. It is characterised by grassy plains, rich soil and a pleasant climate that is conducive to a thriving agricultural industry (StatsSA, 2012). It has the highest unemployment rate, of all provinces, the Free State province has shown the highest increase in urbanisation since 1997 moving from dependence on primary sectors namely mining and agriculture to exports and manufacturing. The high unemployment rate is due to an increase in income inequality and a declining economic growth. Figure 3.10 below illustrates the relations between the GDP growth, Gini coefficient and human development index in the Kwazulu-Natal province.

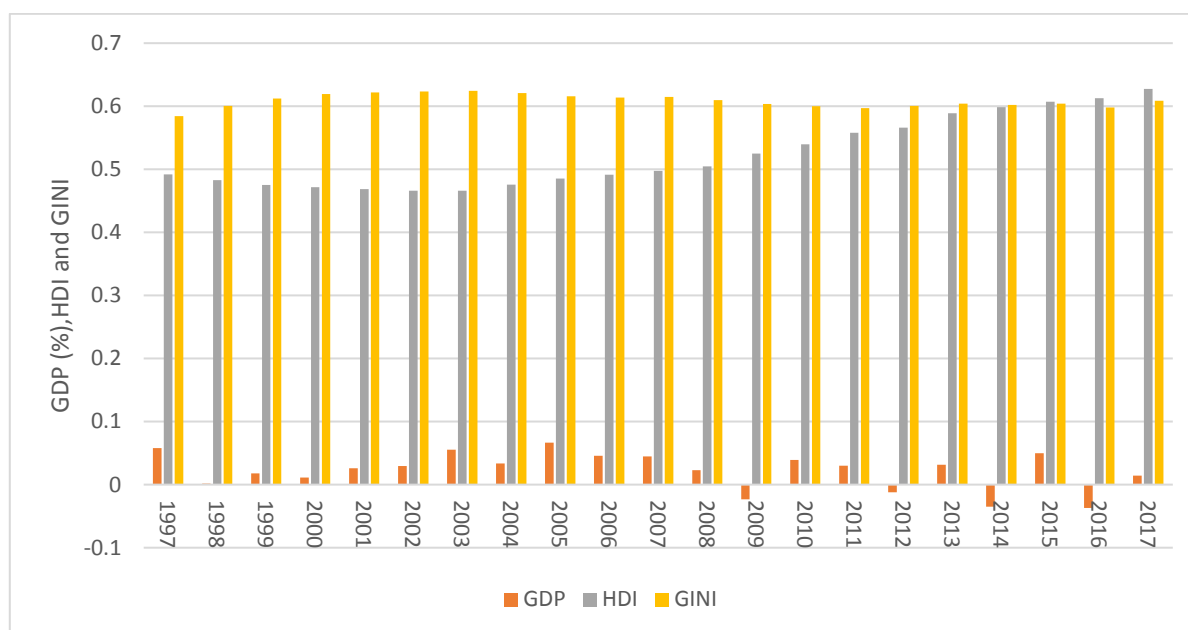
**Figure 3.10: Kwazulu-Natal province GDP growth, GINI coefficient and HDI trends**



Source: Source: Own compilation, (Data obtained from IHS Global Insight, 2018)

The province was created after a merger between the Zulu Bantustan and Natal province in 1994 (StatsSA, 2012). After Gauteng, Kwazulu-Natal province is the second most populated province and the fourth poorest province in South Africa after Eastern Cape, Limpopo and Mpumalanga. It has predominantly Zulu speaking people (StatsSA, 2018:15). There has been an upward trend in the human development index over the years mainly due to the development in Durban and an upsurge in the tourism sector, as well as a small decline in the Gini coefficient. The average growth percentage has not been consistently high or low. Figure 3.11 below illustrates the relations between the GDP growth, Gini coefficient and human development index in the North-West province.

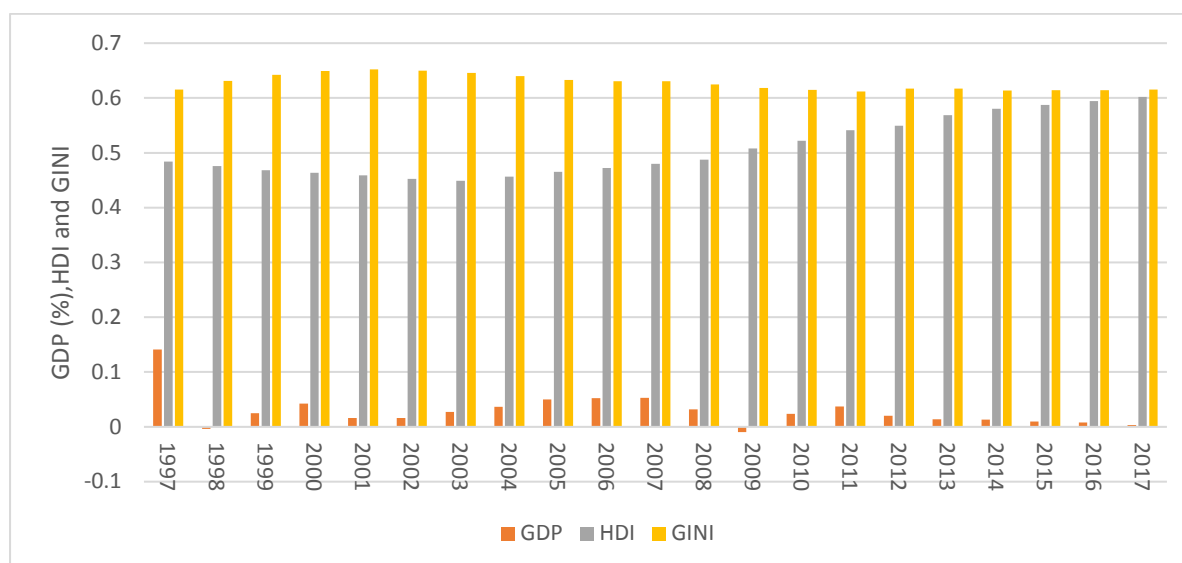
**Figure 3.11: North-West province GDP growth, GINI coefficient and HDI trends**



Source: Own compilation (Data obtained from IHS Global Insight, 2018)

The North-West province has predominantly Tswana speaking people. It includes part of the old Transvaal and Cape province (StatsSA, 2012). The province is characterised by the mining sector and the sector generates more than half of the provinces GDP. It has been experiencing mostly negative growth rates (2012, 2014 and 2016), which is a reflection that it is most volatile to the economic fluctuations such as recession. There is been a minimal decline in income disparity since 1997, together with a slight rise in the human development index in 2017, this is attributed to the tourism sector particularly Sun City and the Lost city. Figure 3.12 below illustrates the relations between GDP growth, Gini coefficient and human development index in the Eastern Cape Province.

**Figure 3.12: Eastern Cape province GDP growth, GINI coefficient and HDI trends**

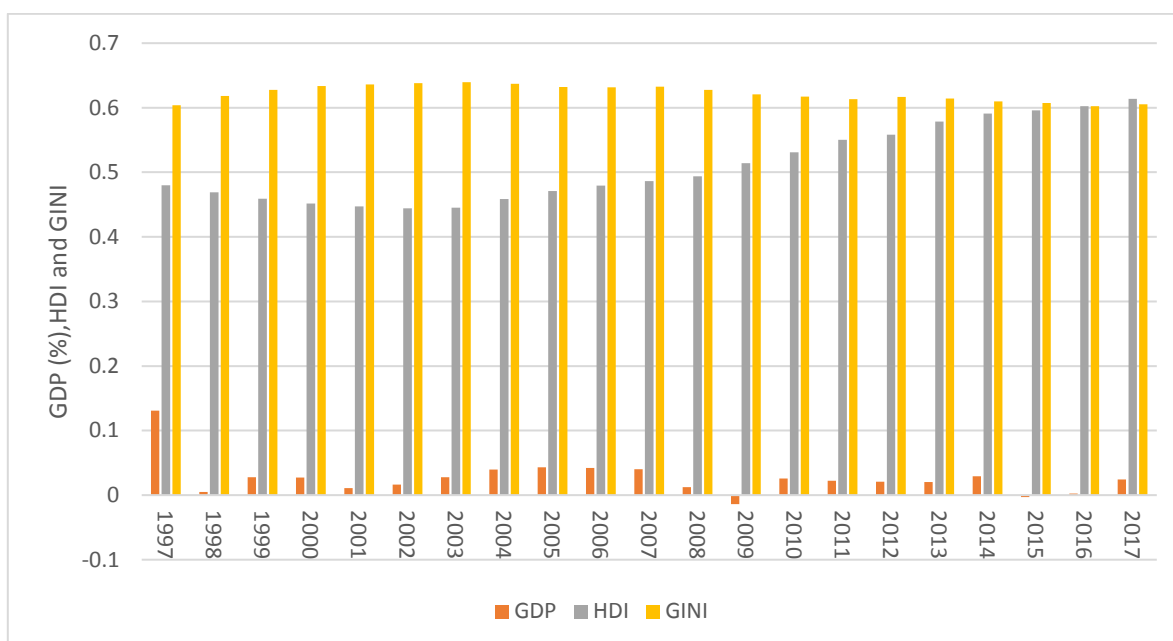


Source: Own compilation, (Data obtained from IHS Global Insight, 2018)

The province is characterised as the poorest province in South Africa followed by Limpopo. It has predominantly Xhosa speaking people (StatsSA, 2012). Financially beset provinces such as Eastern Cape and Limpopo experience huge surges of people while Gauteng and Western Cape experience a tremendous inflow of people, effectively contributing to the growing development of these provinces. The Eastern Cape currently has the lowest level of human development index at 0.60, together with Limpopo.

This is mainly attributed to the rural-urban migration that has a negative impact on rural areas as it deprives them of skilled able to work effectively and impact on rural development. In this process rural areas lose critical thinkers, innovative people and future business leaders and this regrettably prolongs the underdevelopment and poverty in rural areas as there are no people with adequate skills and knowledge to contribute towards development and growth (Shezi, 2013:112). The Eastern Cape has the highest improvement growth rate at 2.4 percent, this is partly due to the construction of the port of Ngqura. Figure 3.13 below illustrates the relations between GDP growth, Gini coefficient and human development index in the Mpumalanga Province.

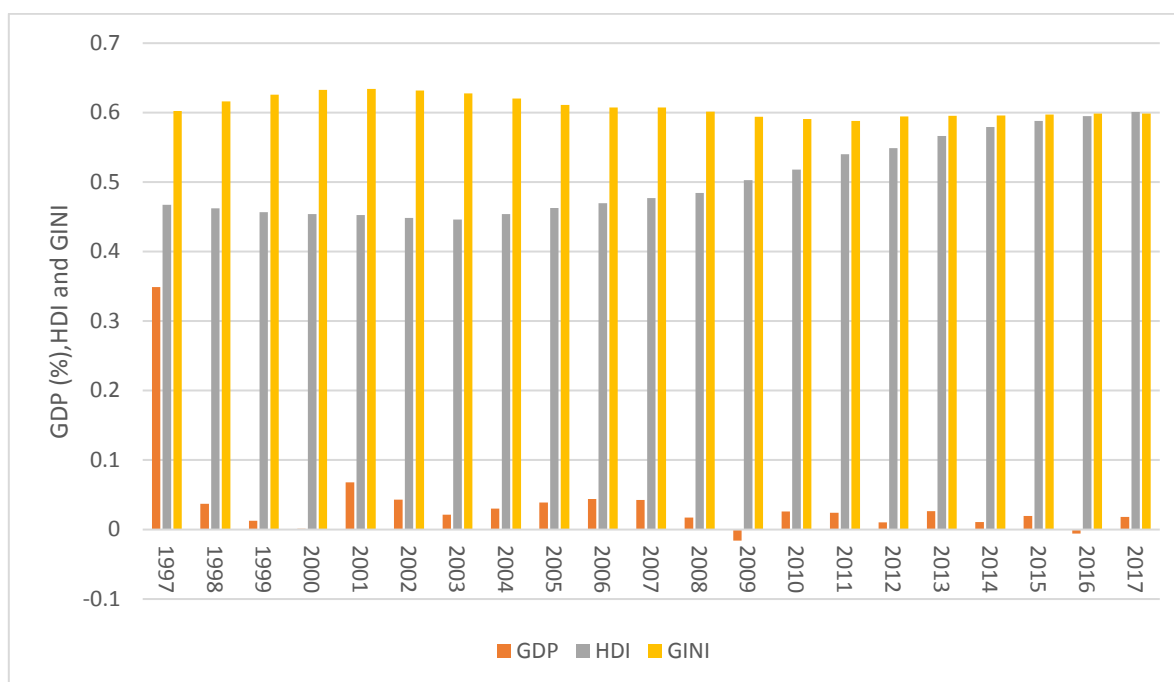
**Figure 3.13: Mpumalanga province GDP growth, GINI coefficient and HDI trends**



Source: Own compilation (Data obtained from IHS Global Insight, 2018)

The province has predominantly Swazi speaking people. Mpumalanga accounts for approximately 83 percent of SA’s coal production (StatsSA, 2012). It is the third most impoverished province in South Africa after the Eastern Cape and Limpopo province. The graphical illustration above is similar to those of other rural provinces such as Limpopo, Eastern Cape and Kwazulu-Natal. The average growth rate has been inconsistent since 1997 and remains low. The Gini coefficient has increased from 0.60 in 2016 to 0.61 in 2017, which is reciprocated by a fluctuation human development index. Figure 3.14 below illustrates the relations between the GDP growth, Gini coefficient and human development index in the Limpopo Province.

**Figure 3.14: Limpopo province GDP growth, GINI coefficient and HDI trends**



Source: Own compilation, (Data obtained from IHS Global Insight, 2018)

According to Donnelly (2012), Limpopo has the most minimal household income with R56 000 per year and has shown the most rapid increase in HDI from 0.47 in 1997 to 0.60 in 2017. There have also been low levels of crime (Meyer & De Jongh, 2018:9). This is due to the high literacy level and less prevalent urbanised areas, the more educated are, the less likely they are to get involved in criminal activities. The younger generation is sent out to study and find employment in urban provinces and in return they sent money back home.

In South Africa, a great number of people favour working in urban zones which are viewed as better as far as living and economic opportunities, subsequently numerous skilled professionals leave rural areas like the Eastern Cape and Limpopo. This, therefore, decreases the availability of skilled professionals to work on developmental projects aimed at developing rural areas. Moreover, the thought that better working conditions are just found in major urban cities, tempts unskilled individuals to leave rural areas, consequently prominent rural sector industries such as agriculture and mining may find it burdensome to attract the required labour, especially with the thought that rural compensations are not in accordance with those of urban zones (Amrevurayire & Ojeh 2016:9).

The upsurge in rural migration also results in the underutilization of resources, if rural people stay behind and cooperate to contribute towards the improvement of rural areas, they would develop and grow, however when they migrate, they migrate with their knowledge and technical know-how. Hence the resources meant for rural development may be under-utilized as there are no people to effectively use them. (Ghatak, 1995:54). In the current South Africa, predominately, rural provinces namely Mpumalanga, Eastern Cape and Limpopo have turned out to be immense senders of individuals to work in mines and other low-skill jobs.

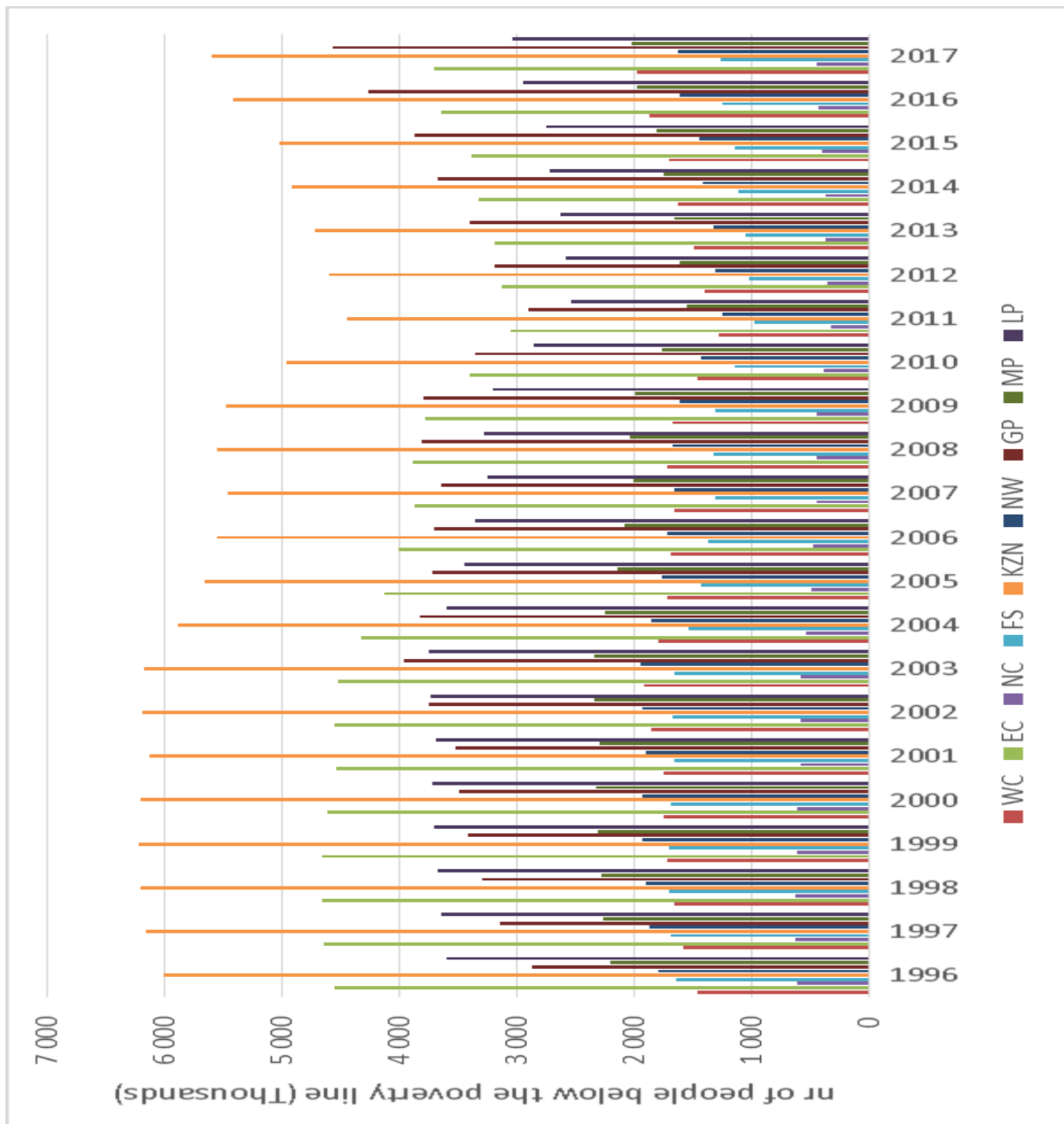
### **3.5.2 Provincial poverty levels**

Poverty in South Africa has been characterized by spatial dimension and spatial patterns which is a clear indication that development to dismantling the spatial apartheid inheritance is slow (World Bank, 2018:42). Rural areas in South Africa remain the regions of highest poverty concentration. Research indicates that there is a distinguished divide in poverty levels between two sets of provinces: Gauteng, Free State and Western Cape (urbanised areas) versus Limpopo, Eastern Cape and KwaZulu-Natal (rural regions) (Bosch *et al.*, 2010). This divide reflects a clear legacy of apartheid because compared to Limpopo, Eastern Cape and KwaZulu-Natal; the Free State, Western Cape and Gauteng, had a low concentration of “homelands” during the apartheid era (World Bank, 2018:147). This is clearly illustrated in Figure 3.15 below.

Throughout apartheid governance, homelands were the areas set aside for black South Africans along ethnic lines. These areas lacked proper development, they had poor public service delivery and the infrastructure was not properly maintained (StatsSA, 2015). It has been 24 years since the transition into democracy yet in provinces like Limpopo, Eastern Cape and Kwazulu-Natal, widespread concerns of abandonment regarding poor public services, child headed households, high levels of food poverty, unmaintained infrastructure and little to no employment opportunities are still largely present (Bhorat & Mayet, 2012:58). Agglomeration is a core topic in economic geography, it can be described as the formation of cities (rural or urban) where clusters of activities enhancing the output of industries located within them. Theoretical foundations can date back to Marshall (1890), and theorists have formalized and coded these concepts over the years, as reviewed by (Duranton &

Puga, 2004; Behrens & Robert-Nicoud, 2015). In South Africa, agglomeration and development clusters are still occurring more in urban areas rather than in the rural parts to boost productivity, create employment, reduce poverty, and decrease income inequality as this will minimize the rich-poor gap. This is a cause for concern as it promotes heavy migration and creates crowded townships.

**Figure 3.15: Number of people living below the poverty lines**



Source: Own compilation (Data obtained from IHS Global Insight, 2018)

Spatial patterns of poverty as graphically presented in Figure 3.15, are supported by the multidimensional poverty index for South Africa (Bhorat *et al.*, 2015). The index

revealed that high multidimensional poverty levels are predominantly found in rural areas (StatsSA, 2017b:38). A closer look at the variation across provinces indicated that the Eastern Cape along with Limpopo had the uppermost SAMPI (South African Multidimensional Poverty Index) score and it was driven by a relatively high multidimensional poverty headcount ratio (StatsSA, 2018:12). The poorest 20 municipalities based on performance were in Limpopo, KwaZulu-Natal and the Eastern Cape (Department of Labour, 2016). Multidimensional poverty remains highly concentrated in previously disadvantaged regions (former homelands) and the poor performance of municipalities in these regions indicate the enduring effects of apartheid, together with ineffective management that has limited development in the homelands (World Bank, 2018:18). The 20 richest and high performing municipalities are mainly in the Western Cape (StatsSA, 2017a:178). Between 1996 and 2011, a strong association was found with regards to municipality-level poverty rates, which implied that the higher the poverty rate a municipality had in 1996, the more likely it is to have higher poverty rates in 201. This is an indication that there has not been much change in the spatial patterns of poverty over time (StatsSA, 2018).

Over the years, Kwazulu-Natal has consistently had the uppermost number of people living below the poverty lines, followed by the Eastern Cape and Limpopo as graphically illustrated in Figure 3.15. In 2015, Eastern Cape, had the highest poverty rate at 59 percent, followed by Limpopo at 57 percent. In 2006, 2009 and 2011 Limpopo province had the highest poverty headcount ratio at 67 percent, 72 percent and 53 percent respectively (StatsSA, 2015:66). Gauteng consistently records the lowest poverty rates (19% in 2015). Between 2006 and 2015, all provinces experienced a reduction in poverty under the LBPL. Between the same periods Mpumalanga recorded the highest reduction in poverty levels, with a decrease from 60 percent to 43 percent whilst the Eastern Cape recorded the lowest reduction in poverty levels (Leibbrandt, Woolard, Finn & Argent, 2010).

Not only is Limpopo the most impoverished province in terms of the poverty headcount ratio, *“the depth and severity of poverty was the highest in three out of four years, while it was the second highest in 2015”* (World Bank, 2018:79). This is according to all three poverty measures: poverty gap, poverty headcount ratio, and the squared poverty gap. Only Mpumalanga has steadily experienced a decline in poverty rates

from 1997 to 2017 (StatsSA, 2017b:84). There was a significant reduction in consumption-based poverty in SA between the years 2006 and 2015. A total of 65.4 percent of the population in rural areas lived below the LBPL in 2015, this was a decrease from 74.9 percent in 2006 (World Bank, 2018).

As indicated by StatsSA (2017a), the Eastern Cape and Limpopo continued to be amongst the most impoverished provinces since 2011, while KwaZulu-Natal's poverty levels have diminished since 2001. These statistics however are unfailingly high to put the province as the third underprivileged place. Over the past decade and a half Gauteng and the Western Cape have remained the least impoverished provinces in South Africa. These provinces are thought to be the "*economic hubs of the country*" and thus have more affluent inhabitants and more job openings (Angelopulo, 2017).

### **3.6 REVIEW OF SOUTH AFRICA'S GROWTH-POVERTY-INEQUALITY POLICIES**

Many initiatives suggested to address South Africa's triple concerns (high poverty, high inequality, and high unemployment) over the years and most of them have failed (Bhorat & Mayet, 2012:104). The ingenuities include, for example, the use of fiscal policy as a tool to effect redistribution. Precisely, transfers to different spheres of government are based on poverty considerations (ITRISA, 2016:327). It is believed that fiscal policy is associated with growth and more precisely appropriate fiscal measures applied circumstances can stimulate economic growth and development (Khosravi & Karimi, 2010:421). The belief that fiscal policies can be used as a tool to influence macroeconomic performances is closely associated with Keynes and his followers (Easterly & Revelo, 1993:192). Some of the main strategies that have been formulated by the South African government to boost economic and trade growth as well as combat the triple challenges will be discussed in this section.

#### **3.6.1 Reconstruction and Development Programme (RDP)**

In 1994, the Reconstruction and Development Program (RDP) was launched by the South African government with the aim to redress the many inequalities of the past. It was the first economic recovery programme in South Africa and its main goals was to embark on a nation-building journey, to protect and respect the minorities as well as accommodating those who wish to retain their cultural identities (Wessels, 1999:236).

Furthermore, the programme aimed to reduce poverty, improve the standard of living for all South Africans, to create employment and for trade policies to introduce export promotion instruments (Klasen, & Woolard, 2009:327). The RDP had very noble aims, but its main criticisms were rooted from the policy not incorporating any mechanisms to ensure that the policy goals were followed through (Ray, 2010). Policies were put in place but there were no strategies put in place to maintain these policies in the long-run.

### **3.6.2 Growth, Employment and Redistribution (GEAR)**

In 1996, the Growth, Employment, and Redistribution (GEAR) strategy was launched. GEAR took its broad direction from the RDP but with a clear definition of the targets for enhancing economic growth and offered more concrete proposals on how these targets can be achieved (Bhorat & Mayet, 2012:32). Wessels (1999:240) stated that GEAR was an indication that the government does not wish to pursue a socialist direction in building the economy. However, the president at the time had suggested that macro-economic strategies would be crucial in guiding government programmes if they are concluded logically (ANC (African National Congress), 1994). Mandela (1997:8) indicated that strategies such as infrastructure development, growth in export production, decreasing the budget deficit, a fair distribution of wealth as well as job creation would be at the corner stone of achieving GEAR's objectives.

The two most publicised targets for GEAR was to create 400 000 new jobs in the formal sector by the year 2000 and an economic growth rate of six percent (StatsSA, 2018:193). At first glance, these targets appeared to be a useful economic breakthrough but just like the RDP, GEAR failed to deliver on its objectives. It lost credibility in the eyes of the public and the labour industry mainly due to the policy failing to gain support of the trade unions as it advocated for a lean and discipline approach to businesses. It could not deliver on the promises made in terms of the economic growth target and employment by 2000. Despite GEAR's failures, some researchers took note of the strong economic growth that was registered until the start of the global financial crisis and that it was largely attributed to GEAR (Bhorat *et al.*, 2015).

### **3.6.3 Accelerated and Shared Growth Initiative for South Africa (ASGISA)**

In 2006 the Accelerated and Shared Growth Initiative for South Africa (ASGISA) was introduced. ASGISA had the support of various cabinet ministers, business leaders, and provincial premiers and was led by South Africa's former deputy president, Phumuzile Mlambo-Ngcuka (World Bank, 2018:721). ASGISA had similar goals to those of GEAR, halving poverty and unemployment by 2014 and having a sustainable six percent growth rate from 2014 onwards. The aim was to decrease poverty by increasing job creation, which will have a trickle-down effect on reducing income inequality. At the core of the programme was investment in infrastructure (StatsSA, 2018:71). Efficient infrastructure had such a positive impact on the economy, the government budgeted to spend over R800 billion to boost capacity. With projects to expand South African airports and ports, and to enhance the electricity supply in the country (Klasen & Woolard, 2009:83).

Another focus area for the programme was the country's' desperate skills shortage, despite the introduction of the Sector Education Training Authorities (SETAs) years earlier. The shortage of technical skills and the application of science and mathematics was and still is a major problem in South Africa as they both produce very low pass rates in matric (StatsSA, 2017a). ASGISA also had proposals to combat government inefficiencies, inflexible labour laws and the high cost of regulatory compliance for business (Ray, 2010). Despite its noble intentions, the 2008 global financial crisis created depressed economic conditions that ruled out all possibilities of achieving these targets. The initiative also lost momentum when its leader, Mlambo-Ngcuka vacated her office at the end of the Mbeki era (ITRISA, 2016:329).

### **3.6.4 New Growth Path (NGP)**

In 2010, the New Growth Path (NGP) was unveiled. The growth strategy had job creation as its central theme (5 million jobs by 2020) and portrayed an image of the state playing a much more interventionist role in the fight to combat economic growth and development and enhancing the standard of living of the millions of people who lack decent work (StatsSA, 2017a:111). The strategy embodied targets of its predecessors as well as supporting entrepreneurship and small businesses by removing unnecessary red tape and rethinking the broad-based black economic

empowerment policy to ensure that it benefits more people (StatsSA, 2015). One of the NGPs suggestion was that government should be the main driver of growth rather than businesses and this prompted a lot of criticisms from within the parliament as it goes against most contemporary economic thinking (ITRISA, 2016:330). One of the NGPs most contentious proposals was that to keep inflation under control, those in high earning brackets salaries would be capped with hopes that it will encourage economic restraint.

The NGP with its ambitious targets, reflected no real insight as to how it will successfully deliver on its objectives where previous strategies have failed (StatsSA, 2015). This was similar to the mistake made when launching the RDP. Academics described the NGPs proposal as un-implementable, stating that growth cannot be driven by rules and regulations (Ray, 2010). The New Growth Path achieved a few visible results, and this was mainly due to it trying to put a ceiling on people's salaries more especially those with scarce skills. Implementing the ceiling would have had a negative impact on productivity and exacerbated South Africa's brain drain. Most of their proposals were rejected by businesses and lacked a backing champion which should have been the president (World Bank, 2018:17).

### **3.6.5 National Development Plan (NDP)**

In 2012, the National Development Plan (NDP) was implemented with the aim to eradicate poverty and inequality reduction by 2030 in South Africa (ITRISA, 2016:330). This plan builds on from previous post-apartheid strategies that centred on poverty reduction and combating inequality (StatsSA, 2015:29). The NDP has set ambitious targets to boost South Africa's economy which includes creating 11 million new jobs by 2030 and to shrink the unemployment rate to 14 percent. To achieve this target, there will have to be about 600 000 jobs created annually and an annual economic growth rate of at least 5.4 percent (StatsSA, 2017a:42).

It is unlikely that these targets will be achieved as the economy can barely create half of the 600 000 jobs per year. The net employment growth between 1993 and 2015 was 2.7 million in the private sector inclusive of both informal and formal sectors and 470 000 in the public sector, which was nearly exclusively created after 2005 (Bhorat et al., 2015). A cause for concern is that unemployment is gradually increasing and

employment have a gendered and generational distribution (StatsSA, 2018:3). What makes the NDP different from its predecessors is that it is refreshingly devoid of empty ideology and offers a more balanced and practical view of the economy's economic potential and priorities. However, for this policy to succeed there has to be a commitment from all stakeholders including labour, government and businesses (StatsSA, 2017b:92).

StatsSA, 2015 showcased a mixed picture of modest achievement and failure. The NDP's objective to reduce poverty-induced hunger to zero is defied by growth of extreme food poverty to 25.2 percent in 2015, up from 21.4 percent in 2011 (StatsSA, 2015). The NDP's objective to diminish the fraction of citizens in the bottommost impoverished category from 39 percent to zero likewise has been unsuccessful as there has been a one percentage point increment to 40 percent rather than a decrease (ITRISA, 2016:331). It looks even more encouraging concerning the NDP's objective of diminishing income disparity from 0.7 to 0.6 on the Gini income measure. The measure of spending that incorporates social grants, however prohibits taxes, with a marginal improvement. Finally, some evolution is made on the NDP objective of expanding the share of income for the bottom 40 percent of households from six percent to 10 percent, in 2015 the numbers improved to 8.3 percent (NPC (National Planning Commission), 2012).

2012).

### **3.6.6 ANC policy on wage inequality**

During the 2014 elections manifesto, the ANC proposed a policy on wage inequality. The main aim for the policy was to examine the modality for the national minimum wage introduction as one of the key instruments to reduce income disparity. The national minimum was implemented in 2018, so far income inequality continues to rise. To reinforce the provisions of the Employment Equity Act that require all employers to report on disproportionate income differentials at all wage levels and submit plans for their progressive reduction. Furthermore, the policy aims to take steps to ensure that collective bargaining takes place within all sectors of the economy. The policy might take steps to support current laws to ensure efficient change in occupation injustice in

all workplaces by making compulsory an accelerated implementation of employment equity targets.

### **3.7 RELATED INTERNATIONAL GROWTH-POVERTY-INEQUALITY POLICIES**

#### **3.7.1 Integrated Rural Development Program (IRDP)**

The integrated rural development program (IRDP) is a poverty alleviation and development strategy officially adopted by India in 1999. It appeared to the world as one of greatest aspiring programs to solve poverty issues in rural areas in provision of income-generated assets to those classified as poorest (Lanjouw & Ravallion, 1999). This program idea originated from Thomas Mathur in 1978-79 to some selected places and had covered all the areas in 1980 (Mathur, 1995). The IRDP was executed with the objective to raise families of acknowledged target groups below poverty line. This idea was going to be achieved by providing capacity to individual enabling them to be self-employed through government and financial institutions assistance (Dreze, 1990:98). It was implemented on a 50:50 basis by the state and the private sector. The target group consists of agricultural workers, small and marginal farmers and rural craftsman having annual income below 11,000 rupees defined as the poverty line.

Within a period of 5 year plan (1980–85) assets worth 47.6 billion rupees were distributed to about 16.6 million poor families. Another 4.2 million families were assisted with an average investment of 4,471 rupees per family or 19 billion rupees overall during 1987-88, (Samuel, 2000:73). To ensure that the benefits reach the more vulnerable people in the society, it was suggested that “*at least fifty percent of assisted families should be from scheduled castes and scheduled tribes with corresponding flow of resources to them*” (Mathur, 1995:32). Additionally, 40 percent of the coverage should benefit women and three percent to people with disabilities. The State Level Coordination Committee (SLCC) monitors the program at state level whereas the Ministry of Rural Areas and Employment is responsible for the release of central share of funds, policy formation, overall guidance, monitoring and evaluation of the program (Samuel, 2000:81).

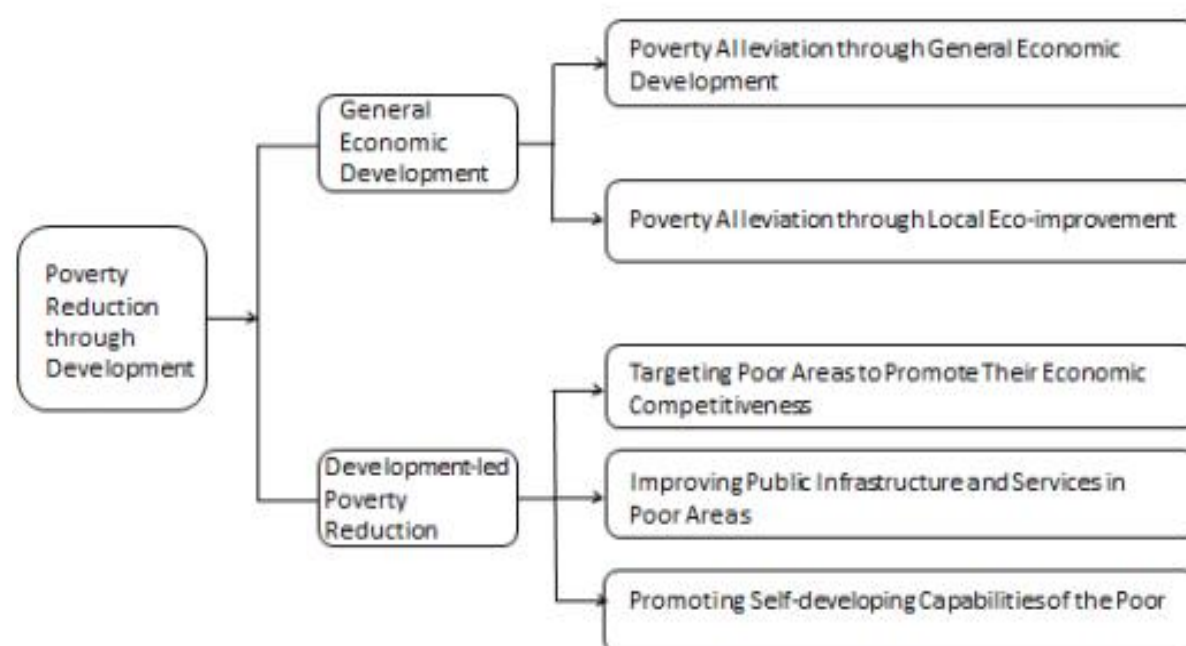
The program is a success story taking into account that since its beginning in 1999, around 2.252 million SHGs have been established including 3.554 million people.

Apart from SHGs, the program has assisted 3.143 million self-employed individuals. The aggregate investment provided for the cause has been amounted at Rs. 14,403.73 crores including Rs. 1,200 crores provided by the Government of India for the calendar year 2006-07. From the entire beneficiaries, 45.54 percent have been SC/STs and 47.85 percent, women (Dreze, 1990:102). What South Africa can learn from this strategy is the allocation of resources and making sure it reaches those it is intended for. Allocating specific committees like the SLCC can help South Africa with efficiency and effectiveness for selected strategies.

### 3.7.2 China's poverty reduction and inclusive growth strategy

Figure 3.16 provides a diagram outline of the principal mechanisms of the dual system approach and its sub-components implemented in China. China followed all phases to eradicate the issue of poverty and the strategy achieved its objectives (Liu, 2017b:10). The best current change to the strategy is to adopt accurate targeting, that is, to “*move the target of various poverty-reduction-specific government interventions away from poor areas and poor communities to poor individuals/households*” (Liu, 2017b:11).

Figure 3.16: Components of the poverty reduction strategy in China



Source: Liu (2017a:12)

It is worthwhile to provide a briefly review of the origins and preceding phases of the strategy Prior to the detailed of this recent adjustment. A dissimilarity needs to be made between a poverty-reduction-specific (PRS) strategy and a general poverty reduction (GPR) strategy (Chen & Ravallion, 2004). The strategy was created with the objective to reduce poverty through social and economic development, without a direct action to directly intervene in poverty and its causes (Liu, 2017b:12). The two types of strategies where created with a similar end goal but are different. Firstly, the PRS strategy a development-led strategy focused more on target formulation (for example, targeting poor area, community, or individual/household). Secondly, the GPR strategy is development-driven, with the purpose to take the form of providing social protections to the poor (Li & Sicular, 2014).

In China two systems are used to measure and determine the absolute poverty. The first is used for the poor rural area and the second applied on the poor in urban area (Ravallion & Chen, 2007). The poverty line in rural was implemented to determine the necessary cost of living needed to sustain a person and the expenditures needed to have access to basic needs. The determination of the urban poverty line is less dominated by the cost of minimum food intake, however it *“also take into account expenses for meeting other minimum needs”*, for example, health and education (Wang, 2008). Neither the first poverty line nor the second provides a denial of the fact that absolute poverty went through consistent and quite sharp reductions in China in roughly the last four decades.

The drastic decline in poverty levels in China in the past periods were both a direct result of the development-led poverty lessening strategy that China followed, and a by-product of general economic development, essential alteration and sharp poverty reductions in the rural areas, mainly through agricultural-sector reforms. The agriculture reform involved both parceling farm land to farmers and increasing prices for agricultural produces. As well as passing on direct gains to farmers through the higher produce prices, these measures spurred farmers' incentives for production (Ravallion & Chen, 2007). China's economy serves a testimony a possibility in poverty reduction. This strategy supports the idea that poverty reduction goes hand in hand with country development (Li & Sicular, 2014).

### 3.8 SUMMARY

The fight to reduce income inequality and poverty levels has been a formidable challenge since South Africa gained political liberation. The nation has witnessed some success in the reduction of poverty levels over the past two decades but none such success with reducing income inequality (Leibbrandt *et al.*, 2011:15). This has been mainly driven by the fact that tackling inequality is more complicated and politically contentious than addressing poverty. After the 2011 census, there was a restructuring to assist government in allocating efficient resources and service delivery (David, Guilbert, Hamaguchi, Higashi, Hino, Leibbrandt & Shifa, 2018:26).

It is widely documented that poverty rates are much higher in rural areas than in urban areas, and the rural-urban gap poverty rates have widened between 2006 and 2015 (StatsSA, 2015:70). There wasn't a significant change in the rural-urban gap between 2006 and 2015, as it decreased by only one percent from 41 percent in 2006 to 40 percent points in 2015 (StatsSA, 2015). Although the level of multidimensional poverty has declined since the end of apartheid, it has become stagnated in recent years. The results further highlight the widening gap with respect to expanding access to basic services in an inclusive manner and reducing multidimensional poverty (Bhorat & Goga, 2013:836). Those in rural areas tend to be the ones most affected by these gaps than those in urban areas, with access to better jobs and education. This echoes previous research from social scientists (David *et al.*, 2018:19), that indicate that the rural-urban gap gave birth to the rural-urban migration (StatsSA, 2018:40).

Sanitation, food insecurity and child malnutrition remain a major challenge in South Africa and socio-economic indicators have been deteriorating since 2012. For multidimensional poverty to be reduced, the government should aim to level the playing field by improving access to quality education, health care needs, sanitation and the water supply irrespective of gender, location or race (Bhorat & Goga, 2013:847). Reducing overcrowding in townships would be effective. Policy design need to accommodate children of certain circumstances; they are the vulnerable generation. The presence of these deprivations points to the need for policy solutions (StatsSA, 2018:41).

Time series patterns of South Africa's average annual growth paint an alarming image of the economy. The results highlight an increase in South Africa's average annual growth since the commencement of the democratic era. Periods such as 2008/2009 and 2016/7 however displayed declining growth rates as well as a deteriorating trend lines for the poverty rate, human development index and the Gini coefficient. Showcasing the economy's reliance on stable macroeconomic conditions. The changing deterioration is mainly attributed to the global financial crisis, political unrest, labour strikes, increasing unemployment rates and the urban-rural migration, and the recessions. In continuance of the study objectives, the next chapter outlines the methodological framework on which the empirical objectives are set to be addressed.

## CHAPTER 4

### RESEARCH DESIGN AND METHODOLOGY

---

#### 4.1 INTRODUCTION

The preceding section had the aim to establish a platform for evaluating trends and policy dynamics specific to the interrelations of income disparity, poverty and economic growth in the nine provinces of South Africa. Additionally, notable observations were identified in Chapter 2 relating to the myriad contributions made to poverty, income inequality and economic growth theory. These consist of the Solow's neoclassical growth theory and the endogenous growth theory, as well as Bradshaw's five theories of poverty, the Kuznets hypothesis, the Marx-Weber theory of stratification including the Davis-Moore theory and the Bourguignon Triangle, amongst others. Nevertheless, further advancements established in early empirical literature pertaining to the current subject have mostly been identified to have been analysed in isolation. Contributions to economic theory, particularly income inequality and poverty theories however, provide a necessary benchmark for the evaluation and assessment of the current study's set objectives and analytical framework.

Past research as identified in Chapter 2 shows evidence of contrasting empirical findings. Some studies indicate a positive correlation and the links between, poverty and growth on the one hand, and inequality and poverty on the other, while other studies cannot be definitively irrefutable as the interrelation between growth and inequality has not been fully established. This study therefore builds on existing literature regarding the relations of income disparity, poverty and economic growth and whether a short and/or long-run link exists. With this in mind, this chapter has the following aims. Firstly, the description of all variables used in the study to determine the relations of income inequalities, poverty and economic growth are outlined to their entirety. Secondly, to present the basic theory of the methodology and techniques observed in this study. Lastly, the chapter presents and justifies the main economic considerations behind the model selection, equation construction and other techniques used in this study. These models are anchored towards the fulfilment of the outlined empirical objectives which includes determining the cointegration and causality between poverty, the Human Development Index, income disparity and

economic growth in SA. Further objectives include the determination of the short-run and/or long-run correlation concerning poverty, income inequality and economic growth in South Africa's nine province, which will be achieved in Chapter 5.

This chapter henceforth is organised as follows. It firstly outlines and describes the research design and theoretical methodology observed. Thereafter, it presents respective data sources, the sample period, the data selection processes, variable descriptions, as well as the variable measurements. Subsequently, the Akaike information criteria (AIC) for model selection as well as the Dumitrescu Hurlin panel causality tests model is estimated. Section 4.7 then outlines and discusses the specification of the models employed in the study, particularly the panel ARDL modelling. It is important to highlight that the use of panel ARDL approach in this study is primarily influenced and motivated by the theoretic and empirical literature standpoint of the model, as well as the unit root test results. To establish the presence of a short-run relation, the ECM will be estimated. Finally, Section 4.8 provides tests used for a dynamic analysis with cross-sectional dependence.

## **4.2 DATA SELECTION, SAMPLE PERIOD AND VARIABLE DESCRIPTION**

This study is based on quantitative research design and follows a functionalist theoretical paradigm. It employs a time-series quarterly data set comprising of economic growth (GDP growth) in South Africa as the dependent variable, and the poverty rate, the Gini coefficient (GINI) and the Human Development Index (HDI) as the independent variables. Accordingly, economic growth (GDP) data was based on real GDP at constant prices, poverty rates were based on absolute poverty as in the study of Angelsen and Wunder (2006:9); and Akanbi (2016:172), whereas income inequality data was based on the Gini coefficient. HDI was used as the control variable and is based on life expectancy indicator, standard of living indicator, literacy indicator and the mortality rate indicator, the HDI was chosen as a control variable based on its interconnection with the principle variables. Standard of living and literacy are affected by growth, inequality and poverty in different ways. All data was acquired from the IHS Global Insight (2018) data base.

The study comprises of a sample period of 21 annual observations for each of the provinces in South Africa ranging from 1997 to 2017. The sample period is pooled in a panel, of which N=9 and T=21 resulting in 189 pooled observations overall, which in turn makes this study a micro panel (Cameron & Trivedi, 2010:27). The provinces were classified accordingly, namely: the Western Cape, Gauteng, Northern Cape, Free State, North-West, Kwazulu-Natal, Mpumalanga, Limpopo and lastly Eastern Cape province. The rationale behind the selected sample period was influenced by the change in South Africa's political and economic structures, along with the exclusion of economic embargo's which characterised South Africa's apartheid era in addition to the availability of data.

The study aims to contribute to the literature by utilizing recently constructed data for poverty and inequality. The results are based on the absolute poverty and the Gini index. The variables of interest in this model is the poverty rate, economic growth, income inequality and the human development index as a control variable. All variables and their subsequent denominators are tabulated in Table 4.1 below.

**Table 4.1: Variable specification**

Description	Variable
L	Natural Logarithm
LGDP	Log of Economic Growth rate
LGINICO	Log of Income Inequality
LPVT	Log of Poverty Level
LHDI	Log of Human Development Index

**Economic growth rate:** is represented as GDP growth rate per capita and can be measured by either output or income of a region (Bucknall, 2013; Meyer *et al.*, 2016).

**Income inequality:** is a necessary indicator when dealing with development, welfare, the impact of social and economic policies of population and living conditions. As indicated in the empirical literature, income disparities are generally measured by the Gini coefficient index (Khemili & Belloumi, 2018:11).

**Poverty levels:** in previous literature, several indicators for poverty measurement were proposed as the annual per capita income, the population rate of living under one or two dollars per day and the three underlining poverty lines used in SA. With regards to this study, the LBPL will be used, based on it being an ideal choice for policy makers and StatsSA.

**Human development index:** is a synopsis measure of the average accomplishment in fundamental dimensions of human development, it has four indicators: life expectancy, knowledge and the living standard. The HDI is a standard method for estimating prosperity and measuring the development level of a country.

### 4.3 DESCRIPTIVE STATISTICS

Descriptive analysis is essential when analysing quantitative data, because it provides a better view of the characteristics in the data collected and used in the study. It also provides an overview of the data used. It can either be graphically presented or tabulated. Combined, these measures describe the ‘normality’ of the model. It includes a number of statistical techniques such as:

- The mean (average) and the median (midpoint of the value), these two techniques measure the central tendency (Albright, 2011).
- The range (minimum and maximum) and the standard deviation (how far scattered to the tails), these two techniques measure dispersion (Macfie & Nufrio, 2006:536; Brooks, 2014:65).

Cox, Arnold and Tomas (2010:483) described skewness as the distribution deviation from symmetry around the average. A positive (+) skewness implies that a larger number of smaller values in the model will peak to the left and the opposite occurs when the skewness is negative. A value between zero and one indicate that the model has an evenly balanced distribution (a normal distribution).

A Kurtosis measures a distributions peak or flatness. A negative (-) kurtosis shows a flatter than normal shape, and a positive value is peaked higher than normal. A value near zero produces a distribution shape close to normal. An extreme kurtosis (for example, more than 5.0) indicates a distribution in which there are more values in the distribution tails than in the mean (Cox *et al.*, 2010:483).

#### 4.4 CORRELATION ANALYSIS

A correlation analysis is carried out to investigate the relations amongst the dependent and independent variables. The correlation coefficient ( $r$ ) is defined as a linear relationship measure between two variables and it can be either positive or negative. It lies between -1 and +1. In mathematical terms, it is presented as  $-1 < r < 1$  (Ahlgren, Jarneving & Rousseau, 2003). The closer the correlation is to zero, the closer the relationship between the two variables is and the further away from zero, the further the relationship. Correspondingly, variables with null correlation have no common econometric basis (Cohen & Cohen, 1983). This study employed a correlation analysis between economic growth, income inequality and the Gini-coefficient in order to ascertain the nature of the relationship between these socio-economic aspects within South Africa.

#### 4.5 FIRST GENERATION PANEL UNIT ROOTS

Before the interrelation between the variables is estimated, it is necessary to examine the properties of time series or the stationarity of the statistics. Non-stationarity is common property to numerous macroeconomic and financial time series (Khemili & Belloumi, 2018:11). Therefore, the first and most crucial component in time series analysis is to check for stationarity (Perron, 1989). Stationarity tests are an important requirement in estimating long-run equilibrium relationships amongst variables that make use of co-integration techniques (Gujarati & Porter, 2008:762). Estimating panel-ARDL cointegration tests requires defining the integrational properties of the considered variables as either order  $I(0)$ , first difference  $I(1)$ , or a mixed integration of both  $I(0)$  and  $I(1)$  in order to avoid spurious regressions (Samargandi *et al.*, 2013). When the variables are stationary at  $I(0)$  a normal panel VAR analysis will be conducted whereas when variables are stationary at  $I(1)$ , the Fisher Johansen panel co-integration test for long run relationship will be conducted. Where variables are represented in a grouping of  $I(0)$  and  $I(1)$  an ARDL panel cointegration will be used.

Hurlin and Mignon (2007:2) argued that the low power unit root test is well known in small sample sizes to distinguish nonstationary series from persistent stationary series. To increase the strength of the unit root tests, the number of observations should be increased by adding more information on individuals. By making use of

panel data therefore enables the low power problem of unit root tests to be solved (Baltagi & Kao, 2001).

Within this context, the cross-sectional independency hypothesis found in first generation unit root tests is quite restrictive and unrealistic in most macroeconomic unit root test applications (Hurlin & Mignon, 2007:2). For example, the study of convergence by Phillips and Sul (2003). Strauss and Yigit (2003) emphasized the significance of the matter since the application of tests using unit roots of the first generation is characterized by cross-sectional dependencies leading to size distortions and low power (Banerjee, Marcellino & Osbat, 2000).

Brooks (2014) indicated that Panel-ARDL unit root tests are more accurate than univariate unit root tests. Tests for unit root are conducted to ensure that none of the variables are integrated at order  $I(2)$ . For that reason, the study made use of panel unit root tests underlying two groups as: unit root tests of the first generation and unit root tests of the second-generation. Contrary to the unit root tests of the second generation, unit root tests of the first-generation do not account for cross-sectional dependence (Barbieri, 2009:119-120). Unit root tests of the first generation incorporates the commitments of Im *et al.* (1997, 2003), Levin and Lin (1992,1993) and Hadri (2000). Depending on whether unit root tests allow for possible correlations between panel unit residuals, two generations of unit root tests can be distinguished, Table 4.2 below present's various first generation unit root tests.

**Table 4.2: Unit root tests of the first generation**

Unit root test of the First Generation	CS-independence
1 <i>Nonstationarity tests</i>	Levin and Lin (1992, 1993) Im, Pesaran and Shin (1997, 2002, 2003) Maddala and Wu (1999) Choi (1999, 2001) Harris and Tzavalis (1999) Levin, Lin and Chu (2002)
2 <i>Stationarity tests</i>	Hadri (2000)

Source: Hurlin and Mignon (2007:3)

Unit root tests of the first generation are based on the cross-sectional independency supposition, these include the commitments of Levin and Lin (1992, 1993), Harris and Tzavalis (1999), Levin, Lin and Chu (2002), Im, Pesaran and Shin (1997, 2002, 2003), Hadri (2000), Maddala and Wu (1999) and Choi (1999, 2001). There is a multiplicity of unit root tests when using panel data. The study employed three-unit root tests of the first-generation, namely: Levin *et al.* (2002), Im *et al.* (2003) and Hadri (2000).

#### 4.5.1 Levin, Lin and Chu (LLC) test

Levin, Lin and Chu (2002) introduce different panel unit root tests with different specifications depending on the supposition of specific entity intercepts and time trends. It was the result of the studies of (Levin & Lin, 1992; 1993). The LLC test imposes homogeneity on the autoregressive coefficient (intercept and trends are possible) demonstrating the presence or nonexistence of unit root. This test is based on ADF regression to investigate the root problem of the unit. The LLC test hypothesis can be written as:

$$\Delta y_{it} = \gamma_{0i} + \rho y_{it-1} + \sum_{L=1}^{pi} \theta_{iL} \Delta y_{it-L} + \alpha_{mi} d_{mt} + \varepsilon_{it} \dots \dots \dots (4.1)$$

In the above-mentioned equation  $\gamma_{0i}$  is the constant term which differs across sectional entities while  $\rho$  has the same autoregressive coefficient. The lag order  $pi$  is allowed to be different across individuals. Campbell and Perron (1991) recommended Hall's (1990) method for lag order selection for a given sample length  $T$ . This involves choosing a maximum lag order  $Pmax$ , and then making use of the  $t$ -statistics of  $\theta_{iL}$  to conclude if a small lag order is preferred. However, since  $pi$  is unknown, Levin *et al.*, (2002:5) suggested a three-step procedure to implement the test. The first step is to perform a separate ADF regression in the panel for each individual and generate two orthogonalized residuals. The second step is the two auxiliary regressions:

1.  $\Delta y_{it}$  on  $\Delta y_{i,t-L}$  and  $d_{mt}$  to obtain the residuals  $\hat{\varepsilon}_{it}$  and
2.  $y_{i,t-1}$  on  $\Delta y_{i,t-L}$  and  $d_{mt}$  to get residuals  $\hat{v}_{it-1}$ .

The third step is to standardize residuals to control for heterogeneity among individuals in order to further normalize  $\hat{\varepsilon}_{it}$  and  $\hat{v}_{it-1}$ . The following regressions were performed:

$$\tilde{\varepsilon}_{it} = \frac{\hat{\varepsilon}_{it}}{\hat{\sigma}_{\varepsilon i}}, \quad \tilde{v}_{it-1} = \frac{\hat{v}_{it-1}}{\hat{\sigma}_{\varepsilon i}}, \dots \dots \dots (4.2)$$

Where  $\hat{\sigma}_{\varepsilon i}$  symbolizes the regression standard error from each ADF. Finally, a pooled OLS regression is performed:

$$\tilde{e}_{it} = \rho \tilde{v}_{it-1} + \tilde{\varepsilon}_{it}, \dots \dots \dots (4.3)$$

The null and alternative hypotheses of the LLC are as follows:

$$H_0: \rho_i = \rho = 0$$

$$H_1: \rho_i = \rho < 0 \text{ for all } i$$

The LLC (2002) model is centred on the adjustment of the pooled t-statistics, where  $\rho$  stays fixed across entities under  $H_0$  and  $H_1$  hypotheses as seen in the original theoretical contribution of Levin *et al.* (2002:7) and Kunst, Nell and Zimmermann, (2011:2). The necessary conditions for the LLC (2002) test is  $\sqrt{N_T}/T \rightarrow 0$ , while adequate conditions would be  $N_T/T \rightarrow 0$  and  $N_T/T \rightarrow k$ . ( $N_T$  represent the cross-sectional dimension, whilst  $N$  is a monotonic function of time dimension  $T$ ).

According to Levin *et al.* (2002:14), if  $N$  lies between 10 and 250 and  $T$  lies between 5 and 250, this indicates that the test is suitable for most macro panels and the statistic works well. When  $T$  is very small, the test is undersized and the power is low. One of the disadvantages of the test statistics is that it is essentially based on the supposition of cross-sectional independence (for example, Gauteng's growth rate does not depend on Western Cape's growth rate). If  $T$  is very large, then Levin *et al.* (2002) suggest a single unit root time-series tests. The usual panel data procedures can be applied if  $N$  is very large (or  $T$  very small).

#### 4.5.2. Im, Pesaran and Shin (IPS) test

IPS (2003:1) proposed a unit root test for panels with dynamic heterogeneity based on the mean of individual unit root statistics. This was a continuation from the study of (Im *et al.*, 1997). The IPS test is not as restrictive as the LLC test, as heterogeneous coefficients are allowed (Kunst *et al.*, 2011:3). The IPS proposed a standardized  $t$ -bar test statistics based on average ADF statistics across the groups and is centred on the arithmetic mean of each series. The null hypotheses of the unit roots are expressed as:

$$\Delta y_{it} = \alpha_i + \beta_i y_{i,t-1} + \varepsilon_{it}, \dots \dots \dots (4.4)$$

Based on equation 4.12, the null hypotheses then become:

$$H_0: \beta_i = 0, \text{ for all } i$$

Against the alternatives,

$$H_1: \beta_i < 0, \quad i = 1, 2, \dots, N_1, \quad \beta_i = 0, \quad i = N_1 + 1, \dots, N.$$

Where  $t_{\beta_i}$  is the individualistic t-statistic for testing the null hypotheses:  $\beta_i = 0$  for all  $i$ , then the test is based on averaging individual unit root tests:

$$\bar{t} = \frac{1}{N} \sum_{i=1}^N t_{\beta_i}, \dots \dots \dots (4.5)$$

The formulation of the alternative hypothesis allows for  $\beta_i$  to differ from one group to another and is more general than the homogeneous  $H_1$ , namely  $\rho_i = \rho < 0$  for all  $i$ , which is implicit in the Quah (1994) and Levin *et al.* (2002:3) testing approach. Breitung and Das (2005:421) stated that a small  $N$  or a large  $N$  relative to  $T$ , imply that IPS and LLC both show size distortions. Additionally, when the deterministic term is included in the analysis then the tests have little power (Chang, 2002:271; Kunst *et al.*, 2011:3; Levin *et al.*, 2002:14).

#### 4.5.3 The Hadri (2000) Lagrange multiplier (LM) stationarity test

The aforementioned unit root tests take on the  $H_0$  that the series contains a unit root. Traditional statistical techniques are intended to reject the hypothesis only when there is sufficiently overwhelming evidence against the null hypothesis (Hadri, 2000). This was a postponement from the works of (Kwiatkowski *et al.*, 1992). Nonetheless, since unit root tests are generally not too powerful against the  $H_1$  of a fairly persistent but stationary procedure, withdrawing roles and testing the  $H_0$  of stationarity against the  $H_1$  of a unit root is attractive. With regards to a pure time series, the KPSS test of Kwiatkowski *et al.* (1992) is one such test.

If the residuals form a stationary process from the deterministic part of the series, the partial sums (properly scaled) of the residuals form a *Brownian Bridge*. A Brownian Bridge is used for statistical inference, it was a result of the Donsker's theorem in empirical processes (Chow, 2009). The two main advantages of the Hadri LM

stationarity panel unit root test is that firstly, compared to other unit root test methods, the null hypothesis is set as stationary, so it can be used to verify results of other methods. Secondly, it can correct heterogeneous error and serial correlation, whereas other methods, such as the IPS test is unable to correct (Hadri & Larsson, 2000; Mokatsanyane et al., 2017:75). The Hadri LM test is designed for large T and moderate N cases and is based on the residues of the OLS regressions of  $y_{it}$  on a constant (suppose a panel-specific time trend is included). The series is set as:

$$y_{it} = r_{it} + \beta_i t + \varepsilon_{it}, \dots \dots \dots (4.6)$$

Where:

- $r_{it}$  = a random walk (constant term),
- $\beta_i t$  = coefficient of t or trend
- $\varepsilon_{it}$  = the residual's term or the zero-mean of normal errors.

Hadri (2000) set the following hypothesis:

- $H_0$  = panel data has no unit root (assume individual unit root) (stationary)
- $H_1$  = Panel data has unit root (Non-stationary).

#### 4.6 COINTEGRATION TEST

The Baltagi and Kao (2001) and Cerrato and Sarantis (2002) studies examined panel unit root tests of first generation, that assumes cross sectional independence and the unit root tests of second generation summarizes the main developments and allow cross sectional dependence (Barreira & Rodrigues, 2005:667). According to the theory of cointegration developed by Engle and Granger (1987), the theory was based on the supposition that when a series is integrated at the same order, then it implies that the variables act together in the long-run. This theory was further advanced by Johansen (1988), Johansen and Juselius (1990) and others.

Panel cointegration tests were also conducted using commitments from Johansen (1995), Kao (1999) and Pedroni (2004) and suitable tests for the time series analysis of the first cointegration tests developed. A prerequisite for both the time series cointegration tests like Engle and Granger (1987) and Johansen (1988); and panel

cointegration tests like Johansen (1995), Kao (1999) and Pedroni (2004) is that all series are stable at the same level.

With regards to this study, the aforementioned methods cannot be used based on the mixture of the integration. Panel ARDL approach developed by Pesaran, Shin and Smith (1999) is suitable for this study as it accommodates mixed series.

#### **4.7 DUMITRESCU-HURLIN PANEL CAUSALITY TEST MODEL**

The main issue that panel data models encounter in causality testing is the specification of the heterogeneity between cross-sections (Mehmood, Aleem & Rafaqat, 2017:100). By allowing all coefficients to be different across cross-sections, DH (2012) accounted for heterogeneity across cross-sections. From a causality perspective, the heterogeneity can be between the heterogeneity of the regression model or from x to y in terms of causal relationship. The simplest form of regression model is heterogeneity and is based on slope parameters heterogeneity.

Mehmood *et al.* (2017:100) indicated that there are four kinds of causal relationships, 1) the Homogeneous non-causality (HNC) hypothesis, where no individual causality occurs, however, 2) the Homogeneous causality (HC) and 3) Heterogeneous causality (HEC), reveal the opposite, as there is a causality relationship for each individual in the sample. The fourth one is the Heterogeneous non-causality (HENC) which results in heterogeneous causal relationships since variable x causes y for certain subgroups. Linear model is presented as follow:

$$y_{i,t} = \alpha_i + \sum_{k=1}^K \gamma_i y_{i,t-k} + \sum_{k=1}^K \beta_i x_{i,t-k} + \varepsilon_{i,t} \quad i=1, 2, \dots, N; t=1, 2, \dots, T, \dots (4.7)$$

The x and y denote the stationary variables observed for N individuals in T periods.  $\alpha_i$  represents the individual effects and are fixed in the time dimension. It implies that there are lag orders of K identical for the cross-section unit of the panels.

#### **4.8 MODEL SPECIFICATION AND ECONOMETRIC MODELLING**

This study will be based on a functionalist theoretical paradigm. Burrell and Morgan (1979) defined the functionalist paradigm as the primary paradigm for investigating organization by testing the hypothesis. A functionalist is characterised by ontology and epistemology. The main concern of a functionalist paradigm is understanding society

in a way that produces knowledge that can be used (Mooney, Knox & Schacht, 2007:1). They therefore often use a problem-oriented approach to solve practical problem (Mooney *et al.*, 2007:1). So a functionalist is a positivist that is studying the organizational behaviour (they do organizational studies) and hypotheses testing (quantitative studies).

Considering the vast economic landscapes and changing global economy, the utilization of the much acclaimed robust and advanced econometric methods in economic analysis is unprecedented (Chipeta, 2017:92). Based on the underlying literature surrounding the current topic, to fulfil the process of determining the relationship between income disparity, economic growth and poverty, this study employed the Pesaran *et al.* (1999) panel-ARDL model, using the pooled mean group (PMG) and mean group (MG) estimators. The panel-ARDL was conducted to determine the relationship between the aforementioned variables within the pooled provinces in SA. This is driven by the underscored objectives of the study. This approach has been employed in similar studies by (Bhorat *et al.* 2009; Van der Berg, 2010; Akanbi, 2016).

#### 4.8.1 Panel ARDL modelling

Panel data regression, also referred to as the cross-sectional time series data is a dataset in which the behaviour of a unit can be observed over time and will be used in this study (Torres-Ryna, 2003:2). This is a pooled regression model and can be generated for the ordinary least squares (OLS) which is an arithmetic technique that makes use of sample data to estimate a country’s true relationship between the four variables and the simplest method of linear regression. It is centred on the supposition that intercepts are identical for all provinces (Kim, 2012:2). Dynamic models have played an increasingly important role since the formative work of Balestra and Nerlove (1966). Considering that the primary purpose of this study is to analysis the interrelations of income disparity, economic growth and poverty in South Africa’s nine provinces, the study employed the panel-ARDL model by means of the pooled mean group (PMG) and mean group (MG) estimator, which will be discussed in greater detail in Section 4.7.3. The four components of this study are expressed as a function:

$$GDP_t = f(PVT_t, GINIco_t, HDI_t), \dots \dots \dots (4.8)$$

To maintain a uniform and consistent dataset, all variables were transformed into their natural logarithmic forms to reduce size residuals and adjust for any likelihood of scale effects, as well as to allow for the estimation of elasticity or growth. The study employed the panel ARDL model for the pooled province, to establish a relationship between the variables, three equations were used and they are expressed in Equation as follows:

#### Model 1

$$\Delta LGDP_t = \beta_0 + \sum_{i=1}^k \beta_i \Delta LGDP_{t-i} + \sum_{i=0}^k r_i \Delta LPVT_{t-i} + \sum_{i=0}^k \vartheta_i \Delta LGINICO_{t-i} + \sum_{i=0}^k \gamma_i \Delta LHDI_{t-i} + \theta_1 LGDP_{t-1} + \theta_2 LPVT_{t-1} + \theta_3 LGINICO_{t-1} + \theta_4 LHDI_{t-1} + \varepsilon_t \quad (4.9)$$

#### Model 2

$$\Delta LGINICO_t = \beta_0 + \sum_{i=1}^k \beta_i \Delta LGINICO_{t-i} + \sum_{i=0}^k r_i \Delta LPVT_{t-i} + \sum_{i=0}^k \vartheta_i \Delta LGDP_{t-i} + \sum_{i=0}^k \gamma_i \Delta LHDI_{t-i} + \theta_1 LGINICO_{t-1} + \theta_2 LPVT_{t-1} + \theta_3 LGDP_{t-1} + \theta_4 LHDI_{t-1} + \varepsilon_t \quad (4.10)$$

#### Model 3

$$\Delta LPVT_t = \beta_0 + \sum_{i=1}^k \beta_i \Delta LPVT_{t-i} + \sum_{i=0}^k r_i \Delta LGDP_{t-i} + \sum_{i=0}^k \vartheta_i \Delta LGINICO_{t-i} + \sum_{i=0}^k \gamma_i \Delta LHDI_{t-i} + \theta_1 LPVT_{t-1} + \theta_2 LGDP_{t-1} + \theta_3 LGINICO_{t-1} + \theta_4 LHDI_{t-1} + \varepsilon_t \quad (4.11)$$

Where:  $\Delta$  denotes the first difference operator of the variables, LGDP indicates the natural log of economic growth and expressed separately as the dependent variable in model 1. LGINICO denotes the natural log of the income inequality as expressed by the Gini index, LPVT denotes the natural log of poverty, and they are the dependent variables of model 2 and model 3, respectively. LHDI indicates the natural log of the human development index. The series  $\beta_i, r_i, \vartheta_i, \gamma_i$  denotes the coefficients for the measurement of the short-run dynamics of the model amongst the dependent and explanatory variables, whilst  $\theta_1, \theta_2, \theta_3, \theta_4$  denotes the measurement of the long-run dynamics of the model amongst the dependent and explanatory variables, and  $\varepsilon_t$  indicates the white noise error term.

Based on equation **4.9, 4.10 and 4.11**, the null hypotheses then become:

$$H_0: \theta_1 = \theta_2 = \theta_3 = \theta_4 = 0:$$

This indicates the absence of a long-run correlation between economic growth, poverty, income inequality and the human development index. This assumption is examined by using the Wald statistic or the statistics of Fisher following a distribution that is not standard (Ghorbani & Motallebi, 2009).

Against the alternatives:

$$H_1: \theta_1 \neq \theta_2 \neq \theta_3 \neq \theta_4 \neq 0$$

A co-integrating long-run relationship exists between the four variables.

#### 4.8.2 Error correction model (ECM)

The presence of a long-run relationship automatically proposes the existence of the error correction term (ECT). To confirm the convergence of short-run dynamics towards long-run equilibrium, the error correction term (ECT) should have a statically significant coefficient with a negative sign (Paul, 2014:3). According to Banerjee, Dolado and Mestre (1998) the ECT indicates the speed of adjustment in the dynamic model to restore equilibrium. The ECM shows how fast variables converge or diverge into equilibrium. Furthermore, the highly significant ECT confirms the existence of a stable long-run relationship.

Equations (4.9, 4.10 and 4.11) of the panel ARDL model can thereby be derived in terms of the ECT as follows:

$$\Delta LGDP_t = \beta_0 + \sum_{i=1}^k \beta_i \Delta LGDP_{t-i} + \sum_{i=0}^k r_i \Delta LPVT_{t-i} + \sum_{i=0}^k \vartheta_i \Delta LINQ_{t-i} + \sum_{i=0}^k \gamma_i \Delta LHDI_{t-i} + ECT_{t-i} + e_t \dots \dots \dots (4.12)$$

$$\Delta LGINICO_t = \beta_0 + \sum_{i=1}^k \beta_i \Delta LGINICO_{t-i} + \sum_{i=0}^k r_i \Delta LPVT_{t-i} + \sum_{i=0}^k \vartheta_i \Delta LGDP_{t-i} + \sum_{i=0}^k \gamma_i \Delta LHDI_{t-i} + ECT_{t-i} + e_t \dots \dots \dots (4.13)$$

$$\Delta LPVT_t = \beta_0 + \sum_{i=1}^k \beta_i \Delta LPVT_{t-i} + \sum_{i=0}^k r_i \Delta LGDP_{t-i} + \sum_{i=0}^k \vartheta_i \Delta LINQ_{t-i} + \sum_{i=0}^k \gamma_i \Delta LHDI_{t-i} + ECT_{t-i} + e_t \dots \dots \dots (4.14)$$

Where the ECT is used to examine the speed of adjustment of short-run dynamics or disequilibrium towards long-run equilibrium (Alimi, 2014:106) and is shown by  $e_t$ .

### 4.8.3 Pooled mean group (PMG) and mean group (MG) estimators

Pesaran and Smith (1995) and Pesaran, Shin and Smith (1999) proposed two estimators as the resolution to the heterogeneity prejudice caused by heterogeneous slopes in dynamic panels: (1) Mean group (MG) estimator and (2) Pooled mean group (PMG) estimator. Pesaran and Smith (1995) introduced the MG estimator and it has the least restrictive procedure as it permits heterogeneity of all the parameters where no cross-country constraint is enforced. The MG estimator derives the long-run parameters from panel-ARDL models for individual provinces.

The MG estimator estimates separate regressions for each province. Thus far, it has computing averages of the province-specific constants, which provides consistent estimates of the long-run coefficients (Chu & Sek, 2014:945). The panel ARDL can be expressed as follow:

$$Y_{it} = \alpha_i + \gamma_1 Y_{i,t-1} + \beta_i X_{it} + \mu_{it} \dots \dots \dots (4.15)$$

For province i, where i=1, 2, …, N. The long-run parameter  $\theta_i$  for country i is:

$$\theta_t = \frac{\beta_i}{1-\gamma_i} \dots \dots \dots (4.16)$$

The MG estimators for the whole panel will be given by:

$$\hat{\theta} = \frac{1}{N} \sum_{i=1}^N \theta_i \qquad \hat{\alpha} = \frac{1}{N} \sum_{i=1}^N \alpha_i \dots \dots \dots (4.17)$$

Pesaran *et al.* (1999) introduced the PMG estimator and was centred on the supposition of consistent homogeneity of the long-run slope. The PMG estimator has the ability to take a normal ARDL cointegration model, adjust it for panel setting by allowing the error variances, "intercepts, short-run coefficients and cointegrating terms" to differ. The PMG intermediates the Pesaran and Smith's (1995) mean group (MG) method in which the intercepts and slope vary across cross section groups. The validation of the long-run homogeneity restrictions thereof, holds the estimations of the mean group estimator to be inefficient (Al Mamun *et al.*, 2013:570). Baek (2016:24) argued that the PMG estimator yields a more efficient estimator. Chu and Sek (2014:945) expressed the PMG as follows:

The unrestricted specification for the ARDL system of equations is:

$$y_{it} = \sum_{j=1}^p \tau_{ij} y_{i,t-j} + \sum_{j=1}^q \gamma_{ij} X_{i,t-j} + \mu_i + \varepsilon_{it} \dots \dots \dots (4.18)$$

Where  $X_{i,t-j}$  is the vector of explanatory variables for group I and  $\mu_i$  represents the fixed effects.

Estimates of both the MG and PMG estimators are consistent in a dynamic panel analysis irrespective of the existence regressors which are potentially non-stationary. Whereas the panel-ARDL method permits the analysis of both short-and long-run estimations provided within the same framework (Lanzafame, 2013:8). Samargandi *et al.* (2013) outlined numerous assumptions and requirements of the PMG in the panel ARDL approach. Firstly, a negative and significant coefficient on the ECT is required to validate the presence of a long-run relationship. Secondly, for the panel ARDL model to be consistent, the consequential residual of the ECM must be consecutively uncorrelated and the explanatory variables treated as exogenous (Mokatsanyane *et al.*, 2016:77). The general form of the empirical description of the PMG-ARDL model can be expressed as follows:

$$Y_t = \sum_{j=1}^p \phi_{ij} y_{i,j-j} + \sum_{j=0}^q \delta_{ij} X_{i,t-j} + \mu_i + \varepsilon_{it} \dots \dots \dots (4.19)$$

Where number of cross sections  $i=1,2,\dots,N$  and time  $t=1,2,3,\dots,T$ .  $X_{it}$  is a vector of  $K \times 1$  regressors,  $\phi_{ij}$  is a scalar,  $\mu_i$  is a group specific effect. If the variables are  $I(1)$  and cointegrated then the disruption term is an  $I(0)$  process. The main characteristic of cointegrated variables is their response to deviances from long run equilibrium. Lastly, the sample size is crucial as it helps in evading the bias in the average estimators and solves the issue of heterogeneity (Garces-Ozanne, 2006; Shittu, 2012; Akanbi, 2016:175).

#### 4.8.4 The Hausman test

The hypothesis of homogeneity of the long-run parameters was introduced by Hausman (1978). The Hausman-type test is centred on the effect of heterogeneity on the means of the coefficients. The PMG estimates are more efficient than MG if the parameters are actually homogeneous. In other words, the efficient estimator is preferred under the  $H_0$ . However, if the  $H_0$  is rejected, the efficient estimator MG is preferred.

## 4.9 DYNAMIC ANALYSIS WITH CROSS-SECTIONAL DEPENDENCE

These tests in this section are only performed when the estimated results show the existence of cross-section in the model.

### 4.9.1 Test for cross-sectional dependence

To avoid incorrect inference and biased estimates presented in standard panel estimators, testing for cross-sectional dependence is important as it checks the validity of unit root (Lombardi *et al.*, 2017). The presence of cross-dependence gives rise to correlation among panel dataset cross-sectional error (Bonizzi, 2017:54). Panel-ARDL estimates produced in the MG and PMG methods which are based on the assumption of cross-section independence are therefore inefficient and may lead to spurious results (Banerjee, Marcellino & Osbat, 2004; Pesaran, 2006).

Initially, Breusch and Pagan (1980) developed the Lagrange multiplier (LM) with the aim to test cross-sectional dependency in panel data. The tests are classified as follows: Pesaran (2004) CDLM (Cross Dependence Lagrange Multiplier), Breusch and Pagan (1980) CDLM1, and Pesaran (2004) CDLM2 tests are used. When the time range is greater than the cross-section range ( $T > N$ ) like in this study, CDLM1 and CDLM2 are used. CDLM test is only employed when the cross section range is greater than the time range ( $N > T$ ). Furthermore, Pesaran and Yamagata (2008) improved the delta test to account for homogeneity of slope coefficient. The  $H_0$  of the test is that there is no cross-sectional independence.

### 4.9.2 Unit root test of the second generation

Regardless of the evolution towards heterogeneous specifications, a second development has been observed recently and concerns cross-sectional dependencies (Hurlin & Mignon, 2007:2). Depending on whether unit root tests allow for possible correlations between panel unit roots residuals, two generations of tests can be distinguished as illustrated in Table 4.2 and Table 4.3.

The unit root tests of the second generation was developed as a response to the need for panel unit root tests that account for cross-sectional dependency relationships. A combination of commitments from Bai and Ng (2001), Moon and Perron (2004), Choi

(2002), Moon, Perron and Phillips (2003), Chang (2002), Phillips and Sul (2003), Pesaran (2003) and Ploberger and Phillips (2002) make up the second generation. Quah (1994) argued that modelling cross-sectional dependencies is a difficult task, because in unit observations there is no natural ordering.

**Table 4.3: Unit root test of the second generation**

Unit root test of the second Generation	CS-dependence
1. <i>Factor Structure</i>	Bai and Ng (2001, 2004) Choi (2002) Pesaran (2003) Phillips and Sul (2003) Moon and Perron (2004)
2. <i>Other approaches</i>	Chang (2002, 2004) O'Connell (1998)

Source: Hurlin and Mignon (2007:3)

Hurlin and Mignon (2007:8) indicated that unit root tests of second generation ease the cross-section dependence supposition and aims to use these common movements to develop new tests statistics as an alternative to treating correlations between unit as nuisance parameters (Bai & Ng, 2001, 2004). If there is no cross section dependency, unit root tests of first generation are used and unit root tests of second generation are used if there is cross section dependency. From Table 4.3, only Pesaran (2003) will be discussed in detail as it was the only test utilised for this study.

#### **4.9.3 Pesaran (2003) panel unit with cross-section dependence**

When the cross-sectional dependence problem arises, Pesaran (2003) proposed a new methodology to deal with it. Similar to Philips and Sul (2003), Pesaran (2003) who considered a single factor model with heterogeneous loading factors for residues. However, Pesaran (2003) augmented a typical DF regression with the “*cross section average of lagged levels*” and first differences of the individual series, instead of basing the unit root on deviations from “*estimated common factors*”. The Pesaran (2003) test is centred on cross sectionally augmented ADF statistics (CADF), together with a modified version of IPS (CIPS). They are presented as follow:

$$CIPS = \frac{1}{N} \sum_{t=1}^N t_i (N, T) \dots \dots \dots (4.20)$$

#### 4.9.4 Westerlund (2007) ECM panel cointegration test

Westerlund (2007) tests for short-run dynamics in series with cross-sectional dependence.

$$y_{it} = \sum_{j=1}^p \tau_{ij} y_{i,t-j} + \sum_{j=1}^q \gamma_{ij} X_{i,t-j} + \varepsilon_{it} \dots \dots \dots (4.21)$$

#### 4.9.5 Cross-sectional dependence estimators

Since the Pesaran and Smith (1995) MG estimator does not account for cross-sectional dependency, the study of **Hernandez (2016:3)** stated that recent literature has provided two MG alternative models that accommodate slope heterogeneity and cross-sectional dependency. These models were introduced by Pesaran (2006) and Eberhardt-Teal (2010).

##### 4.9.5.1 Common correlated effects mean group estimator (CCEMG)

Pesaran (2006) developed the common correlated effects mean group estimator (CCEMG). It allows for the empirical configuration that induces cross-sectional dependence, time variation that cannot be observed with heterogeneous impacts on panel members and identification problems (Kapetanios, Pesaran & Yamagata, 2011).

Pesaran and Hashem (2006:971) indicated that the coefficients estimated on the average cross-sectional variables and their average estimates can be interpreted with ease in empirical application. They are only used to cross-fade the biased effects of the unobservable common factor. In comparison to the AMG, the CCEMG estimator is relatively data-intensive (Eberhardt & Teal, 2008:11). The estimator focuses on consistent estimates of the parameters associated with the observable variables.

##### 4.9.5.2 The augmented mean group estimator (AMG)

Eberhardt and Teal (2010) developed the augmented mean group estimator (AMG) as an alternative to the Pesaran (2006) CCEMG. Neal (2015:17) and Hernandez (2016:3) emphasized that the CCEMG treated unobservable common factors as a nuisance, something to be accounted for which is not of particular “*interest for the empirical analysis*”.

Bond and Eberhardt (2009) stated that under MG the regression model includes an intercept, which captures time-invariant fixed effects similar to the CCEMG in which group-specific model parameters across the panel are averaged. In replications, the AMG performed in panels with no stationary variables “(cointegrated or not)” and multifactor error terms “(cross-section dependence)” similar to the CCEMG’s performance in terms of bias or RMSE.

After Pesaran and Smith (1995), the standard errors reported in the average regression results (the standard output) are constructed. Therefore, testing the substantial differences of the average constant from zero. However, Eberhardt, Markus and Teal (2010) stated that in practice, the group-specific coefficients, either without weighting or with less weight attached to outliers, are traced back to an intersection point.

The study of Eberhardt and Teal (2008:10) on “modelling technology and technological change in manufacturing” indicated that the AMG is favourable for use in panels with a mixture of countries with stationary or non-stationary variable. The study of Mehmood *et al.* (2017:96), Hernandez (2016:1) and Damette *et al.* (2016:14) preferred the AMG over the CCEMG based on how it accounts for slope heterogeneity and unobservable parameters. However, this study implemented the CCEMG due to the number of significant relationships found and the robustness of the RMSE.

#### 4.10 NORMALITY TESTING

In the final stage of conducting a time series analysis, the validity of the results from the estimated models depends on the outcomes of the diagnostics tests (Sibanda, Ncwadi & Mlambo, 2013:261). However, for time series estimates that include cross-section, the normality test is the only one commonly used for diagnostics testing (Gujarati & Porter, 2010:536). The normality test is one of the popular test in statistics, it was formally introduced by Fisher (1948:30), but a standard Jarque-Bera (JB) test (1980) is widely employed. The JB test determines whether the error terms are distributed normally or not. The test is expressed in terms of the third and fourth moments of the disturbances, as follows:

$$JB = (n-K) \left( \frac{S^2}{6} + \frac{(k-3)^2}{24} \right) \dots \dots \dots (4.22)$$

Where S is the skewness and K is the Kurtosis.

When conducting the normality test, if the probability values obtained is higher than five percent significance level, the greater the evidence to maintain the null hypothesis that states that error terms are normally distributed (Gujarati & Porter, 2010:536).

#### **4.11 SUMMARY**

This chapter elaborated on the research methodology employed in this study. It delivered a discussion on data selection procedures and statistical methods employed in chapter 5. The methodological discussion provided the steps undertaken in establishing models and techniques to be employed for the estimation of the long and/or short-run relationships and the causal linkages between poverty, income disparity, economic growth and the HDI. The data selection process involved time series annual observations. Data used in the study was acquired from the IHS Global Insight (2017) data base. The period encompassing the study was selected based on data availability as well as the focus on the post-apartheid era to discount for social and economic embargoes of the apartheid system.

Several statistical techniques were discussed and the choice of the panel ARDL model was motivated by its flexible components relative to traditional co-integration methods and its power to analyse the mixed orders of co-integration if none of them was I(2). Various tests were discussed, which include different unit roots, the Kao cointegration to test for the existence of long-run relations, the error correction model (ECM), the Akaike information criteria (AIC) for model selection as well as the DH Panel Causality Tests. The panel-ARDL cointegration test as well as dynamic panel estimates that include cross-sectional dependence were discussed together with their sub-tests. The methodology and models outlined in this chapter will be applied to estimate the empirical tests results, which will then be interpreted and discussed in the next chapter.

## CHAPTER 5

### EMPIRICAL ESTIMATION AND DISCUSSION OF RESULTS

---

#### 5.1 INTRODUCTION

This chapter presents estimations and results from the panel ARDL cointegration model that was discussed in the previous chapter. The empirical analysis in this chapter entails graphical representations of descriptive statistics and a correlation analysis to provide a brief estimation of the relationship between the variables. Variables are tested for order of integration using various new generation methods of unit root and stationarity testing.

A panel ARDL approach is employed to estimate the empirical findings of this study, followed by a Fisher-based Kao (1999) panel cointegration test. The preceding estimations are conducted to provide a comparative assessment of projected individual average annual economic growth findings against established results of income inequality, human development index and poverty groups. The model is also tested for homogeneous causality using the Dumitrescu and Hurlin (2012) panel causality tests. Finally, the normality test is conducted for each of the ARDL models to assess the reliability and distribution of the model. Variables that were employed in the study are explained and elaborated in Table 5.1.

**Table 5.1: Variable representation**

Variables	Representation
Log of GDP growth rate	LGDP
Log of income inequality	LGINICO
Log of poverty	LPVT
Log of human development index	LHDI

#### 5.2 DESCRIPTIVE STATISTICS

This section elaborate on the descriptive statistics results of the data used in this study. The following descriptive statistics are analyzed and discussed: mean, standard

deviation, maximum, minimum, kurtosis and skewness of all variables (LGDP, LGINICO, LPVT and LHDI) as shown in Table 5.1.

Table 5.2 provides the descriptive summary for the four variables utilized in the study before changing them into their natural logarithms. Equation 4.9 was employed. The average of the annual data for each province was calculated for the period of review from 1997 to 2017. The table further highlights the maximum and minimum values of the study, making it possible to identify whether or not the observed variables are within the expected range or are outliers. Easterly and Levine (1997), Levine (2005) and Alfaro *et al.* (2004) indicated that time series data is subjected to high levels of skewness mainly due to the existence of outliers along the trend line (Stiglingh, 2015:63). The mean based coefficients of skewness and kurtosis are applied to check the symmetric nature of the variables as well as the Jarque-Bera test of normality to see whether the data is normally distributed or not.

**Table 5.2: National descriptive statistics**

	<b>GDP</b>	<b>GINICO</b>	<b>PVT</b>	<b>HDI</b>
Mean	0.093820	61.95007	2629837.	0.558995
Median	0.090628	61.70231	2040639.	0.549036
Maximum	0.413837	65.39738	6232709.	0.731613
Minimum	0.010000	58.02374	330756.0	0.444054
Std. Dev.	0.036291	1.749233	1538859.	0.081500
Skewness	4.119196	0.109434	0.585131	0.356304
Kurtosis	35.23204	2.111586	2.508442	1.908080
Jarque-Bera	8715.856	6.592820	12.68773	13.38828
Probability	0.000000	0.037016	0.001757	0.001238
Observations	189	189	189	189

Source: Authors' compilation

The results in Table 5.2 indicate positive skewness for all four variables which reflects that the observed values of the variables peak to the left. The standard deviation indicates a high volatile level in the Gini index of 1.74. According to the probability,

none of the variables are normally distributed due to the p-values for the Jargue-Bera test being less than 0.05, so we fail to accept the null hypothesis of normal distribution. The skewness (different from zero) and kurtosis (greater than 3) of PVT, HDI and GINICO indicate complementary results to the hypothesis. GDP's extreme kurtosis of 35.2 percent is a reflection that the distribution of the values is in the tails rather than around the mean. The mean results indicate that on average, 262983 people are living below the LBPL in South Africa, with an average income inequality of 61.9 and a low average for GDP and HDI at 0.093820 and 0.558995 respectively. This reflects South Africa's climate as discussed in Section 3.2, characterised by high poverty rates and high income inequality levels yet low levels of growth, literacy and standard of living. Table 5.3 below presents a provincial overview of GDP growth.

**Table 5.3: Provincial descriptive statistics (GDP growth rate)**

Province	Mean	Max.	Min.	Std. Dev.	Skew.	Kurt.	Obs.
1. WC	0.098606	0.152376	0.050855	0.023601	0.083253	3.069778	21
2. EC	0.093705	0.205915	0.054955	0.031210	2.216209	9.062449	21
3. NC	0.091606	0.235954	0.042109	0.037374	2.701163	12.01964	21
4. FS	0.084188	0.131276	0.010000	0.027877	-1.02440	3.906916	21
5. KZN	0.097191	0.182824	0.051192	0.027665	1.199760	5.539612	21
6. NW	0.087117	0.131301	0.027677	0.029498	-0.64486	2.554770	21
7. GP	0.097185	0.156813	0.049582	0.023011	0.479373	3.724466	21
8. MP	0.091013	0.195499	0.050774	0.028241	2.351687	10.18377	21
9. LP	0.103774	0.413837	0.048884	0.073502	3.795621	16.65812	21
All	0.093820	0.413837	0.010000	0.036291	4.119196	35.23204	189

Source: Authors' compilation

The mean equates for average of all the number of variables in the data set (Stiglingh, 2015:63). Based on the mean results, all nine province indicate positive average growth, however, LP (Limpopo) province has the highest average economic growth of 0.10 percent, accompanied by a maximum of 0.41 percent and a minimum of 0.04

percent. Followed by WC (Western Cape) with 0.098 percent, KZN (Kwazulu-Natal) with 0.097 percent and GP (Gauteng) province with 0.097 percent. The growth in LP is mainly attributed to the agricultural sector as presented in Figure 3.5 and in increase in HDI reflected in Figure 3.14.

More people are getting educated in LP so the standard of living is improving. The FS (Free State) province has the lowest average economic growth of 0.084 percent out of all the nine provinces, with a maximum of 0.13 percent and a minimum of 0.01 percent. It is closely followed by the NW (North West) province with 0.087 percent, with a similar maximum of 0.13 percent and a minimum of 0.2 percent. Since 2015 the FS province has been experiencing low growth rates as presented in Figure 3.9 and a very high unemployment rate. Whilst the NW province was most affected by the recession and irregular fluctuations in the economy. It has been contributing mostly negative growth since 2012 refer to Figure 3.11.

The results in Table 5.3 indicate positive skewness for seven of the nine provinces which reflects that the observed values of the variables peak to the left. The FS (Free State) and NW (North West) negative skewness is a reflection that a larger number of greater values peak to the right. The standard deviation values in eight provinces are low and similar with the exception of LP (Limpopo). This indicates that out of all the nine provinces, LP is most volatile to the fluctuations of GDP growth rate. Limpopo's extreme kurtosis of 16.6 is a reflection of how more of the values are in the tails of the distribution rather than around the mean, followed by Northern Cape (NC) with 12.0, Mpumalanga (MP) with 10.1, Eastern Cape (EC) with 9 and Kwazulu-Natal with 5.5. Table 5.4 below presents a provincial overview of income inequality.

Based on the mean results, GP has the highest level of income inequality with a Gini index score of 64.05, with a maximum of 65.31 and a minimum of 61.09. The province accounts largely for economic activities but disparities occur when comparing cities like Sandton with Alexandra for example. One is fully urbanized and a corporate hub for South Africa, whilst the other is made up of slums, high poverty rates, unemployment and low literacy rates. As illustrated in Figure 3.7, the increase in HDI is for the top 10 percent. It is followed by KZN with 63.51, EC (Eastern Cape) with 62.7, MP (Mpumalanga) with 62.2 and the FS with 62.02. The WC is the most equal province in terms of income out of the nine provinces with 60.37. Accompanied by the

lowest maximum of 61.1 and a minimum of 58.02. The WC has the highest HDI in SA as graphically presented in Figure 3.6, majority of people in the province are educated, and the living standards are decent which in turn decreases income inequality.

**Table 5.4: Provincial descriptive statistics (GININDEX)**

Province	Mean	Max.	Min.	Std. Dev.	Skew.	Kurt.	Obs.
1. WC	60.37792	61.11521	58.02374	0.694399	-1.98557	7.337729	21
2. EC	62.76454	65.20808	61.19318	1.401414	0.492149	1.738379	21
3. NC	60.92262	63.56592	58.61756	1.751053	0.232416	1.462780	21
4. FS	62.02138	64.04511	59.73990	1.294323	0.211520	1.835813	21
5. KZN	63.51640	65.39738	61.90960	1.141863	0.411946	1.753651	21
6. NW	60.85681	62.43576	58.45531	1.042347	-0.23434	2.504192	21
7. GP	64.05637	65.31680	61.09161	1.034983	-1.16050	4.179008	21
8. MP	62.21212	63.96096	60.24841	1.237149	-0.14390	1.610645	21
9. LP	60.82248	63.42657	58.79551	1.510149	0.519260	1.848455	21
All	61.95007	65.39738	58.02374	1.749233	0.109434	2.111586	189

Source: Authors' compilation

The results in Table 5.4 indicate positive skewness for five of the nine provinces which reflects that the observed values of the provinces peak to the left, whilst WC, NW, GP and MP negative skewness is a reflection that a larger number of bigger values peak to the right. The standard deviations values in eight provinces are low and similar with the exception of WC. This indicates that out of all the nine provinces, the Western Cape Province is less volatile to the fluctuations of the Gini index. The skewness (different from zero) and kurtosis (greater than 3) of WC and GP indicate extreme results which complement the findings from the provincial trend lines in Chapter 3. WC and GP are highly developed, highly populated and have a high rural-urban gap that contributes to the high Gini coefficient. Table 5.5 below presents a provincial overview of the number of people leaving below the LBPL.

**Table 5.5: Provincial Descriptive Statistics (PVT)**

Province	Mean	Max.	Min.	Std. Dev.	Skew.	Kurt.	Obs.
1. WC	1682890	1979612	1284759	167923.4	-0.519163	3.136880	21
2. EC	3955745	4661362	3049804	566814.5	-0.114695	1.595085	21
3. NC	484798	625002	330756	99683.22	0.106000	1.609719	21
4. FS	1383897	1707276	980628	255979.7	-0.014327	1.574367	21
5. KZN	5557362	6232709	4448571	584813.2	-0.403999	1.941592	21
6. NW	1673750	1941988	1253909	231887.3	-0.393342	1.814519	21
7. GP	3639076	4571073	2908221	376623.5	0.427129	3.479528	21
8. MP	2042929	2349401	1561905	259333.3	-0.447608	1.909121	21
9. LP	3248083	3757204	2541553	436155.8	-0.294975	1.596005	21
All	2629837	6232709	330756	1538859	0.585131	2.508442	189

Source: Authors' compilation

Based on the mean results, KZN has the highest average number of people leaving below the LBPL with 5 557 362 people. With a maximum of 6 232 709 people and a minimum of 4 448 571 people. It receives an influx of people from neighboring poor provinces such as EC and FS, as well as migrants from Swaziland and Lesotho. It is followed by GP with an average number of 3 639 076 people living below the LBPL, with a maximum of 4 571 073 people and a minimum of 2 908 221 people. These people are living of less than R758 per month as presented in Table 3.1. The KZN province is the second most populous province in South Africa after GP. However, NC (Northern Cape) is associated with the lowest average number of people living below the LBPL with 484 798 people, accompanied by a maximum of 625 002 people and a minimum of 330 756 people. This is mainly due to the mountainous landscape, low population, lack of opportunities and high income inequality as reflected in Figure 3.8.

The results indicate that GP and NC have a positive skewness out of the nine which reflects that the observed values of the provinces peak to the left and the rest of the provinces negative skewness is a reflection that greater peak to the right. Gauteng province and Northern Cape are outliers in the opposite ends of poverty rates. The

standard deviation indicates that KZN is the most volatile province to poverty changes, followed closely by EC and LP lastly NC is the least volatile province to poverty movements.

**Table 5.6: Provincial descriptive statistics (HDI)**

Province	Mean	Max.	Min.	Std. Dev.	Skew.	Kurt.	Obs.
1. WC	0.684416	0.731613	0.660394	0.027110	0.698524	1.818789	21
2. EC	0.507917	0.601969	0.448866	0.052678	0.598233	1.812105	21
3. NC	0.572956	0.654744	0.521657	0.048195	0.449052	1.683594	21
4. FS	0.545386	0.636076	0.484727	0.051786	0.502170	1.744436	21
5. KZN	0.517001	0.615579	0.457971	0.055139	0.618696	1.847000	21
6. NW	0.523841	0.627547	0.466000	0.055678	0.612459	1.843024	21
7. GP	0.665325	0.717710	0.629495	0.029811	0.544256	1.822982	21
8. MP	0.510461	0.613655	0.444054	0.058849	0.500927	1.732620	21
9. LP	0.503648	0.601075	0.446084	0.055350	0.614180	1.783763	21
All	0.558995	0.731613	0.444054	0.081500	0.356304	1.908080	189

Source: Authors' compilation

The mean results above are complementary to those in Figure 3.6 indicating that the WC has the highest average HDI in South Africa of 0.68, with a maximum of 0.73 and a minimum of 0.66. It is the most developed province in terms of literacy, standard of living and longevity. LP and EC have the lowest average HDI with 0.503 and 0.507 respectively. These are the poorest province in South Africa with regards to literacy and standard of living. The results in Table 5.6 indicate positive skewness for all nine provinces which reflects that the observed values of the provinces peak to the left. The standard deviation value range from 0.0271 (WC) to 0.0588 (MP). The kurtosis is similar within the provinces.

### 5.3 CORRELATION ANALYSIS

Table 5.7 below presents a correlation analysis of how economic growth interacts with the considered regressors (using model one) in South Africa. Results show that economic growth has relatively positive and insignificant relations with income disparities and poverty. This is in line with a study of Aghion and Howitt (1998) about the endogenous fiscal policy channel that revealed a weak positive correlation between economic growth and income disparities. However, Berg *et al.* (2012:158) found the link between economic growth and income disparities to be weakly negative or even positive, supported by Barro (2000). Also, an insignificant yet weak negative relationship is identified between the human development index and economic growth. Guiga and Rejeb (2012) found a positive link between economic growth and poverty reduction.

**Table 5.7: Correlation analysis**

Correlation Probability	LGDP	LGINICO	LPVT	LHDI
LGDP	1.000000 .....	-	-	-
LGINICO	0.075415 (0.3024)	1.000000 .....	-	-
LPVT	0.115921 (0.1122)	0.525372 (0.0000)*	1.000000 .....	-
LHDI	-0.097840 (0.1804)	-0.322215 (0.0000)*	-0.241752 (0.0008)*	1.000000 .....

Note: \* denotes the rejection of the null hypothesis at the 1 percent significance level ( ) p-values

Source: Authors' compilation

Moreover, the outcomes revealed a strong positive association between income disparity and poverty. This shows that a decrease in income disparity translates to a decrease in the poverty rate. The relationship is significant at 1 percent with a strong correlation coefficient of 0.52 which translate into 52 percent relationship strength. Similar to the studies of Perotti (1994); Ravallion (2001) in as much, a weak yet significant and negative association exists between income disparity and the human development index. Lastly, the results show a significant yet weak negative affiliation between poverty and the human development index. This indicates that when South

Africa experiences an increase in poverty rate and income inequality, the human development index decreases. The less people earn, the more vulnerable they are to poverty, which then results in a low standard of living and low levels of literacy. These outcomes are similar to the studies of Forbes (2000); Cingano (2014) and Halter, Oechslin and Zweimüller (2014).

## **5.4 PANEL DATA ANALYSIS OF GROUPED PROVINCES**

Before establishing the empirical findings, the study conducted tests to see if there is a presence of unit root within the panel data. The panel ARDL approach is a consistent model that produces robust estimates regardless of whether the variables are integrated at order  $I(0)$  or  $I(1)$ . However, this approach is not applicable to variables integrated at  $I(2)$ . Due to such limitations, testing for the presence of unit root within the series LGDP, LGINICO, LPVT, LHDI was essential and was conducted using the Levin-Lin-Chu (2002) (LLC) and the Im-Pesaran-Shin (2003) (IPS) methods.

The null hypothesis  $H_0$  of the methods mentioned above to panel unit root tests is centered on the supposition of non-stationarity, against the alternative hypothesis  $H_a$  of a stationary series. To examine the LLC and IPS, the Hadri unit root is employed and it rejects the  $H_0$  of a non-stationary series. For long-run cointegration, the Fisher-type Kao (1999) panel cointegration test is employed. Furthermore, the Akaike information criterion (AIC) is employed based on automatic lag specification and to test for homogeneous causality, the Dumitrescu and Hurlin (2012) panel causality test is employed.

### **5.4.1 Panel unit root test of first generation**

An econometric analysis was conducted to measure the variables stationarity. Due to an upsurge in the period of the analysis and dynamic panels, non-stationarity is of dire importance as it indicates the type of model to be estimated. To test the time series properties of key variables with unit roots, assuming homogeneous slopes and heterogeneous slopes, respectively the LLC (2002) and IPS (2003) were employed. The LLC (2002) unit root test inflicts homogeneousness on the autoregressive coefficient, it assumes that  $\rho$  (which symbolizes the unit root parameters) are uniform in all horizontal sections that form a panel and the  $H_0$  is presented as  $|\rho| = 1$  where

the series are not stable. The IPS (2003) unit root test checks unit root in heterogeneous panels, it is acknowledged that the parameter of the unit root can vary between horizontal sections and the  $H_0$  is presented as  $|\rho_i| = 1$  where the series are not stable. Table 5.8 presents' unit root test results of the mentioned series undertaken at levels with both intercept and trend, as well as at first differences with intercept and the Hadri (2000) unit root test.

**Table 5.8: Results of LLC and IPS unit root test (p-values)**

Variables	Deterministic terms	LLC (2002)	IPS (2003)	Hadri (2000)	Integration order
<b>LEVELS</b>					
LGDP	Intercept	0.0010*	0.0000*	0.0010*	I(0)
LGINICO	Intercept	0.3014	0.2592	0.0000*	Not Stationary
LPVT	Intercept	0.0257**	0.2958	0.0000*	I(0)
LHDI	Intercept	0.9615	1.0000	0.0000*	Not Stationary
LGDP	Intercept & trend	0.0058*	0.0000*	0.0042*	I(0)
LGINICO	Intercept & trend	0.9069	0.1768	0.0000*	Not Stationary
LPVT	Intercept & trend	0.9984	0.8374	0.0012*	Not Stationary
LHDI	Intercept & trend	0.0000*	0.0389**	0.0000*	I(0)
<b>FIRST DIFFERENCE</b>					
$\Delta$ LGDP	Intercept	0.0000*	0.0000*	0.0333**	I(1)
$\Delta$ LGINICO	Intercept	0.0000*	0.0000*	0.0007*	I(1)
$\Delta$ LPVT	Intercept	0.0000*	0.0010*	0.3284	I(1)
$\Delta$ LHDI	Intercept	0.0267**	0.1015	0.0000*	I(1)

Note: \*denotes the rejection of the null hypothesis at the 1% level of significance

Source: Authors' compilation

LGDP results indicate that there is a presence of unit root in both the LLC and IPS at level with intercept, this suggests that the  $H_0$  of non-stationarity can be rejected at a

one percent significance level. The inclusion of an intercept and trend at levels indicate a strong presence of stationarity in both tests for LGDP and LHDI, however the  $H_0$  can be rejected at first differences indicated by a non-unit root for three out of the four variables. The LGINICO is the only variable that is only stationary at the first difference order in both tests.

The Levin-Lin-Chi (2002) unit root tests results are preferred for this study as they yield more robust results, which indicates higher power and better predictability. The results reveal a mixture of  $I(0)$  and  $I(1)$  results under LLC. Variables are integrated at levels and first difference, therefore an ARDL panel is a more suitable technique for estimation in the present study. In panel ARDL approach, unit root tests are applied in a way that disregard the likelihood of integration at  $I(2)$  (Pesaran *et al.*, 2001).

Hadri's (2000) unit root test hypothesis is contradictory to that of IPS and LLC tests. With that said, it is a test that examines the best fit between the LLC and IPS tests. That is, the null hypothesis  $H_0$  is presented as  $|\rho| < 1$  which is the sequential stop. Results (Table 5.8) in both classes of tests (intercept; intercept and trend) reveal stationarity at one percent. Hadri's test for the unit root suggests that regardless of the residue hypothesis, the  $H_0$  of non-stationary series is rejected.

#### **5.4.2 Panel cointegration test**

Since not all variables are integrated at first difference, in order to see if the variables cointegrate in the long-run, a panel cointegration test is essential. McCoskey and Kao (1998), Pedroni (1999) and Kao (1999) studies initially introduced the residual-based panel cointegration test statistics; and the panel cointegration test statistics based on maximum-likelihood were introduced by (Larsson, Lyhagen & Lothgren, 2001; Larsson & Lyhagen, 1999; Groen & Kleibergen, 2003).

With regards to this study, the Fisher-style Kao (1999) panel cointegration test is employed. The residual test of Fisher & Huh (1999) is supported by the residual test for unit root of Hadri (2000) and can be conducted when variables are integrated at  $I(0)$  and  $I(1)$ , which makes this test suitable for this study. The series can be stationary around a deterministic level, unit-specific (a fixed effect) or around a specific to the unit deterministic trend. Table 5.9 below presents the Fisher-type Kao (1999) panel cointegration test results with the Newey-West estimator.

**Table 5.9: Fisher-type Kao (1999) panel cointegration test**

	<b>t-Statistic</b>	<b>Prob.</b>
ADF	-4.567803	0.0000*
Residual variance	0.220839	-
HAC variance	0.056903	

Note: \*denotes significant at 1 percent

Source: Authors' compilation

The results indicate the cointegration of the variables at a one percent significant level under the Kao test. Based on the results, the  $H_0$  of no cointegration is prohibited. These results are similar to the study of Akanbi (2016:175) on the growth-poverty-inequality nexus in SA, which acknowledged the presence of a cointegrating relationship between the variables using a different cointegration measure.

### 5.4.3 Panel model selection (AIC)

The number of lags to be utilized in this study was generated for all three models. EViews was utilized to select the best model, using the Akaike Information Criteria (AIC), the maximum number of lags suggested by the employed lag selection criteria was three maximum dependent lags and three lags for the regressors for model two and three ARDL (3, 3, 3,3). Model one's suggested lag was ARDL (4, 3, 3, 3). Lags are often included in regression models to predict the future, that is to predict what will happen in the period (t) based on the knowledge obtained from what happened in the past (Ernst, Nau & Bar-Joseph, 2005).

## 5.5 PANEL ARDL COINTEGRATION RESULTS

Having confirmed a mixed order of integration on the panel dataset as either  $I(0)$  and  $I(1)$  variables, the panel ARDL test for cointegration is conducted to estimate whether cointegration exists between the variables. The estimations of the averaged long-run coefficients (across provinces) of income inequality, poverty, human development index and economic growth, together with the mean estimate of the speed of adjustment from the panel ARDL model are reported in Table 5.10 below. The

cointegration tests are accompanied by corresponding results of the Hausman test and cross-sectional dependency test.

In this study, the mean group (MG) and the pooled mean group (PMG) estimator of Pesaran *et al.* (1999) were employed to examine the pooled relationship between income inequality, economic growth and poverty within the South African provinces. The Hausman test was used to test for the suitability of the MG estimator relative to the pooled MG based on the consistency and efficiency properties of the two estimators. The estimated results of the pooled MG and MG were conducted by means of the STATA 13 statistical package.

The Pooled MG and MG results indicated that the MG estimator has slightly outperformed the pooled MG and this is supported by the P-value of the Hausman test which is below 5 percent. Samargandi *et al.* (2015:72) stated that the Hausman test operates under the  $H_0$  of an insignificant difference between the Pooled MG and MG estimator, against the  $H_a$  of a significant difference. A significant P-value thus suggests the use of the MG estimator as the appropriate estimator for this study. Based on the Hausman test results we fail to reject the long-run assumption of coefficient homogeneity hence the MG method is favourable to the pooled MG estimator and only the MG results are presented in Table 5.10 below.

Out of the three models, model one indicated significant long-run results compared to the other two models. Model one indicate that there is a long-run relationship between LGDP and LGINICO at 14.66 percent, statistically significant at one percent significance level. A one percent increase in income inequality induces an increase in economic growth. In the case of South Africa, an increase in economic growth does not necessarily mean these improvements in the income levels of its citizens, the positive relationship may solely be an indicator that the GDP growth rate and Gini coefficient have been increasing since 1997 as reflected in Chapter 3.

It also supports Akanbi's growth-inequality disconnect. Niyimbanira (2017:258) also found similar results under a pooled regression, economic growth is positively related to income inequality in the long-run. Findings of the current study also suggest a negative significant relationship between LGDP and LPVT in the long-run. This

indicate that a one percent increase in South Africa's poverty rate induces a 1.52 percent decline in economic growth.

**Table 5.10: Panel ARDL long-run and short-run estimates**

Dependent Variable	LGDP model 1	LGINICO model 2	LPVT model 3
Estimator	MG	MG	MG
<b>Long-run coefficients</b>			
LGDP	-	0.00135 0.777	-0.05219 0.746
LGINICO	14.66170 (0.000)*	-	3.46634 (0.818)
LPVT	-1.52072 (0.000)*	-0.01383 (0.568)	-
LHDI	0.65521 (0.367)	-0.13068 (0.001)*	2.09920 (0.672)
<b>Short-run coefficients</b>			
ECT	-1.03628 (0.000)*	-0.43572 (0.000)*	-0.25722 (0.003)*
$\Delta$ LGDP	-	0.00123 (0.213)	-0.03491 (0.000)*
$\Delta$ LGINICO	-6.42912 (0.153)	-	-1.42578 (0.015)**
$\Delta$ LPVT	-1.35349 (0.008)*	0.02402 (0.018)**	-
$\Delta$ LHDI	-11.06890 (0.073)***	-0.3179 (0.014)**	-4.48152 (0.001)*
Constant	28.67065 (0.000)*	-0.19030 (0.166)	5.33124 (0.000)*
<b>Diagnostic tests</b>			
<b>Pesaran's CD test:</b>		16.848 (0.0000)*	
<b>Friedman's test:</b>		97.899 (0.0000)*	
<b>Breusch-Pagan LM test:</b>		310.565 (0.0000)*	
<b>Hausman test</b>	9.78	1.85	1434.22
	(0.0205)**	(0.6049)	(0.0000)*

Note: \*, \*\* and \*\*\* denotes 1 percent, 5 percent and 10 percent level of significance, respectively. ( ) p-values. STATA command *xtpmg*

Source: Authors' compilation

Furthermore, the error correction term (ECT) of LGDP, LGINICO and LPVT are negative and statistically significant at one percent. The statistically significant coefficient of the ECT provides evidence of the existence of cointegrating vectors that explains the long-run relationship. It means that short-run deviations in the model are adjusted towards long-run equilibrium.

According to Table 5.10, the results of the Pesaran's cross-sectional dependence test, Friedman's test and the Breusch-Pagan LM test indicate that there is cross-sectional dependence correlation in the model based on the significance of the p-value so we reject the null hypothesis of no cross-sectional independence. The short and long-run results in Table 5.10 are not fully reliable. Phillips and Sul (2007) state that if cross-section dependence (correlation) exists across individuals, then the estimated parameters may be significantly biased and in a worst case scenario identification problem may show up in the long-run as unobserved common effects are not accounted for. This may be partly to blame for the high coefficients under MG. Mehmood, Aleem and Razaqat (2017:96) conducted a study on the Steel augmented production function: robust analysis for European Union and indicated that in dynamic analysis, the presence of cross sections requires implementation of improved versions of the MG approach.

## **5.6 DYNAMIC ANALYSIS WITH CROSS-SECTIONAL DEPENDENCE**

In light of the cross sectional dependency results, improved versions of the MG (as selected by the hausman test in Table 5.10) will be further estimated. Recent literature by Eberhardt and Teal (2008:1); Hernandez (2015:2) and Mehmood *et al.* (2017:94) provide two panel data models that accommodate cross sectional dependency and slope heterogeneity. Hernandez (2015:11) stated that Pesaran's (2004) models exhibited cross-sectional dependence residuals, therefore it is logical to deploy advanced estimated techniques that cater for cross-section dependence. Pesaran (2006) introduced the Common Correlated Effects Mean Group model also referred to as the CCEMG, and Eberhardt and Bond (2009) introduced an advanced version: Augmented Mean Group Model also known as the AMG. The Augmented Mean Group is considered to be a surrogate for the Common Correlated Effects Mean Group (Mehmood *et al.*, 2017:96).

### **5.6.1 Second generation panel unit root test, cross-sectional dependence and cointegration tests**

Since the presence of strong cross-sectional residuals has been established in Section 5.5, checking stationarity using second generation panel unit root is essential. This is necessary due to the fact that first generation unit root tests (Levin-Lin-Chu (2002); Im-Pesaran-Shin (2003)) estimated above do not account for cross-sectional

dependency. The study applied a battery of panel unit root tests (PURT) on each variables using Im-Pesaran-Chu (2003) and the Fisher-type ADF test (Maddala and Wu, 1999) to provide a robust analysis and to avoid spurious regressions. Pesaran (2003) cross-sectional ADF unit root and Pesaran (2007) cross-sectional IPS unit root tests are utilised in Table 5.11 to check for stationarity.

**Table 5.11: Results of Pesaran (2003) cross-sectional ADF and Pesaran (2007) cross-sectional IPS (p-values)**

Variables	Deterministic terms	CADF (2003)	CIPS (2007)	Integration order
Levels				
LGDP	constant	-3.671 (0.000)*	-5.910 (0.000)*	I(0) both
LGINICO	constant	-2.345 (0.037)**	-0.008 (0.497)	I(1) CADF
LPVT	constant	-2.608 (0.005)*	-0.884 (0.188)	I(1) CADF
LHDI	constant	-2.669 (0.002)*	-2.810 (0.002)*	I(0) both
LGDP	constant & trend	-4.186 (0.000)*	-6.051 (0.000)*	-
LGINICO	constant & trend	-2.279 (0.540)	0.101 (0.540)	-
LPVT	constant & trend	-2.234 (0.597)	0.245 (0.597)	-
LHDI	constant & trend	-3.329 (0.001)*	-3.286 (0.001)*	-

Note: \* and \*\*denotes 1 percent and 5 percent significance level, STATA command: pescadf and multipurt, respectively. ( ) p-values.

Source: Authors' compilation

The tests are estimated with a constant term, constant with trend term at levels and at first difference. The results indicate that there is a mutual consensus between the two unit root tests with regards to LGDP and LHDI. Economic growth and the human development index are stationary I(0), at levels under constant term and constant with trend term. They are stationary at a one percent significant level. Income inequality and poverty are not stationary at level but are stationary at first difference under the Pesaran (2003) cross-sectional ADF unit root only. They are stationary at a five percent and one percent significance level, respectively.

### 5.6.2 ECM panel cointegration tests

Results from Figure 5.10 strongly indicate the presence of cross-sectional dependence, meaning that there are common factors affecting the cross-sectional

units. The study employed the Westerlund (2007) ECM panel cointegration tests as illustrated in Figure 5.12 to test for short-run dynamics. The test takes into account cross-sectional dependence and to accept the null hypothesis of no cointegration, all four p-values must be insignificant.

**Figure 5.12: Westerlund (2007) ECM panel cointegration tests**

Statistic	Value	Z-value	P-value
Gt	-2.333	-1.827	0.034**
Ga	-6.225	0.761	0.777
Pt	-6.559	-6.559	0.023**
Pa	-0.851	-0.851	0.198

Note: \* and \*\*denotes 1 percent and 5 percent significance level, STATA command: xtwest

Source: Authors' compilation

Based on the results presented in the table above, the study rejects the null hypothesis of no cointegration based on the significant p-values at five percent significance level. This indicates that there is short-run dynamics between the variables of the study.

### 5.6.3 Advanced MG estimators

Damette, Maurel and Stemmer (2016:14) indicated that covariates added by the CCEMG estimator assist in consistently estimating the models parameters in the presence of unobserved common factors, which is the reason the CCEMG was chosen over the AMG. Pesaran and Tosetti (2010) indicated that the CCEMG approach is robust to the presence of a limited number of 'strong' factors as well as an infinite number of 'weak' factors. Table 5.13 below present's results of the Common Correlated Effects model (CCEMG), as well as the root mean squared error (RMSE) statistic for each model to indicate a measure of goodness of fit.

Under model one, poverty shows a statistically significant negative long-run relationship (slope) with economic growth. Meaning that a one percent decrease in the number of people living below the LBPL would induce a 3.92 percent increase in economic growth. The relationship is significant at a one percent significance level.

Whereas, income inequality and the human development indicate statistically insignificant relationships.

**Table: 5.13: Common correlated effects (CCEMG) versus augmented mean group (AMG)**

Dependent Variable	LGDP (model 1)	LGINICO (model 2)	LPVT (model 3)
Estimator	<i>CCEMG<sup>a</sup></i>	<i>CCEMG<sup>a</sup></i>	<i>CCEMG<sup>a</sup></i>
LGDP	-	0.0039255 (0.061)***	-0.0250619 (0.132)
LGINICO	7.848049 (0.107)	-	1.06645 (0.391)
LPVT	-3.92271 (0.006)*	0.0538494 (0.225)	-
LHDI	-0.6957829 (0.880)	0.4294957 (0.008)*	-1.521092 (0.008)*
constant	-0.801421 (0.780)	-0.0868936 (0.639)	0.0348936 (0.969)
<i>RMSE<sup>c</sup>,</i>	0.1545	0.0027	0.0098
Obs.	189	189	189
a Pesaran (2006) Common Correlated Effects Mean Group estimator			
b RMSE is not affected by robust regression and is a better fit			

Note: \* and \*\*\*denotes 1 percent and 10 percent significance level, p-values (), STATA command *xtmg*

Source: Authors' compilation

Model two shows the presence of a statistically significant positive long-run relationship between income inequality and GDP growth at a 10 percent significance level. A one percent increase in economic growth translates to a 0.003 percent increase in income inequality alleviation. The results also indicated a statistically significant positive long-run relationship between income inequality and the human development index at a one percent significance level. Meaning that a one percent increase in income inequality reduction translates to a 0.42 percent increase in the longevity, literacy rate and standard of living in the South African economy. These results support the graphical findings in Figure 3.7 and Figure 3.8.

Model three results reflect a statistically significant negative long-run relationship between the number of people living below the LBPL and human development index

at a one percent significance level. Meaning that a one percent increase in the human development index will result in a 1.52 percent decrease in the number of people living below the LBPL. The RMSE results are all less than 1, indicating how taking into account cross-section dependence and slope heterogeneity helps to improve the fit of the model. Model two and three results contradict those found in Akanbi (2016), in which the study found a significant relationship between poverty and income inequality. The study revealed that a one percent increase in poverty induces a 0.14 percent decline in income inequality in South Africa.

Model two results are in line with the findings of Chang and Caudill (2005) who found that economic growth increases income inequality and Akanbi (2016), who found a positive significant long-run relationship between income inequality and economic growth in South Africa. This was further supported by Forbes (2000); Li and Zou (1998) who both found evidence of positive effects of income inequality on economic growth. However, Alesina and Rodrik (1994); Persson and Tabellini (1994); Perotti (1996), found evidence of a negative effect of various measures of inequality on economic growth. Likewise, Cingano (2014:16) found a negative relationship between income inequality and economic growth which then creates a contrasting view on the inequality-growth nexus found in this study.

## **5.7 Panel homogeneous causality**













The Dumitrescu and Hurlin (2012) causality test is a simple version of the “*Granger (1969) non-causality test*”. What makes them different is the fact that DH measures homogeneous causality, whilst Granger measure heterogeneous causality.

Under the  $H_0$ , the study is under the supposition that there is no presence of a causal relationship for any of the panel units. This supposition is referred to as the homogeneous non-causality (HNC) hypothesis, where the alternative is specified as the heterogeneous non-causality (HENC) hypothesis. Table 5.14 provides the DH (2012) panel causality tests results.

Table 5.14 outcomes revealed three uni-directional causalities, two bi-directional non-causal and one bi-directional causality between the variables. There is a uni-directional causality among income inequality and poverty, moving from income inequality to poverty, due to the rejection of the null hypothesis at a 1 percent level of

significance. This indicates that when income inequality decreases, poverty levels also decrease. This is supported by the study of Akanbi (2016) that also found a uni-directional association between poverty and income disparity. However, the relationship is moving in the opposite direction, where the causal movement is from poverty to income inequality.

**Table 5.14: Dumitrescu and Hurlin (2012) panel causality tests**

Null Hypothesis	W-Stat.	Zbar-Stat.	Prob.	DH Causality
LGDP  LGINICO	1.95438	-0.41178	0.6805	No Causality
LGINICO  LGDP	2.52981	0.21350	0.8309	No Causality
LPVT  LGINICO	2.93280	0.65140	0.5148	No Causality
LGINICO  LPVT	5.69292	3.65061	0.0003*	Causality
LHDI  LGINICO	4.83741	2.72100	0.0065*	Causality
LGINICO  LHDI	4.32318	2.16222	0.0306**	Causality
LPVT  LGDP	3.66027	1.44188	0.1493	No Causality
LGDP  LPVT	3.58746	1.36277	0.1730	No Causality
LHDI  LGDP	4.72893	2.60312	0.0092*	Causality
LGDP  LHDI	1.13051	-1.30702	0.1912	No Causality
LHDI  LPVT	4.92453	2.81566	0.0049*	Causality
LPVT  LHDI	2.93732	0.65631	0.5116	No Causality

Note: \* and \*\* denotes 1 percent and 5 percent level of significance, respectively

Source: Authors' compilation

There is a uni-directional causal connection concerning the human development index and GDP growth, running from human development index to GDP growth, based on the rejection of the  $H_0$  at a 1 percent significance level. This suggests that an increase in SA's literacy rate and the overall standard of living boosts economic growth. There is a uni-directional causal affiliation concerning the human development index and poverty based on the rejection of the  $H_0$  at a 1 percent significance level. This suggests that an increase in South Africa's standard of living and literacy levels, decreases the level of poverty. This means that a more literate population can enter the economic

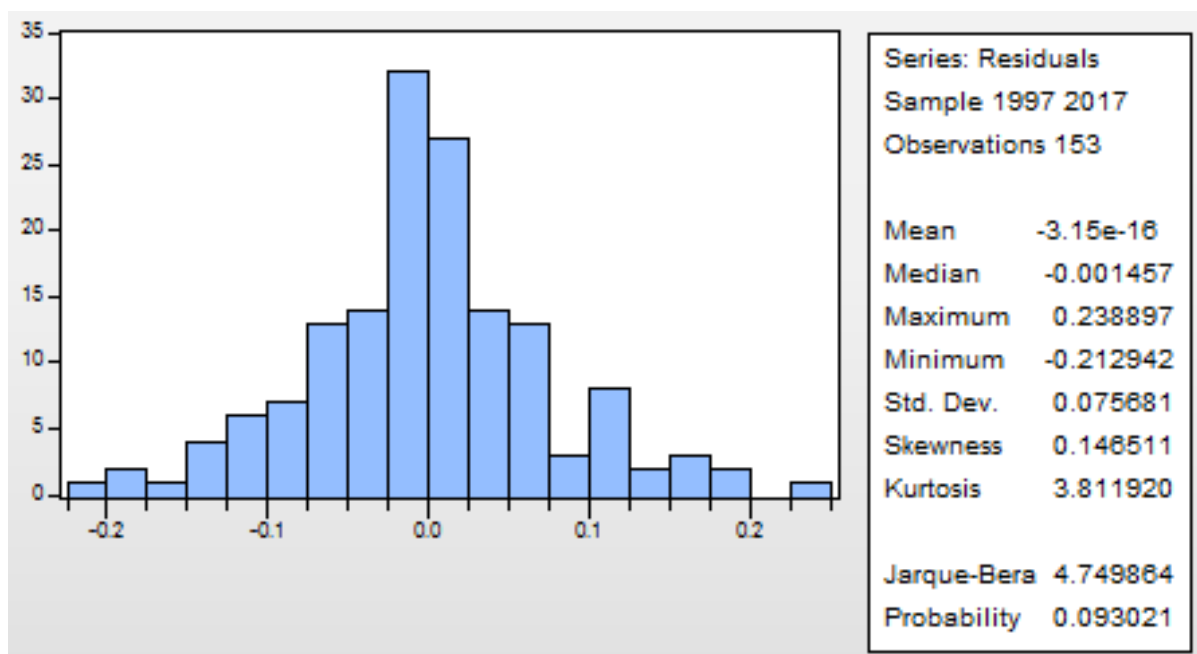
labour market and be productive citizens which in turn translates to a decrease in poverty levels. This is solely based on homogeneous causality. Supported by studies of Agyemang (2014); Guiga and Rejeb (2012); Akanbi (2016); Fosu (2017).

There is a bi-directional causal connection between income inequality and the human development index based on the significance of the p-values at 1 percent and 5 percent. This indicates that income has a significant role in improving people’s livelihood and standard of living, likewise, education levels influence income. Furthermore, the outcomes indicate that there are two bi-directional non-causal relationships between LGDP and LGINICO; poverty and LGDP, meaning these no causality amongst the variables.

### 5.8 JARQUE-BERA NORMALITY TEST

When conducting time series research, it is crucial to account for the normal distribution of the data. The results revealed that data is normally distributed nad stable when using model one. Figure 5.15 below illustrates a Jarque-Bera normality test using model one (equation 4.9).

**Figure 5.15: Normality test Model 1**

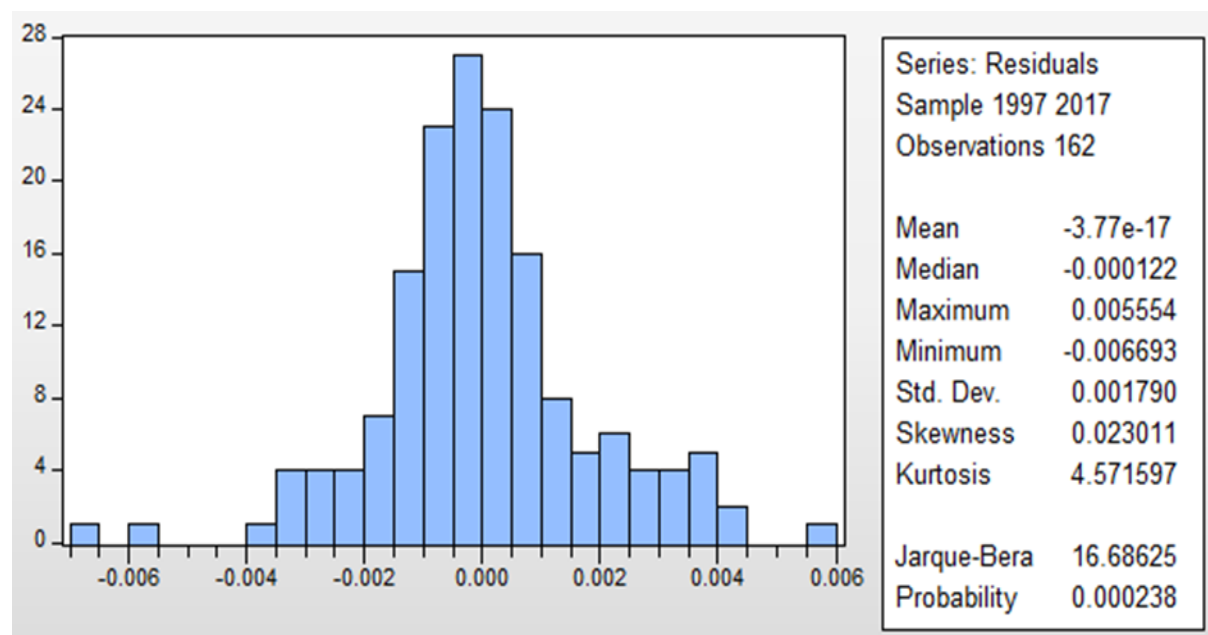


Source: Authors’ compilation

The JB normality test indicates that the variables are distributed normally. For the variable to be normally distributed, the skewness must be zero or less, meaning that

the model is “*perfectly symmetrical around the mean*”, moreover, a kurtosis must be three or below which is an indication as to how much of the distribution is in the tails. The p-value must be at a 5 percent level of significance or more. The illustration above show that the variables are normally distributed based on a p-value of 0.093 which is above the five significance level. Supported by a skewness of 0.14 and a kurtosis of 3.81. The study therefore fails to reject the  $H_0$  of normal distribution. Figure 5.16 below illustrates a Jarque-Bera normality test using model two (equation 4.10).

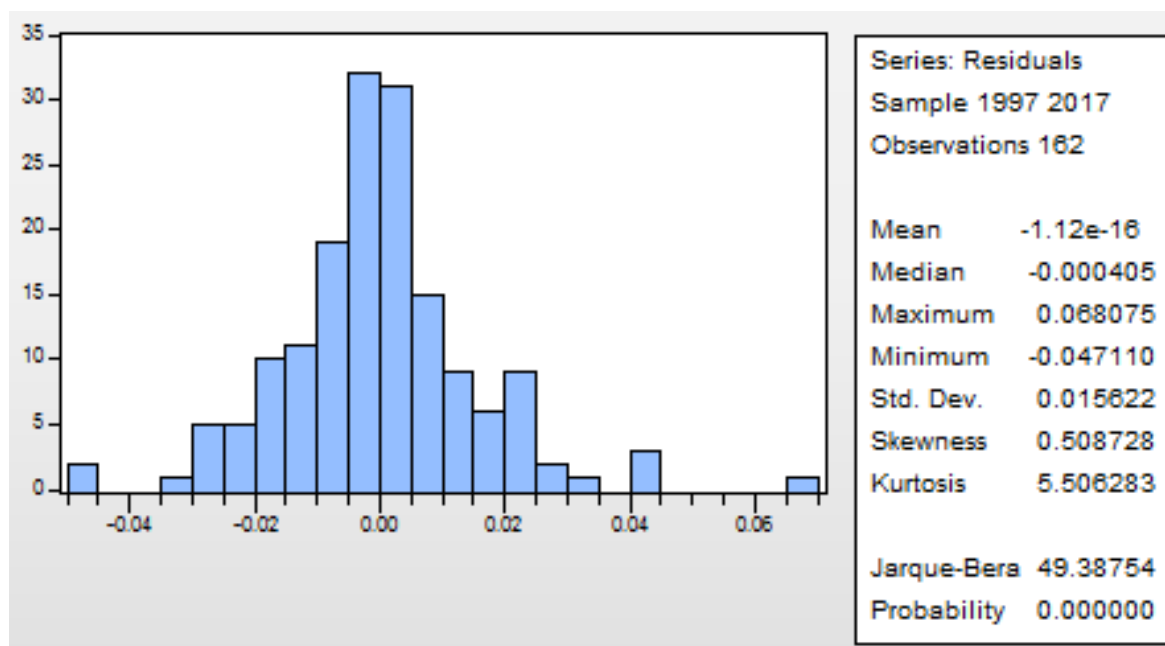
**Figure 5.16: Normality test model 2**



Source: Authors' compilation

When using the second model, the JB normality test above indicates that the variables are not distributed normally. This is based on a significance of the p-value (0.0002) and a high Kurtosis of 4.57. The  $H_0$  hypothesis for the JB test is that data is normally distributed and based on the results, the study rejects the  $H_0$ . Figure 5.17 below illustrates a Jarque-Bera normality test using model three (equation 4.11).

**Figure 5.17: Normality test Model 3**



Source: Authors' compilation

When using the third model, the Jarque-Bera normality test above indicates that the data is not distributed normally. The test is based on the  $H_0$  that data is normally distributed. Based on the graphical presentation in Figure 5.17, the study rejects the  $H_0$  based on the significance of the p-value (0.0000) and a high kurtosis of 5.50.

## 5.8 SUMMARY

The key agenda for most developing countries in particular is to address the challenge of poverty and disparity. This requires inclusive economic growth. This chapter conducted and established the empirical results aimed at estimating the long and/or short-run relationships and the causal connection between income inequality, poverty and economic growth. The study began by analysing the statistical descriptive summary of the variables used. Additionally, the analysis identified a mixed order of integration of the datasets at either  $I(0)$  or  $I(1)$  orders of integration. Having identified the variables' order of integration, the Fisher-type Kao (1999) panel cointegration test was employed and revealed that there is cointegration between income disparity, poverty, economic growth and HDI, therefore a long-run correlation exists. For lag selection, the AIC was utilised and resulted in 3 lags of the dependent and 3 lag orders for the regressors for model two and three but selected 4 lags of the dependent and 3 lag orders for the regressors for model one.

The DH (2012) panel causality test is employed thus resulting in three uni-directional causalities, two bi-directional non-causal and one bi-directional causality between the variables. The most significant results from this test was that income inequality does homogeneously cause poverty and human development does homogeneously cause economic growth and poverty. Furthermore, the results indicated that education levels and people's standard of living have a two-way homogeneous influence on income inequality.

Furthermore, the Panel ARDL approach was employed with the aim to examine the long and short-run cointegration relationships, the Panel ARDL approach accounts for different order of integration in variables, provincial slope heterogeneity, and the potential endogeneity caused by potential growth feedback to regressors. The established long-run cointegration thus implied the analysis of a short-run relation based on the ECM. The ECT revealed significantly negative estimates demonstrating the existence of a short-run link between the variables. The Mean Group estimator was favoured more than the pooled Mean Group based on the results of the Hausman test. The test revealed p-values that are less than five percent. Moreover, the study analysed the Pesaran's CD test, Friedman's test and the Breusch-Pagan LM test that confirmed the existence of cross-sectional dependence. The panel ARDL approach does not account for cross-section dependency hence the significance of using modified MG estimates.

The CCEMG was chosen over the AMG and was employed for all three models. In model one revealed one long-run negative association between poverty and economic growth. Model two reveal two positive long-run relationships between income disparity and economic growth along with the relations between income disparity and human development index. Model three resulted in one negative long-run relationship between poverty and the human development index. The RMSE results are all less than 1, indicating that the models are a good fit. The next chapter, provides a summary of the study as a whole, how the objectives where achieved, offers recommendations followed by the conclusion. Furthermore, the next chapter presents limitations of the study.

## CHAPTER 6

### SUMMARY, RECOMMENDATIONS AND CONCLUSION

---

#### 6.1 INTRODUCTION

The study analyzed the interrelations of income disparity, economic growth and poverty in South Africa, based on the primary aim of establishing whether a short and/or long-run relationship exist, in addition to the causality relations that exists between growth, income inequality and poverty in SA, particularly within the South African provinces (which could also apply to other world regions). The Estimations of the study were based on the primary objective as well as secondary objectives underlined in the theoretical and empirical objectives. The study focused on South Africa's nine provinces. It was based on time series annual data ranging from 1997 to 2017 which resulted in 21 observations for each province. The data was pooled in a panel, resulting in 189 observations. The considered sample period was chosen based on the availability of data as obtained from the disclosed sources and excludes the effects of the apartheid regime as it focuses on post-apartheid period. Variables included GDP growth rate as a proxy for economic growth, poverty measured using the lower-bound poverty line, Gini coefficient as a measure of disparities and HDI representing life expectancy, mortality rate and literacy. The variables used were estimated based on transformed logarithms of each variable according to its natural logarithmic form.

Upon achieving the set objectives, the study made use of various tests and econometric models consisting of graphical representations for national data and provincial trend analysis, descriptive statistics at national and provincial level, correlation analyses, to test for homogeneous causality, the Dumitrescu & Hurlin (2012) panel causality tests was used. A Fisher-type Kao (1999) panel cointegration test followed by the panel ARDL test for cointegration. Dynamic analysis with cross-sectional dependence using modified versions of the mean group were employed. This closing chapter consists of a synopsis of findings together with the conclusion of the study. It provides the summarized review of literature and empirical studies and their outcome as well as the realisation of the objectives sets out in the beginning of the study. Additionally, it concludes the study and provides the essential

recommendations. Lastly, it outlines the restrictions of the study and proposes some focus areas for the forthcoming studies.

## **6.2 SUMMARY OF THE STUDY**

The study was centered on establishing whether a short and/or long-run relationship, in addition to the causality interrelations of growth, income inequality and poverty in South Africa in fact does exist. The main aims of the study consisted of: 1) identifying the interrelations of income disparity and poverty; 2) determining the cointegration and causal relationship between poverty, the Human Development Index, income disparity and economic growth in South Africa; 3) determining the long and/or short run relationship between poverty, income disparity and economic growth in South Africa; 4) provide recommendations on how to better improve the outlook in South Africa regarding poverty, economic growth and income disparity.

The study consisted of different sections and sub sections. The summary reflects the manner in which the entire study was outlined. In other words, the study summary commences with a brief overview on each of the included chapters. Here, chapter one provided a background of the study. This included an outline of the study's background and need as well as the various theoretical and empirical objectives that were identified. Chapter two provided a literature review related to economic growth, income inequality, poverty, human development as well as theories that govern the aforementioned variables, together with an empirical review. In doing so, the chapter signified and highlighted the complex and multi-dimensional nature of the growth-poverty-inequality nexus. In addition, Chapter three provided specific context to these factors from a South African perspective which included an examination of economic growth, income inequality, poverty and human development trends and policies in the country.

Chapter four outlined the methodological framework which reviewed and justified the use of panel ARDL cointegration and the use of estimators that accommodate CSD presented by Pesaran *et al.* (2001, 2003, and 2007). Preliminary tests of the series gave way of assessing the features of each variable to make provision for any discrepancies within the distribution of the series. First and second generation unit root test results emphasized the use of panel ARDL. Methods used to realise the set

objectives were justified by theoretical and empirical research. The following subsection, Section 6.3 further summarises the realisation of the objectives of the study including a discussion on the purpose of each of the included chapters were. Here chapter 5 and 6 are discussed in more detail.

### **6.3 REALISATION OF OBJECTIVES BY CHAPTER**

The principal objective of this study was to conduct an analysis on the interrelations of income disparity, economic growth and poverty in South Africa, particularly within the nine provinces. To fulfil this objective, the Study undertook numerous steps in fulfilling the relevant theoretical and empirical objectives. This section summarizes how the study's objectives were achieved in each chapter.

**Chapter one** provided an introduction and background of the study, which encompassed an introduction of the research problem statement followed by the background on income disparity, economic growth and poverty. An outline of the theoretical and empirical objectives to be achieved as well as the justification of the study. This chapter provided a better understating of how the relationship exists between the variables and why it is a problem for academicians to come to a consensus in terms of how the growth-inequality-poverty nexus work.

**Chapter two** set out to achieve the first four **theoretical objectives**

- *To conduct a literature review on concepts relating to poverty, GDP growth and income inequality measures.*

To achieve this objective, Section 2.2.1 provided definitions and conceptual discussions related to economic growth its relatedness to other socio-economic variables. The study found that economic growth is essential for improving people's likelihood, more especially the standard of living, health and greater opportunities. Evidence of economic growth inducing poverty reduction was found. Section 2.2.2 identified the main determinants of economic growth and revealed that in many endogenous models, human capital is the main source for economic growth followed by investments as well as trade openness. Section 2.3.1 provided definitions and conceptual discussions related to poverty and its relatedness to economic growth and inequality. It revealed that there is a global fight to reduce poverty and that countries

with low economic growth found it harder to combat poverty than those with high economic growth. The section shed light on how poverty is related to but different from inequality.

Section 2.3.2 and 2.3.3 gave a brief overview of the measures of poverty which include different poverty lines and how they are formulated as well as poverty indexes such as the headcount index. Furthermore, Section 2.5.1 provided definitions and conceptual discussions related to income inequality as well as income inequality measures in Section 2.5.2. The two distinct measures of income inequality were found to be the Gini coefficient and the Lorenz curve. Graphical representations were used to further substantiate the functions and significance of these measures. The study provided extended research in Section 2.4 on the aspect of the human development index, indicators related to it and a theoretical background on how it relates to economic growth, income disparities and poverty.

- *To review theories relating to the concepts of poverty, economic growth and disparity.*

To provide a conceptual understanding of the growth-poverty-inequality nexus, Section 2.6.1 provided the study with theories of economic growth such as the Solow neoclassical growth theory and the endogenous growth theory, as well as a theoretical background on the functionality and application of the theories. Bradshaw's five theories of poverty were conceptually discussed in Section 2.6.2. Moreover, income inequality theories such as the Kuznets hypothesis and, Karl Marx and Max Weber's theory of stratification were provided as well as a theoretical background on the functionality and application of the theory.

- *To conduct literature relating to income inequality, economic growth and poverty.*

Seeing that the study focused on income disparity, economic growth and poverty, Section 2.7 delivered a theoretical overview of the relationship between the variables in question. The Bourguignon triangle in Section 2.7.1 as well as the mechanical relationships in Section 2.7.2, provided a conceptualised discussion on the concepts relating to income inequality, economic growth and poverty using graphical illustrations to substantiate how the variables are related.

- *To review the empirical literature in the form of case studies from previous studies.*

Section 2.8 provided a conceptual discussion on empirical literature with regards to economic growth, poverty and income inequality in the form of case studies and published works from previous studies. The significance of this section lies in the betterment of understanding the relatedness between the variables as well as the progress that has been achieved over the years in countries of different structures, demographic, wealth and population levels. Section 2.8.1 (developed countries), Section 2.8.2 (developing countries) and Section 2.8.3 (African and Sub-Saharan countries) provided an empirical discussion based on how different countries have progressed or regressed in dealing with the fluctuations in income inequality, poverty and economic growth.

**Chapter three** set out to achieve the last two theoretical objectives, as well as the first empirical objective. The direction of the discussion shifted from a global stand point to a more country specific discussion. In this chapter, the discussion centred on South Africa. The objectives that were addressed are as follows:

- *To review empirical literature on the rural-urban migration in South Africa, focusing on economic growth, poverty, income inequality and the overall implications it has on the economy as a whole.*

Section 3.4 provided a review on South Africa's rural-urban migration patterns and a synopsis of the socio-economic climate in the nine provinces. South Africa is distinguished by high income inequality, low growth and high poverty rates, which in turn increases the rural-urban gap within provinces.

- *To provide a review of South Africa's poverty, economic growth and income disparity policies.*

Moreover, the study outlined and discussed applicable growth, poverty and income inequality policies. The discussion on the selected poverty and income disparity policies in Section 3.6.1 focused on South Africa's policies that were established after South Africa gained political liberation (democracy). The policies included the Reconstruction and development programme (RDP), Accelerated and shared growth initiative for South Africa (ASGISA), Growth, employment and redistribution (GEAR),

the new growth path (NGP), national development plan (NDP) as well as the ANC policy on wage inequality. Section 3.6.2 focused more on international policies that have been successful in the combat for poverty reduction, income inequality reduction and boosting growth. The policies included India's integrated rural development program (IRDP) and China's strategy in inclusive growth and poverty reduction. After addressing the aforementioned theoretical objectives, the study sought to achieve the following empirical objectives:

- *To determine a post-apartheid trend analysis between economic growth, income inequality and poverty in South Africa*

The objective was achieved by establishing graphical and tabulated representations of the trends and patterns of South Africa's income inequality, economic growth and poverty rates. The trend graphs in Section 3.3 provided a synopsis of how the variables have been performing from 1997 to 2017 on a national level as well as shocks that have occurred in the world but caused fluctuations in the South African economy. Section 3.5.1 provided graphical representations of SA's nine provinces and how they have been performing over the years in terms of income inequality, economic growth and human development. Furthermore, Section 3.5.2 provided an overview of South Africa's provincial poverty levels. Some provinces have not fully recovered from the legacy of apartheid.

- *To determine the cointegration and causality between poverty, the Human Development Index, income inequality and economic growth in South Africa.*

To achieve this objective, **Chapter 5** and more specifically, Section 5.4.2 applied the Fisher-type (1999) panel cointegration test, which revealed that at most three cointegration relationships between income disparity, poverty, HDI and economic growth exist, therefore a long-run relationship can be established. To test for homogeneous causality, the DH (2012) panel causality tests was employed. The results indicated three uni-directional causalities, two bi-directional non-causal and one bi-directional causality between the variables.

- *To determine the presence of a long and/or short run relations between poverty, income disparity and economic growth in South Africa.*

The results of the first and second generation unit root tests revealed that the model is mixed. Henceforth, the Panel ARDL method to cointegration based on the MG was pursued, which presented the long-run and short-run parameters concerning the dependent variables and the dependent variables. The approach accounts for provincial slope heterogeneity. Accordingly, results of the MG estimator were presented in Table 5.8, as they were deemed to be more superior to the pooled MG's results due to the results provided by the Hausman test. These results were discussed further in other sections and compared to the relevant literature presented in chapter two. Significant positive and negative long-run results were established in all three models. The short-run relationships were based on the ECM. The ECT revealed significantly negative estimates indicating the presence of short-run relations between the variables in all three models.

The study made use of the Pesaran's CD test, Friedman's test and the Breusch-Pagan LM test to exam for cross-section dependence. The results produced significant p-values, indicating that the model has cross dependence so the standard panel ARDL cointegration results can be biased or have large size distortions in terms of the coefficients (Strauss & Yigit, 2003; Banerjee et al., 2004). This led to further estimations using alternative MG models for instance, the CCEMG model and the AMG model. Since first generation unit root tests do not comprise of cross-section dependence, therefore, second generation unit root tests were used. As well as the Westerlund (2007) ECM test to test for short-run dynamics. The CCEMG was chosen over the AMG based on the robustness of the results, indicated statistically significant positive and negative coefficient slope in all three models.

- *To provide recommendations on how to better improve the outlook in South Africa regarding poverty, income inequality and economic growth.*

The final empirical objective as outlined above, had the aim to provide recommendations on how to best address the complex nature of the growth-poverty-inequality nexus within the South African context. In order to address the set out objective, the following section, Section 6.4 outlines and discusses several aspects which policymakers and stakeholders can take into consideration.

## **6.4 RECOMMENDATIONS**

The implementation of empirical and theoretical findings above, recognized notable recommendations for poverty and inequality reduction, as well as boosting economic growth. In order to curb the country's high unemployment rate, low standard of living and low literacy rates, policies that accommodate current constraints are essential. Income inequality and poverty are indirect societal effects of political and economic processes. Empirical literature (Ravillion, 2004) and results of this study indicated that changes in poverty complement changes in income distribution. Therefore, actions on reducing inequality can be highly complementary to poverty reduction. Policy recommendations below henceforth provide both inequality-focused as growth-focused strategies.

### **6.4.1 Better social program targeting**

Targeting comes with a lot of benefits, particularly in helping reduce income disparity, especially education and health disparities. Developing more accurate mechanisms for targeting mostly under-resourced schools in provinces with a high human development index and high vulnerability like Limpopo, Eastern Cape and Mpumalanga. Social programmes based on income transfers have a longer term and greater impact if they are targeted better, this ensures that people that actually need the programmes (low income household, lack access to basic needs) will be able to access the programmes. This can be achieved by making use of surveys to estimate whether a potential beneficiary is poor to what extent, making use of geographic targeting (selecting regions with higher poverty prevalence). Participatory targeting is also possible in which people from the community identify and validate the selection of beneficiaries. Lastly, implementation of a national level list of social beneficiaries to prevent the programmes to duplicate efforts.

### **6.4.2 Prioritising urban and rural housing and tenure programmes**

This can be achieved by developing separate poverty lines so the government can account for basic needs needed by people of different social class. A similar strategy to the China poverty reduction and inclusive growth strategy can be monumental for the South African economy. Furthermore, creating committees similar to the SLCC with the main objective of monitoring and housing and tenure programmes. Given the

success of these implemented policies referred to in Section 3.7.1 and 3.7.2, South African policymakers should adopt a more pro-poor targeted growth focus. This should entail serious and concerted efforts aimed towards the implementation of local economic development initiatives specifically in geographically marginalized communities and regions.

### **6.4.3 Addressing regional inequality**

The decentralization of public services, industries and offices can foster united prosperity between regions. Access to roads, communications and markets need to be improved as they can have a major effect on poverty reduction and open up opportunities for marginalized groups thus preventing regional poverty pockets.

### **6.4.4 Legislative interventions aimed at reducing inequality**

Section 27 of the Employment Equity Act (EEA) contains a unique provision that requires companies to report on income differentials, between various levels of the workforce, and where disproportionate differentials are identified, to take measures to reduce these differentials. This provision has not been enforced in South Africa but it forms part of the equity act. Legislative amendments are essential to constrict the voluntarism elements of this section of the Act so that Section 27 can be enforced and to provide for stronger measures to reduce income inequality. Inserting target ratios in the legislation, between the top five percent and bottom five percent of earners, as proposed by the NMW expert panel will strengthen Section 27. In this manner the contributions of companies towards a more equitable and prosperous South Africa can be improved.

### **6.4.5 Developing policy packages**

The government and policy makers should develop package of policy interventions with the objective to reduce differentials throughout the economy. Various policy options to reduce excessive income inequality are being discussed internationally and in South Africa. These policies include capping (or reduction) of excessively high executive and management salaries. The introduction of a maximum salary will complement the implementation of the minimum wage. A strategy for reducing income disparities in South Africa could be combined into a road map together with the

National Minimum Wage. For example, given the income gap in South Africa, these policy strategies should have long been developed. PPC is the only known exception to this wage restructuring, in 2013/2014, PPC initiated salary cuts/ freezes by the top 60 executives and this increased the salaries of the bottom 1000 workers, reducing the salary gap from 120:1 to 40:1 in a short space of time. What PPC has achieved could serve as a model for other companies and corporate codes should be amended to accommodate this model.

## **6.5 LIMITATIONS OF THE STUDY AND FUTURE RESEARCH**

Notwithstanding the importance of the study and its contribution towards the body of knowledge surrounding the poverty-inequality nexus in South Africa, the following aspects were considered to limit the potential of the findings:

- In conducting this study, the main challenges faced was the data constraint which led to the selection of the sample period (annual observations from 1997 to 2017). South Africa has experienced structural and political instabilities which create a complex image of annual results.
- While there have been improvements in income inequality measurements, the Gini coefficient is still the only prominent measure for all inequality. Difficulty arises when comparing the Gini coefficient with other measures that are not in indexes.
- There are many econometric models that can still be used to find most significant results on data that has cross-section dependence, but due to time constraints, not all can be estimated.

For future research, quality data availability will surely improve the parameter estimates found in this research. Moreover, other variables could be included in the study especially with regards to the external control variable. Further research may also consider using actual income figures as opposed to the Gini coefficient, as the former may produce different results. The application of alternative methodologies of examining the relationship between income inequality, poverty and economic growth is recommended. Lastly, a comparative study of the current subject within countries characterized by high income inequality and low growth may yield further additional insight into the multidimensional relationship between variables.

## 6.5 CONCLUSION

Economic growth in South Africa has translated into minimal poverty reduction and a persistently high income inequality. The main objective of the study was to analyze the relations between income inequality, economic growth and poverty. Chapter two provided more insight into empirical studies and what other researchers in the field have found, whilst Chapter three provided a closer look into the South African economy by means of graphical trend presentations from 1997 to 2017.

The analyses were based on South Africa's nine provinces from 1997 to 2017. The unit root tests that were estimated proposed the existence of unit root at different integration order. Descriptive statistics were estimated before the variables were logged and revealed that the Western Cape and Gauteng are the leading economic hubs in SA, whilst Limpopo and the Eastern Cape are the lagging provinces with regards to socio-economic progress.

A correlation test was employed to test the strength and significance of the relationships and revealed strong correlating relationships between income inequality, poverty and human development. The panel ARDL cointegration results were estimated using the mean group estimator and revealed long-run and short-run results that were spurious due to the presence of cross-sectional dependence. This prompted the study to use alternative mean group estimators to analyze the relationship between the variables. Second generation unit root tests revealed results mixed at different integration orders so the study continued with a panel ARDL cointegration model.

The DH (2012) panel causality tests was employed to test for causality between the variables and revealed three uni-directional causalities, two bi-directional non-causal and one bi-directional causality between the variables. There is a uni-directional causality between income inequality and poverty, running from income inequality to poverty, a uni-directional causality between the human development index and GDP growth, running from human development index to GDP growth, a uni-directional causality between the human development index and poverty, as well as a bi-directional causality between income inequality and the human development index. The results also revealed that there are two bi-directional non-causalities between GDP and GINI; poverty and GDP, meaning there is no causality amongst the variables.

The Westerlund ECM cointegration model revealed a presence of short-run dynamics. The CCEMG was employed for the three models of the study, model one revealed one long-run negative relationship between economic growth and poverty. Model two revealed two positive long-run relationships between income inequality and economic growth as well as between income inequality and human development index. Model three resulted in one negative long-run relationship between poverty and the human development index. Last but not least, a Jarque-bera normality test was employed which revealed a normally distributed and stable dataset when using model one. In estimating all these tests, the objectives that were set out to be achieved in Chapter one have been achieved.

## BIBLIOGRAPHY

---

Abbet, C. 2010. Recent trend in income inequality: emphasis on the Finnish and the Swiss Cases. University of friburgensis. (Thesis-MA).

Adamopoulos, A. 2010. Financial development and economic growth an empirical analysis for Ireland. *International Journal of Economic Sciences and Applied Research*, 3(1):75-88.

Adams, R.H. 2002. Nonfarm income, inequality and land in rural Egypt. *Economic Development and Cultural Change*, 50(2):339-363.

Adams, R.H. 2004. Economic growth, inequality and poverty: estimating the growth elasticity of poverty. *World Development*, 32(12):1989-2014.

Adelman, I. & Morris, C.T. 1973. Economic growth and social equity in developing countries. Stanford University press.

AFDB (African Development Bank). 2017. Indicators on gender, poverty, the environment and progress toward the sustainable development goals in African countries, volume XVIII. Cote d'Ivoire: scan print, Denmark.

Agarwal, P. 2017. Lorenz curve and Gini coefficient.  
<https://www.intelligenteconomist.com/lorenz-curve-gini-coefficient/> Date of access: 20 April 2018.

Aghion, P. & Howitt, P. 1996. Research and development in the growth process. *Journal of Economic Growth*, 1(1):49-73.

Aghion, P. & Howitt, P. 1998. Endogenous growth theory. Cambridge, Massachusetts: The MIT Press.

Agyemang, E. 2014. Economic growth, income inequality and poverty reduction: a regional comparative analysis. Canada: University of Lethbridge. (Thesis- MA).

Ahlgren, P., Jarneving, B. & Rousseau, R. 2003. Requirements for a cogitation similarity measure, with special reference to Pearson's correlation coefficient.

*Journal of the American Society for Information Science and Technology*, 54(6):550-560.

Akanbi, O.A. 2016. The growth, poverty and inequality Nexus in South Africa: Cointegration and Causality Analysis, *Development Southern Africa*, 33(2):166-185.

Al Mamun, A., Yasser, Q. R. & Rahman, M.A. 2013. A discussion of the suitability of only one vs. more than one theory for depicting corporate governance. *Modern Economy*, 4(1):37-48.

Albright, E.A. 2011. Policy change and learning in response to extreme flood events in Hungary: an advocacy coalition approach. *Policy Studies Journal*, 39(3):485-511.

Alesina, A. & Rodrik, D. 1994. Distributive politics and economic growth. *The Quarterly Journal of Economics*, 109(2):465-490.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S. & Sayek, S. 2004. FDI and economic growth: the role of local financial markets. *Journal of International Economics*, 64(1):89-112.

Alimi, R.S. 2014. ARDL bounds testing approach to cointegration: a re-examination of augmented fisher hypothesis in an open economy. *Asian Journal of Economic Modelling*, 2(2):103-114.

Amrevurayire, E. & Ojeh, V. 2016. Consequences of rural-urban migration on the source region of ughievwen clan delta state Nigeria. *European Journal of Geography*, 7(3):42-57.

Anderson, P. 1964. Origins of the present crisis. *New Left Review*, 1(23):25.

Angelopulo, G. 2017. A competitive assessment of South Africa's leading cities-national, continental and global perspectives. *Strategic Review for Southern Africa*, 39(1):65.

Angelsen, A. & Wunder, S. 2006. Poverty and inequality: economic growth is better than its reputation. Chapter in Dan Banik (ed.): *Poverty, politics and development: interdisciplinary perspectives*. Fagbokforlaget, Bergen.

- Baek, J. 2016. A new look at the FDI-income-energy-environment nexus: dynamic panel data analysis of ASEAN. *Energy Policy*, 91(1):22-27.
- Bai, J. & Ng, S. 2001. A consistent test for conditional symmetry in time series models. *Journal of Econometrics*, 103(1-2):225-258.
- Bai, J. & Ng, S. 2004. A panic attack on unit roots and cointegration. *Econometrica*, 72(4):1127-1177.
- Balestra, P. & Nerlove, M. 1966. Pooling cross section and time series data in the estimation of a dynamic model: the demand for natural gas. *Econometrica: Journal of the Econometric Society*, 1(1):585-612.
- Baltagi, B.H. & Kao, C. 2001. Nonstationary panels, cointegration in panels and dynamic panels: a survey. Emerald Group Publishing Limited.
- Banerjee, A. V. & Duflo, E. 2000. Reputation effects and the limits of contracting: a study of the Indian software industry. *The Quarterly Journal of Economics*, 115(3):989-1017.
- Banerjee, A., Dolado, J. & Mestre, R. 1998. Error- correction mechanism tests for cointegration in a single- equation framework. *Journal of Time Series Analysis*, 19(3):267-283.
- Banerjee, A., Marcellino, M. & Osbat, C. 2004. Some cautions on the use of panel methods for integrated series of macroeconomic data. *The Econometrics Journal*, 7(2):322-340.
- Banerjee, A.V. & Duflo, E. 2000. Reputation effects and the limits of contracting: a study of the Indian software industry. *The Quarterly Journal of Economics*, 115(3):989-1017.
- Barbieri, P. 2009. Flexible employment and inequality in Europe. *European Sociological Review*, 25(6):621-628.
- Barreira, A.P. & Rodrigues, P.M. 2005. Unit root tests for panel data: a survey and an application. *Estudos II*, 1(2):665-685.

- Barro, R. J. 1991. Economic growth in a cross section of countries. *The Quarterly Journal of Economics*, 106(2):407-443.
- Barro, R. J. 2000. Inequality and growth in a panel of countries, *Journal of Economic Growth*, 5(1):5-32.
- Barro, R.J. 1996. Determinants of economic growth: a cross-country empirical study. National Bureau of Economic Research.
- Barro, R.J. 1999. Determinants of democracy. *Journal of Political economy*, 107(6):158-183.
- Baudoin, M.A., Vogel, C., Nortje, K. & Naik, M. 2017. Living with drought in South Africa: Lessons learnt from the recent El Niño drought period. *International Journal of Disaster Risk Reduction*, 23(2):128-137.
- Becker, G. S., Murphy, K. M. & Tamura, R. 1990. Human capital, fertility and economic growth. *Journal of Political Economy*, 98(5):12-37.
- Behrens, K. & Robert-Nicoud, F. agglomeration theory with heterogeneous agents. *In Handbook of Regional and Urban Economies*, 5(1):171-245.
- Benabou, R. 1994. Human capital, inequality and growth: a local perspective. *European Economic Review*, 38(3-4):817-826.
- Benabou, R. 1996. Inequality and growth. NBER Macroeconomics Annual, No. 11.
- Berg, A., Ostry, J. & Zettelmeyer, J. 2012. What makes growth sustainable? *Journal of Development Economics, Elsevier*, 98(2):149-166.
- Bhorat, H. & Goga, S. 2013. The gender wage gap in post-apartheid South Africa: a re-examination. *Journal of African Economies*, 22(5):827-848.
- Bhorat, H. & Van Der Westhuizen, C. 2008. Economic growth, poverty and inequality in South Africa: the first decade of democracy. Unpublished paper commissioned by the presidency. UCT press.

- Bhorat, H. & Van der Westhuizen, C. 2010. Poverty, inequality and the nature of economic growth in South Africa. 2<sup>nd</sup> ed. Cape Town: ABC press.
- Bhorat, H. & Van Der Westhuizen, C. 2012. Poverty, inequality and the nature of economic growth in South Africa. DPRU working paper 12/151. UCT
- Bhorat, H., Kanbur, R. & Stanwix, B. 2014. Estimating the impact of minimum wages on employment, wages and non-wage benefits: The case of agriculture in South Africa. *American Journal of Agricultural Economics*, 96(5):1402-1419.
- Bhorat, H., Naidoo, K., Oosthuizen, M. & Pillay, K. 2015. Demographic, employment, and wage trends in South Africa. UNU-WIDER Working Paper. No. 141. California: United Nations.
- Bhorat, H., Van der Westhuizen, C. & Goga, S. 2009. Analysing wage formation in the South African labour market: the role of bargaining councils. DPRU working paper 12/151. UCT.
- Birdsall, N., Ross, D. & Sabot, R. 1995. Inequality and growth reconsidered: lessons from East Asia. *The World Bank Economic Review*, 9(3):477-508.
- Bloch, H. & Tang, S.H.K. 2004. Deep determinants of economic growth: institutions, geography and openness to trade. *Progress in Development Studies*, 4(3):245-255.
- Bonizzi, B. 2017. Institutional investors' allocation to emerging markets: a panel approach to asset demand. *Journal of International Financial Markets, Institutions and Money*, 47(1):47-64.
- Bosch, A., Rossouw, J., Claassens, T. & Du Plessis, B. 2010. A second look at measuring inequality in South Africa: A modified Gini coefficient. School of Development Studies Working Paper. No. 58. Durban: University of KwaZulu-Natal
- Bourguignon, F. & Morrison, C. 1998. Inequality and development: the role of dualism. *Journal of development economics*, 57(2):233-257.
- Bourguignon, F. 1990. Growth and inequality in the dual model of development: the role of demand factors. *The Review of Economic Studies*, 57(2):215-228.

Bourguignon, F. 2003. The poverty-growth-inequality Triangle, contribution presented in Indian Council for Research on International Economic Relations, in New Delhi, India.

Bourguignon, F. 2004. The poverty-growth-inequality triangle. The World Bank Policy Working paper. No. 125. World Bank: Washington D.C.

Bourguignon, F., 1981. Pareto superiority of unegalitarian equilibria in Stiglitz' model of wealth distribution with convex saving function. *Econometrica: Journal of the Econometric Society*, 1(1):1469-1475.

Bradshaw, T.K. 2006. Theories of poverty and anti-poverty programs in community development. RPRC Working Paper, No. 06-05. Rural Poverty Research Center: Columbia.

Breitung, J. & Das, S. 2005. Panel unit root tests under cross sectional dependence. *Statistica Neerlandica*, 59(4):414–433.

Breusch, T. S. & Pagan, A. R. 1980. The Lagrange multiplier test and its applications to model specification in econometrics. *The Review of Economic Studies*, 47(1):239-253.

Brooks, C. 2014. Introductory econometrics for finance. Cambridge university press.

Bruenig, D., White, M. J., Young, R. M. & Voisey, J. 2014. Subclinical psychotic experiences in healthy young adults: associations with stress and genetic predisposition. *Generic Testing and Molecular Biomarkers*, 18(10):683-689.

Bruno, M., Ravallion, M. & Squire, L. 1998. Equity and growth in developing countries: Old and new perspectives on the policy issues. Income distribution and high growth, Cambridge, MA: MIT Press.

Brunori, P. Ferreira, F. & Peragine V. 2013. Inequality of opportunity, income inequality and economic mobility: Some international comparisons. Policy Research Working Paper No. 6304. Washington D.C: World Bank.

- Bucknall, K. 2013. The differences between economic growth and economic development. North Carolina: Boson Books.
- Burns, J. K., Tomita, A. & Lund, C. 2017. Income inequality widens the existing income-related disparity in depression risk in post-apartheid South Africa: evidence from a nationally representative panel study. *Health & Place*, 45(1):10-16.
- Burrell, G. & Morgan, G. 1979. Social paradigms and organisational analysis. Elements of the sociology of corporate life.
- Calvo, C. & Dercon, S. 2009. Chronic poverty and all that: The measurement of poverty over time. In Addison, T., Hulme, D. & Kanbur, R., ed. Poverty dynamics: interdisciplinary perspectives. Oxford University Press.
- Cameron, A.C. & Trivedi, P.K. 2010. Microeconometrics using Stata (Vol. 2). College Station, TX: Stata press.
- Campbell, J.Y. & Perron, P. 1991. Pitfalls and opportunities: what macroeconomists should know about unit roots. *NBER Macroeconomics Annual*, 6(1):141-201.
- Cappellari, L. & Jenkins, S. 2002. Who stays poor? Who becomes poor? Evidence from the British household panel survey. *The Economic Journal*, 112(478):60-67.
- Carmon, N. 1985. Poverty and culture: empirical evidence and implication for public policy. *Sociological Perspectives*, 28(4):403-417.
- Cerrato, M. & Sarantis, N. 2002. The cross sectional dependence puzzle. London Guildhall University press.
- Chang, T. & Caudill, S.B. 2005. Financial development and economic growth: the case of Taiwan. *Applied Economics*, 37(12):1329-1335.
- Chang, Y. 2002. Nonlinear IV-unit root tests in panels with cross sectional dependency. *Journal of Econometrics* 110(2):261–292.
- Chemli, L. & Smida, M. 2013. Interaction between poverty, growth and inequality during the crisis: a panel data study. *International Journal of Economics and Finance*, 5(5):120-130.

Chen S. & Ravallion, M. 2004. How have the world's poorest fared since the early 1980s? *The World Bank Research Observer*, 19(2):141-169.

Chen, B. & Feng, Y. 2000. Determinants of economic growth in China: private enterprise, education and openness. *China Economic Review*, 11(1):1-15.

Chen, S. & Ravallion, M. 2008. The developing world is poorer than we thought, but no less successful in the fight against poverty. Policy Research Working Paper. No.4703. World Bank, Washington D.C.

Chen, W. & Vujic, S. 2016. A reassessment of the relationship between Income Inequality and Economic Growth: New Empirical Evidence from China.

Chipeta, C. 2017. Effects of openness to trade, exchange rate fluctuations and foreign direct investment on job dynamics in South Africa. Vanderbijlpark: NWU. (Dissertation-M.Com).

Chow, W.C. 2009. Brownian bridge. *WIREs Computational Statistics*, 1(3):325-332.

Chu, J.F. & Sek, S.K. 2014. Investigating the relationship between inflation and growth: Evidence from panel ARDL models. In *AIP Conference Proceedings*, 1605(1):943-948.

Cingano, F. 2014. Trends in income inequality and its impact on economic growth. OECD Social, Employment and Migration Working Paper. No. 163. Paris: OECD Publishing.

Clarke, G.R. 1995. More evidence on income distribution and growth. *Journal of Development Economics*, 47(2):403-427.

Cogneau, D. & Guenard, C. 2002. Can relationship be found between inequality and growth, documents de travail DIAL. In Dial-Paris Development Seminar, Paris.

Cohen, J. & Cohen, P. 1983. Applied multiple regression/correlation analysis for the behavioral sciences. Hillsdale, NJ: Erlbaum.

Cox, M., Arnold, G. & Tomas, S.V. 2010. A review of design principles for community-based natural resource management. *Ecology and Society*, 15(4):38.

Cullen, J.B. & Novick, S.M., 1979. The Davis-Moore theory of stratification: A further examination and extension. *American Journal of Sociology*, 84(6):1424-1437.

Dabla-norris, E., Kochhar, K., Suphaphiphat, N., Ricka, F. & Tsounta, E. 2015. Causes and consequences of income inequality: a global perspective. International Monetary Fund Working Paper 15/13. Washington D.C.

Dahan, M. & Tsiddon, D. 1998. Demographic transition, income distribution and economic growth. *Journal of Economic growth*, 3(1):29-52.

Dalton, H. 1920. The measurement of the inequality of incomes. *The Economic Journal*, 30(119):348-361.

Datt, G. & Ravallion, M. 1992. Growth and redistribution components of changes in poverty measure; a decomposition with applications to Brazil and India in the 1980s. *Journal of Development Economics*, 38(2):275-295.

Datt, G., Simler, K., Mukherjee, S. & Dava, G. 2000. Determinants of poverty in Mozambique: 1996-97. International food policy research institute, Washington D.C.

David, A., Guilbert, N., Hamaguchi, N., Higashi, Y., Hino, H., Leibbrandt, M. & Shifa, M. 2018. Spatial poverty and inequality in South Africa: a municipality level analysis. SALDRU Working Paper, No. 221. Cape Town: UCT.

Davis, K. & Moore, W. E. 1945. Some principles of stratification. *American Sociological Review*, 10(4):242-249.

Deininger, K. & L. Squire. 1996. A New Data Set Measuring Income Inequality. *World Bank Economic Review*, 10(3):565–591.

Deininger, K. & Squire, L. 1998. New ways of looking at old issues: inequality and growth. *Journal of Development Economics*, 57(2):259-287.

Dollar, D. & Kraay, A. 2000. Growth is good for the poor. World Bank, DEC.

Dollar, D. & Kraay, A. 2002. Growth is good for the poor. *Journal of Economic Growth*, 7(3):195-225.

Donnelly, L. 2012. A country in a state of influx. Mail and guardian <https://mg.co.za>.  
Date of access: 18 August 2018.

Dornbusch, R., Fisher, S. & Startz, R. 1998. Macroeconomics. 7<sup>th</sup> ed. New York: McGraw-Hill.

Dreze, J., 1990. Poverty in India and the IRDP Delusion. *Economic and Political Weekly*, 1(1):95-104.

Duclos, J.Y., Esteban, J. & Ray, D. 2004. Polarization: Concepts, measurement and estimation. *Econometrica*, 72(6):1737-1772.

Dumistrescu, E. & Hurlin, C. 2012. Testing for granger non-causality in heterogeneous panels. *Economic Modelling*, 29(1):1450-1460.

Dunga, S.H. 2014. The channels of poverty reduction in Malawi: a district level analysis. Vanderbijlpark: NWU. (Thesis-PhD).

Duranton, G. & Puga, D. 2004. Micro-foundations of urban agglomeration economies. *In Handbook of Regional and Urban Economies*, 4(1):2063-2117.

Durlauf, S.N. 1994. Spillovers, stratification and inequality. *European Economic Review*, 38(3-4):836-845.

Durlauf, S.N. 1996. A theory of persistent income inequality. *Journal of Economic Growth*, 1(1):75-93.

Easterly, W. & Levine, R. 1997. Africa's growth tragedy: policies and ethnic divisions. *The Quarterly Journal of Economics*, 112(4):1203-1250.

Easterly, W. & Revelo, S. 1993. Fiscal policy and economic growth: an empirical investigation. *Journal of Monetary Economics*, 32(1):177-219.

Eberhardt, M. & Teal, F. 2008. Modeling technology and technological change in manufacturing: how do countries differ? Working Paper. No. 12. Centre for the study of African economies, University of Oxford: Oxford.

Eberhardt, M. & Teal, F. 2010. Productivity Analysis in Global Manufacturing Production. Economics Series Working Papers, No. 515. Department of Economics, University of Oxford.

Engle, R.F. & Granger, C.W. 1987. Co-integration and error correction: representation, estimation, and testing. *Econometrica: Journal of the Econometric Society*, 55(1):251-276.

Ernst, J., Nau, G.J. & Bar-Joseph, Z. 2005. Clustering short time series gene expression data. *Bioinformatics*, 21(1):159-168.

European Commission. 2010. Europe 2020: a strategy for smart, sustainable and inclusive growth: communication from the commission. Publications office of the European Union.

European Commission. Directorate-General for employment and inclusion. 2011. Employment and social development in Europe. Publications office of the European Union.

Fanta, F. & Upadhyay, M. P. 2009. Poverty reduction, economic growth and inequality in Africa. *Applied Economics Letters*, 16(18):1791-1794.

Ferreira, F. 2012. Distributions in motion: Economic growth, inequality and poverty dynamics. In P.N. Jefferson (Ed), the Oxford Handbook of the Economics of Poverty. Oxford: Oxford University Press.

Fields, G. S. 2003. Accounting for income inequality and its change: a new method, with application to the distribution of earnings in the United States. *Research in Labour Economics*, 22(4):1-38.

Fields, G.S. & Jakubson, G. H. 1994. New evidence on the Kuznets curve. Cornell University. New York: Ithaca.

Finn, A., Leibbrandt, M. & Ranchhod, V. 2016. Patterns of persistence, intergenerational mobility and education in South Africa. SALDRU Working Paper 175/3. University of Cape Town: Cape Town.

Fisher, L.A. & Huh, H.S. 1999. Weak exogeneity and long-run and contemporaneous identifying restrictions in VEC models. *Economics Letters*, 63(2):159-165.

Fisher, R. A. 1948. Combining independent tests of significance. *American Statistician*, 2(5):30.

Fishlow, A. 1996. Growing apart: the causes and consequences of global wage inequality. Council on Foreign Relations.

Forbes, K.J. 2000. A reassessment of the relationship between inequality and growth. *American Economic Review*, 90(4):869-887.

Fosu, A. K. 2010. Inequality, income and poverty: comparative global evidence. *Social Science Quarterly*, 91(5):1432-1446.

Fosu, A. K. 2016. The recent growth resurgence in Africa and poverty reduction: assessing the context and evidence. No. 11. Centre for the study of African Economies, University of Oxford.

Fosu, A. K. 2017. Growth, inequality and poverty reduction in developing countries: recent global evidence. *Research in Economics*, 71(2):306-336.

Freeman, C. 2002. Continental, national and sub-national innovation systems complementarity and economic growth. *Research Policy*, 31(2):191-211.

Funke, M. & Struiklik, H. 1999. Regional growth in West Germany: Convergence or divergence? *Economic Modelling*, 16(4):489-502.

Galor, O. & Tsiddon, D. 1997. The distribution of human capital and economic growth. *Journal of Economic Growth*, 2(1):93-124.

Galor, O. & Zang, H. 1997. Fertility, income distribution and economic growth: theory and cross-country evidence. *Japan and the World Economy*, 9(2):197-229.

Garces-Ozanne, A. 2006. A bounds test approach to the study of level relationships in a panel of high-performing Asian economies (hpaes). No. 0607.

Gelaw, F. 2009. The relationship between poverty, inequality and growth in the rural Ethiopia: micro evidence. A paper presented at the International Association of Agricultural Economists Conference (IAAEC), Beijing, China.

Ghatak, S. 1995. Introduction to development economics. London: Routledge.

Ghorbani, M. & Motallebi, M. 2009. Application Pesaran and Shin method for estimating Iran's import demand function. *Journal of Applied Sciences*, 9(6):1175-1179.

Gini, C. 1912. Variabilita e mutabilita. Reprinted in *Memorie di metodologica statistica* (Ed. Pizetti E, Salvemini, T). Rome: Libreria Eredi Virgilio Veschi.

Global Insight. 2018. Regional explorer data base. Pretoria.

Global Report of Human Development. 2003. Economica, Paris.

Gore, C. 2007. Which growth theory is good for the poor? *The European Journal of Development Research*, 19(1):30-48.

Groen, J.J.J. & Kleibergen, F. 2003. Likelihood-based cointegration analysis in panels of vector error-correction models. *Journal of Business & Economic Statistics*, 21(2):295-318.

Guiga, H. & Rejeb, J. 2012. Poverty, growth and inequality in developing countries. *International Journal of Economics and Financial Issues*, 2(4):470-479.

Gujarati, D. & Porter, D. C. 2008. Basic Econometrics. México: McGrawHill.

Gujarati, D.N. & Porter, D.C. 2010. Econometría. México: McGrawHill.

Hadri, K. & Larsson, R. 2005. Testing for stationarity in heterogeneous panel data where the time dimension is finite. *The Econometrics Journal*, 8(1):55-69.

Hadri, K. 2000. Testing for stationarity in heterogeneous panel data. *The Econometrics Journal*, 3(2):148-161.

Halter, D., Oechslin, M. & Zweimuller, J. 2014. Inequality and growth: The neglected time dimension. *Journal of Economic Growth*, 19(1):81-104.

- Harmse, L. 2013. South Africa's Gini coefficient: causes, consequences and possible responses. Pretoria: UP. (Dissertation-M.Com).
- Hauhart, R.C. 2003. The Davis–Moore theory of stratification: the life course of a socially constructed classic. *The American Sociologist*, 34(4):5-24.
- Hausman, J. A. 1978. Specification tests in econometrics. *Econometrica*, Journal of the Econometric Society, 46(6):1251-1272.
- Hernandez, M. A. 2015. Estimating capital flows to emerging market economies with heterogeneous panels. Banco de Mexico Working Papers, No. 03. Mexico.
- Higgins, M. & Williamson, J. G. 1999. Explaining inequality, the world round: cohort size, Kuznets curves and openness. Mimeographed.
- Hoogeveen, J.G. & Ozler, B. 2004. Not separate, not equal: poverty and inequality in post-apartheid South Africa. Mimeo: World Bank.
- Hoogeveen, J.G. & Ozler, B. 2006. Poverty and inequality in post-apartheid South Africa. *Human Sciences Research Journal*, 3(6):59-94.
- Hurlin, C. & Mignon, V. 2007. Second generation panel unit root tests.
- ILO (International Labour Organisation). 2014. World social protection report 2014/15: Building economic recovery, inclusive development and social justice. International Labour Organisation, Geneva.
- Im, K.S., Pesaran, M.H. & Shin, Y. 1997. Testing for Unit Roots in Heterogeneous Panels'. Working Paper, No. 9526. University of Cambridge.
- Im, K.S., Pesaran, M.H. & Shin, Y. 2003. Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, 115(1):53-74.
- IMF (International Monetary Fund). 2012. Statistics on the growth of the global gross domestic product (GDP). IMF, Washington D.C.
- Insight, IHS Global. 2018. Macroeconomic variable database. Washington D.C.

- ITRISA (International Trade Institute of Southern Africa). 2016. Government strategies to boost South Africa's economic/ trade growth. South Africa: North-west university Publishing.
- Janvry, A. D. & Sadoulet, E. 2000. Growth, poverty and inequality in Latin America: a causal analysis, 1970-94. *Review of Income and Wealth*, 46(3):267-287.
- Jarque, C. M. & Bera, A. K. 1980. Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economics Letters*, 6(3):255-259.
- Jitsuchon, S. & Richter, K. 2007. More than a pretty picture, using poverty maps to design better policies and interventions. Washington. D.C, World Bank.
- Johansen, S. & Juselius, K. 1990. Maximum likelihood estimation and inference on cointegration, with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52(2):169-210.
- Johansen, S. 1988. Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control*, 12(2-3):231-254.
- Johansen, S. 1995. Identifying restrictions of linear equations with applications to simultaneous equations and cointegration. *Journal of Econometrics*, 69(1):111-132.
- Kakwani, N. & Pernia, E. 2000. What is pro-poor growth? *Asian Development Review*, 18(1):1-16.
- Kakwani, N. & Sajaia, Z. 2004. New poverty thresholds for Russia. Processed, World Bank. Washington D.C
- Kakwani, N. 1993. Poverty and economic growth with application to Cote D'ivoire. *Review of Income and Wealth*, 39(2):121-122.
- Kaldor, N. 1956. Indian tax reform: report of a survey. Ministry of Finance, Department of Economic Affairs.
- Kao, C. 1999. Spurious regression and residual-based tests for cointegration in panel data. *Journal of Econometrics*, 90(1):1-44.

Kapetanios, G. M., Pesaran, M. H. & Yamagata, T. 2011. Panels with non-stationary multifactor error structures, *Journal of Econometrics*, 160(2):326-348.

Keeton, G. 2014. Inequality in South Africa. *Journal of the Helen Suzman Foundation*, 74(9):26-31.

Khan, M.A., Khan, M.Z., Zaman, K. & Hassan, U. 2013. Global estimates of Growth-Inequality-Poverty (GIP) Triangle: Evidence from the World Bank's classification countries. *Quality & Quantity*, 48(5):2631-2646.

Khemili, H. & Belloumi, M. 2018. Cointegration relationship between growth, inequality and poverty in Tunisia. *International Journal of Applied Economics, Finance and Accounting*, 2(1):8-18.

Khosravi, A. & Karimi, M.S. 2010. To investigate the relationship between monetary policy, fiscal policy and economic growth in Iran: Autoregressive distributed lag approach to cointegration. *American Journal of Applied Sciences*, 7(3):420-424.

Kim, H. 2012. Lecture 8: Panel data. ECON4211, University of Minnesota: United States of America.

Klasen, S. & Woolard, I. 2009. Surviving unemployment without state support: Unemployment and household formation in South Africa. *Journal of African Economies*, 18(1):1-51.

Kok, P. & Collinson, M. 2006. Migration and urbanization in South Africa. Report 03-04-02, Pretoria: Statistics South Africa [https:// statssa.gov.za](https://statssa.gov.za).

Kok, P. 2006. Migration in South and Southern Africa: dynamics and determinants. HSRC Press. Pretoria

Kraay, A. 2004. When is growth pro-poor? Evidence from a panel of countries. *Journal of Development Economics*, 80(1):198-227.

Kraay, A. 2006. When is growth pro-poor? Evidence from a panel of countries. *Journal of Development Economics*, 80(1):198-227.

Kriegler, A. & Shaw, M. 2016. A citizen's guide to crime trends in South Africa. Johannesburg: Jonathan Ball Publishers.

Krueger, A. 2012. The rise and consequence of inequality in the United States. Speech at the Center for American Progress. Washington D.C.

Kunst, R., Nell, C. & Zimmermann, S. 2011. Summary Based on Chapter 12 of Baltagi: Panel Unit Root Tests. Lecture Notes. Department of Economics. The University of Vienna.

Kuznets, S. 1955. Economic growth and income inequality. *American Economic Review*, 45(1):1-28.

Kwiatkowski, D., Phillips, P.C., Schmidt, P. & Shin, Y. 1992. Testing the null hypothesis of stationarity against the alternative of a unit root: how sure are we that economic time series have a unit root? *Journal of Econometrics*, 54(1-3):159-178.

Lanjouw, P. & Ravallion, M. 1999. Benefit incidence, public spending reforms, and the timing of program capture. *The World Bank Economic Review*, 13(2):257-273.

Lanzafame, M. 2013. The balance of payments-constrained growth rate and the natural rate of growth: new empirical evidence. *Cambridge Journal of Economics*, 38(4):817-838.

Larsson, R. & Lyhagen, J. 1999. Likelihood-based inference in multivariate panel cointegration models. Working Paper, No. 331. Stockholm School of Economics and Finance.

Larsson, R., Lyhagen, J. & Lothgren, M. 2001. Likelihoodbased cointegration tests in heterogeneous panels. *Econometrics Journal*, 4(1):109-142.

Leibbrandt, M., Wegner, E. & Finn, A. 2011. The policies for reducing income inequality and poverty in South Africa. A Southern Africa Labour and Development Research Unit Working Paper No. 64. Cape Town: SALDRU, University of Cape Town.

- Leibbrandt, M., Woolard, I. & Woolard, C. 2007. Poverty and inequality dynamics in South Africa: post-apartheid development in the light of the long-run legacy. Prepared for the IPC-DRCLAS workshop, University of Cape Town, South Africa.
- Leibbrandt, M., Woolard, I., Finn, A., & Argent, J. 2010. Trend in South African income distribution and poverty since the fall of apartheid. OECD Social, Employment and Migration Working Papers, No. 101. Paris: Organisation for Economic Co-operation and Development.
- Leitner, S. & Stehrer, R. 2014. Drivers of inequality and poverty in the CEE and other EU member states (No. 398). The Vienna institute for international economic studies.
- Lenski, G.E. 2013. Power and privilege: a theory of social stratification. UNC Press Books.
- Levin, A. & Lin, C. F. 1993. Unit root tests in panel data: new results. Discussion Paper, Department of Economics, San Diego.
- Levin, A. & Lin, C.F. 1992. Unit root tests in panel data: asymptotic and finite-sample properties. University of California. San Diego, mimeographed.
- Levin, A., Lin, C.F. & Chu, C.S.J. 2002. Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of Econometrics*, 108(1):1-24.
- Levine, A. J. 1997. The cellular gatekeeper for growth and division. *Cell*, 88(3):323-331.
- Levine, R. 2005. Finance and growth: theory and evidence. *Handbook of Economic Growth*, 1(1):865-934.
- Lewis, W.A. 1980. The slowing down of the engine of growth. *The American Economic Review*, 70(4):555-564.
- Li, H. & Zou, H.F. 1998. Income inequality is not harmful for growth: theory and evidence. *Review of Development Economics*, 2(3):318-334.
- Li, S. & Sicular, T. 2014. The distribution of household income in China: Inequality, poverty and policies. *China Quarterly*, 217(1):1-41.

Liu, M. 2017a, China's evolving poverty reduction strategy: experiences and lessons for ASEAN, report submitted to IPRCC, China.

Liu, M., 2017b. Inclusive growth and poverty eradication policies in China. Paper prepared for strategies for eradicating poverty to achieve sustainable development for all. Division for social policy and development, department of economic and social affairs. United Nations Headquarters, New York.

Lombardi, M. J., Mohanty, M. S. & Shim, I. 2017. The real effects of household debts in the short and long-run.

López, J. H. 2004. Pro-Growth, Pro-Poor: Is there a trade off? Policy Research Working Paper. No. 3378. World Bank: Washington, D.C.

Macfie, B.P. & Nufrio, P.M. 2006. Applied statistics for public policy. ME Sharpe. Inc., Armonk, New York.

MacLeod, C. & Rankin, N. 2016. Econometric analysis of the employment tax incentive. Presentation to National Treasury. Pretoria.

Magruder, J. R. 2010. Intergenerational networks, unemployment and persistent inequality in South Africa. *American Economic Journal of Applied Economics*, 2(1):62-85.

Mandela, N. 1997. Report of the president of the ANC. Presented at the 50<sup>th</sup> national conference of the African national congress.

Mankiw, N. G., Romer, D. & Weil, D. N. 1992. A contribution to the empirics of economic growth. *The Quarterly Journal of Economics*, 107(2):407-437.

Martine, G. 2012. The new global frontier: urbanization, poverty and environment in the 21<sup>st</sup> century. Earth scan: Routledge.

Marx, K. 1973. Karl Marx on society and social change: with selections by Friedrich Engels. University of Chicago Press.

Mathur, K., 1995. Politics and implementation of integrated rural development programme. *Economic and Political Weekly*, 1(1):2703-2708.

- May, J. & Governder, J. 1998. Poverty and inequality in South Africa. *Indicator South Africa*, 15(7):53-58.
- May, J. 2003. Chronic poverty and older people in South Africa. CPRC Working paper. No. 25. World Bank: Washington D.C.
- McCoskey, S. & Kao, C. 1998. A residual-based test of the null of cointegration in panel data. *Econometric Reviews*, 17(1):57-84.
- Mehmood, B., Aleem, M. & Rafagat, M. 2017. Steel augmented production functions. *Statistics and Economy Journal*, 97(1):89-103.
- Mellet, A. 2012. A critical analysis of South African economic policy. Vanderbijlpark: NWU. (Thesis-PhD).
- Meth, C. 2006. Half measures: the ANC's unemployment and poverty reduction targets. In Bhorat, H. and Kanbur, R. ed. *Poverty and policy in post-apartheid South Africa*. Pretoria: HSRC.
- Meyer, D. F. & De Jongh, 2018. An alternative multi-dimensional regional economic development index: a provincial application in South Africa. Unpublished document.
- Meyer, D.F., De Jongh, J.J. & Meyer, N. 2016. The formulation of a composite regional development index. *International Journal of Business and Management Studies*, 8(1):100-116.
- Michalek, A. & Vybostok, J. 2018. Economic growth, inequality and poverty in the EU. *Social Indicators Research*, 49(1):1-20.
- Mlambo, V. 2018. An overview of rural-urban migration in South Africa: its causes and implications. *Archives of Business Research*, 6(4):63-70.
- Mokatsanyane, D., Muzindutsi, P.F. & Viljoen, D. 2017. Credit Risk and Securitisation in the South African Banking Sector. *Acta Universitatis Danubius. Œconomica*, 13(2).
- Moon, H.R. & Perron, B. 2004. Testing for a unit root in panels with dynamic factors. *Journal of Econometrics*, 122(1):81-126.

Mooney, L.A., Knox, D. & Schacht, C. 2007. Understanding social problems: three main sociological perspectives. 5<sup>th</sup> ed. Nebraska: Thompson Wadsworth.

Morris, D. & Beaumont, P. 2004. Archaeology in the northern Cape: some key sites. McGregor Museum.

Murphy, K. M., Schleifer, A. & Vishny, R. 1989. Income distribution, market size and industrialization. *The Quarterly Journal of Economics*, 104(3):537-564.

Nallari, R. & Griffith, B. 2011. Understanding growth and poverty theory, policy and empirics. Washington D.C, World Bank.

Niyimbanira, F. 2017. Analysis of the impact of economic growth on income inequality and poverty in South Africa: the case of Mpumalanga province. *International Journal of Economics and Financial Issues*, 7(4):254-261.

NPC (National Planning Commission). 2012. National Development Plan 2030. Our future - make it work. <http://www.gov.za/issues/national-development-plan-2030>. Date of access: 14 April 2018.

OPPG (Operationalising Pro-Poor Growth) programme. 2005. Pro-poor growth in the 1990s: lessons and insights from 14 countries

Organisation for Economic Co-operation and Development. 2011. OECD Territorial Reviews OECD Territorial Reviews: The Gauteng City-Region, South Africa. OCED Publishing. Paris.

Orsetta, C., De Serres, A. & Ruiz, N. 2014. Can growth enhancing policies lift all boats? An analysis based on household disposable incomes. Paris: OECD Publishing.

Pagano, M. 1993. Financial markets and growth: An overview. *European Economic Review*, 37(1):613-622.

Page, T. 2013. Addressing South Africa's poor healthcare. Al Jazeera <https://www.aljazeera.com>.

- Papanek, G. F. & Kyn, O. 1986. The effect on income distribution of development, the growth rate and economic strategy. *Journal of Development Economics*, 23(1):55-65.
- Pedroni, P. 1999. Critical values for cointegration tests in heterogeneous panels with multiple regressors. *Oxford Bulletin of Economics and Statistics*, 61(1):653-670.
- Perotti, R. 1993. Political equilibrium, income distribution and growth. *The Review of Economic Studies*, 60(4):755-776.
- Perotti, R. 1994. Income distribution and investment. *European Economic Review*, 38(3-4):827-835.
- Perotti, R. 1996. Growth, income distribution, and democracy: What the data say. *Journal of Economic Growth*, 1(2):149-187.
- Perron, P. 1989. The great crash, the oil price shock, and the unit root hypothesis. *Econometrica: Journal of the Econometric Society*, 1(1):1361-1401.
- Persson, T. & Tabellini, G. 1994. Is inequality harmful for growth? *The American Economic Review*, 84(3):600-621.
- Pesaran, M. H. & Smith, R. 1995. Estimating long-run relations from dynamic heterogeneous panels. *Journal of Econometrics, Elsevier*. 68(1):79-113.
- Pesaran, M. H. & Yamagata, T. 2008. Testing slope homogeneity in large panels. *Journal of Econometrics*, 142(1):50-93.
- Pesaran, M. H. 2006. Estimation and inference in large heterogeneous panels with a multifactor error structure. *Econometrica*, 74(4):967-1012.
- Pesaran, M.H. 2003. Aggregation of linear dynamic models: an application to life-cycle consumption models under habit formation. *Economic Modelling*, 20(2):383-415.
- Pesaran, M.H. 2007. A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics*, 22(2):265-312.

- Pesaran, M.H., Shin, Y. & Smith, R.J., 2001. Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3):289-326.
- Phillips, P. C. & Sul, D. 2003. Dynamic panel estimation and homogeneity testing under cross section dependence. *The Econometrics Journal*, 6(1):217-259.
- Piketty, T. 2014. About capital in the 21st century (PDF). Thomas Piketty PSE Website.
- Piketty, T. 2006. The Kuznets curve: yesterday and tomorrow. *Understating Poverty*, 4(20):63-72.
- Quah, J.S. 1994. Controlling corruption in city-states: a comparative study of Hong Kong and Singapore. *Crime, Law and Social Change*, 22(4):391-414.
- Ravallion, M. & Chen, S. 1996. What can new survey data tell us about recent changes in distribution and poverty? *The World Bank Economic Review*, 11(2):357-382.
- Ravallion, M. & Chen, S. 2003. Measuring pro-poor growth. *Economics Letters*, 78(1):93-99.
- Ravallion, M. & Chen, S. 2004. How have the world's poor fared since the early 1980s? Policy Research Working Paper. No. 3341. World Bank, Washington. D.C.
- Ravallion, M. & Chen, S. 2007. China's uneven progress against poverty. *Journal of Development Economics*, 82(1):1-42.
- Ravallion, M. & Datt, G. 2002. Why has economic growth been more pro-poor in some states of India than others? *Journal of Development Economics*, 82(1):381-400.
- Ravallion, M. 1995. Growth and poverty: evidence for developing countries in the 1980s. *Economics Letters*, 48(1):411-417.
- Ravallion, M. 1997. Can high-inequality developing countries escape absolute poverty? *Economics Letters*, 56(1):51-57.

- Ravallion, M. 2001. Growth, inequality and poverty: looking beyond averages. *World development*, 29(3): 1803-1815.
- Ravallion, M., Datt, G. & Van de Walle, D. 1991. Quantifying absolute poverty in the developing world. *Review of income and wealth*, 37(4):1.
- Ray, D. 2010. Uneven growth: A framework for the research in development economics. *Journal of Economic Perspectives*, 24(3):45-60.
- Ray, D. 2010. Uneven growth: A framework for the research in development economics. *Journal of Economic Perspectives*, 24(3):45-60.
- Reich, M. 2017. Racial inequality: a political-economic analysis. New Jersey: Princeton University Press.
- Rio-group. 2006. Compendium of best practices in poverty measures. Rio de Janeiro.
- Rodrik, D. E. 2003. In search of prosperity: analytical narratives of economic growth. Princeton University press.
- Romer, D. 2011. Endogenous growth: advanced macroeconomics. 4<sup>th</sup> ed. New York: McGraw-Hill.
- Romer, P. M. 1990. Endogenous technological change. *Journal of Political Economy*, 98(5):71-102.
- Romer, P.M. 1986. Increasing returns and long run growth. *Journal of Political Economy*, 94(5):1002-1037.
- Rose, M. 1972. The relief of poverty. 1834-1914.
- Rostow, W. W. 1960. The stages of economic growth; a non-communistic manifesto. Cambridge: Cambridge University press.
- Rowntree, B.S. 1918. The human need of labour. London: Longman publishers.

Samargandi, N., Fidrmuc, J. & Ghosh, S. 2013. Is the relationship between financial development and economic growth monotonic for middle-income countries? Economics and finance Working Paper, No. 13-21.

SASSA (South Africa Social Security Agency). 2016. Annual Report. South African Social Security Agency (SASSA): Pretoria.

Seekings, J. & Nattrass, N. 2005. Race, class, and inequality in South Africa. Connecticut: Yale University Press.

Sen, A. 1999. The possibility of social choice. *American Economic Review*, 89(3):349-378.

Senkal, A. 2017. Documenting the stylized facts on structural transformation in Southern Africa, forthcoming as a background note for Systematic Country Diagnosis (SCD), The World Bank.

Shezi, X. 2013. The impact of migration on rural development: a case study of Emabhugwini in Nkandla. Durban: UKZN. (Thesis-PHD).

Shittu, A. I. 2012. Financial intermediation and economic growth in Nigeria. *British Journal of Arts and Social Sciences*, 4(2):164-179.

Sibanda, K., Ncwadi, R. & Mlambo, C. 2013. Investigating the impact of real exchange rates on economic growth: a case study of South Africa. *Mediterranean Journal of Social Sciences*, 4(13):261.

Singh, K. 2016. Unemployed rural migrants end up committing crimes in urban areas- KZN South Coast CPF chair <https://www.news24.com>.

Skoufias, E. 2001. PROGRESA and its impacts on the human capital and welfare of households in rural Mexico: a synthesis of the results of an evaluation by IFPRI. International Food Policy Research Institute, Washington D.C.

Smith, A. 1904. The wealth of nations. 5<sup>th</sup> ed. New York: Bantam Dell.

Solow, R.M. 1956. A contribution to the theory of economic growth. *Quarterly Journal of Economics*, 70(1):65-94.

South Africa. Department of Labour. 2016. Annual industrial action report. Pretoria.

South Africa. Department of National Treasury. 2018a. Budget Review in February 2018. Pretoria.

South Africa. Department of National Treasury. 2018b. Employment tax incentive descriptive report. Pretoria.

Spaull, N., 2013. South Africa's education crisis: The quality of education in South Africa 1994-2011. Johannesburg: Centre for Development and Enterprise.

Squire, L. 1993. Fighting poverty. *American Economic Review*, 5(1): 377-382.

StatsSA (Statistics South Africa). 2015. Methodological report on rebasing of national poverty lines and development of pilot provincial poverty lines. Report no. 03-10-11. Pretoria: Government Printer.

StatsSA (Statistics South Africa). 2017a. Income inequality, unemployment and economic growth. Pretoria: Government Printer.

StatsSA (Statistics South Africa). 2017b. Poverty Trends in South Africa: An examination of absolute poverty between 2006 & 2015. Pretoria: Government printer.

StatsSA (Statistics South Africa). 2018. South Africa poverty and inequality assessment report. Pretoria: Government Printer.

Stein, J. L. 1969. Neoclassical and Keynes-Wicksell monetary growth models. *Journal of Money, Credit and Banking*, 1(2):153-171.

Stevens, L.K. & Sessions, D.N. 2008. The relationship between poverty, economic growth revisited. *Journal of Income Distribution*, 17(1):5-20.

Stiglingh, A. 2015. Financial development and economic growth in BRICS and G-7 countries: a comparative analysis. Vanderbijlpark: NWU. (Dissertation-M.Com).

Stiglitz, J.E. 1969. Distribution of income and wealth among individuals. *Econometrica: Journal of the Econometric Society*, 8(1):382-397.

Strauss, J. & Yigit, T. 2003. Shortfalls of panel unit root testing. *Economics Letters*, 81(3):309-313.

Thirtle, C., Lin, L. & Piesse, J. 2003. The impact of research-led agricultural productivity growth on poverty reduction in Africa, Asia and Latin America. *World Development*, 31(12):1959-1975.

Todes, A. Kok, P. Wentzel, M. Van Zyl, J. & Cross, C. 2010. Contemporary South African urbanization dynamics. In *Urban forum* 21(3):331-348.

Torres-Ryna, O. 2003. Panel data analysis: fixed & random effects (using strata 10.x). [PowerPoint Slides]. Princeton University press.

Townsend, P. 1993. *The international analysis of poverty*. New York: Harvester Wheatsheaf.

Tregenna, F. & Tsela, M. 2012. Inequality in South Africa: the distribution of income, expenditure and earnings. *Development Southern Africa*, 29(1):35-61.

Tunim, M. E. 1953. Reply to Kingsley Davis. *American Sociological Review*, 18(1):672-673.

UNDP (United Nations Development Programme). 2013. *South Africa Human development report: The challenge of sustainable Development*. New York: United Nations press.

UNDP (United Nations Development Programme). 2017. What is human development? <http://hdr.undp.org/en/content/human-development-index-hdi> Date of access: 21 May 2018.

Van den Berghe, P. L. 1963. Dialectic and functionalism: toward a theoretical synthesis. *American Sociological Review*, 10(1):695-705.

Van der Berg, S. 2010. Current poverty and income distribution in the context of South African history. Economic working paper, No. 22/10. Stellenbosch: Stellenbosch University press.

- Van der Berg, S. 2014. Inequality, poverty and prospects for redistribution. *Development Southern Africa*, 31(2):197-218.
- Van der Berg, S., Burger, R., Louw, M. & Yu, D. 2005. Trends in poverty and inequality since the political transition. A report prepared for the office of the president. Department of Economics, University of Stellenbosch.
- Van Der Westhuizen, C. 2012. South Africa: economic growth, poverty and inequality. *Foresight Africa: top priorities for the continent*.
- Wakefield, A. 2015. Urban migration 'putting pressure' on Gauteng's public transport <https://www.news24.com>.
- Weber, M. 2009. *The theory of social and economic organization*. Simon and Schuster.
- Wessels, D. 1999. South Africa's reconstruction and development programme: a better life for all. *Journal of Social Sciences*, 3(4):235-243.
- Westaway, A. 2012. Rural poverty in the Eastern Cape Province: legacy of apartheid or consequence of contemporary segregationism? *Journal of Development Southern Africa*, 29(1):115-125.
- Westerlund, J. 2007. Testing for error correction in panel data. *Oxford Bulletin of Economics and statistics*, 69(6):709-748.
- Wilkinson, R. & Pickett, K. 2010. The spirit level. Why equality is better for. *Journal of Social Policy*, 42(4):840-884.
- Wilson, W. J. 1996. When work disappears. *Political Science Quarterly*, 111(4):567-595.
- Woolard, I. & Leibbrandt, M.V. 2006. Towards a poverty line in South Africa: background note. South Africa labour and development research unit (SALDRU), University of Cape Town.
- World Bank. 2003. *Reaching the rural poor: a renewed strategy for rural development*. Washington D.C: The World Bank.

World Bank. 2005. Poverty manual. Washington D.C: The World Bank.

World Bank. 2008. Global monitoring report. Washington. D.C: The World Bank.

World Bank. 2014. South Africa economic update: Fiscal policy and redistribution in an unequal society. Washington D.C: World Bank.

World Bank. 2017. Income level database. <https://data.worldbank.org/country/south-africa>. Date of access:17 April 2018.

World Bank. 2018. Republic of South Africa systematic country diagnostic. An incomplete transition: Overcoming the legacy of exclusion in South Africa. Washington D.C: World Bank.

Wright, E. O. & Perrone, L. 1977. Marxist class categories and income inequality. *American Sociological Review*, 2(1):32-55.

Zuma, N. 2018. Rural-urban Migration in South Africa. China institute for reform and Development economic policy forum <https://ageconsearch.umn.edu>. Date of access: 18 September 2018.

## ANNEXURE A: LETTER FROM THE LANGUAGE EDITOR

---

Ms Linda Scott  
English language editing  
SATI membership number: 1002595  
Tel: 083 654 4156  
E-mail: lindascott1984@gmail.com

**18 November 2018**

To whom it may concern

This is to confirm that I, the undersigned, have language edited the **dissertation** of

**Mpho Ramudzuli**

for the degree

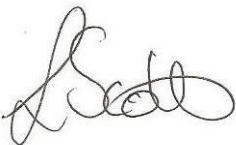
**Masters of Commerce in Economics**

Titled:

***The relationship between income inequality, economic growth and poverty in  
South Africa***

The responsibility of implementing the recommended language changes rests with the author of the dissertation.

Yours truly,



Linda Scott