Income inequality and economic growth: An empirical investigation in South Africa

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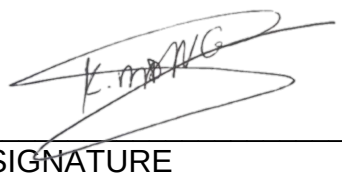

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ABSTRACT

Over the past decade, increasing income inequality has been a major challenge for both developed and developing countries, with South Africa ranked as the most unequal country in the world. Such extreme income inequality is believed to lead to high unemployment and crime rates in the country. Although South Africa has suffered from the continuing rise in income inequality and sluggish economic growth, there have been limited studies done in this area. Therefore, this study contributes to the existing body of knowledge by empirically investigating the impact of income inequality on growth in South Africa from 1991 to 2017, using the Autoregressive Distributed Lag (ARDL) bounds testing technique.

The long run results show that income inequality has a significant and negative impact on economic growth. This study also found that other control variables such as physical capital, population growth and government expenditure are significant and negatively affect economic growth. Only human capital was found to have a significant and positive impact on economic growth. The short run results found that human capital, population growth and government expenditure are statistically significant and negatively influence economic growth. While the results show that there is no relationship between income inequality and economic growth in the short run. Only physical capital was found to be positive and statistically significant in the short run. Based on the findings, this study recommends that policy makers should pursue policies that reduce income inequality in order to enhance economic growth in the country.

KEY TERMS/ AMAGAMA ANGUNDOQO

Income inequality; Gini coefficient; economic growth; South Africa; impact; national level; provincial level; Solow model; ARDL cointegration

AMAGQABANTSHINTSHI

Kwiminyaka elishumi edlulileyo ukwanda kokungalingani kwemivuzo kube ngumceli mngeni omkhulu kumazwe aphuhlileyo kunye namazwe asaphuhlayo, kuquka noMzantsi Afrika othathwa njengelona lizwe lingalinganiyo kwihlabathi liphela. Kukholelwa ukuba ukungalingani okugqithise olo hlobo kukhokelela kumaqondo aphezulu entswelangqesho nolwaphulomthetho. Naxa uMzantsi Afrika ufumene ubunzima ngenxa yokwenyuka kokungalingani kwemivuzo kunye nokukhula kancinci koqoqosho, zinqongophele izifundo ezenziweyo ngalo mba. Ngako oko, olu phando ligalelo kumthombo wolwazi osele ukho ngokuthi luphande nzulu ifuthe lokungalingani kwemivuzo kuphuhliso eMzantsi Afrika ukusukela kunyaka we-1991 ukuya kowama-2017, ngokusebenzisa iAutoregressive Distributed Lag (ARDL) njengesakhelo sobuchule bokuphanda nokuvavanya.

Iziphumo zexesha elide zityhila ukuba ukungalingani kuneempembelelo ezibalulekileyo nezimbi ekukhuleni koqoqosho. Olu phando lukwafumanise ukuba ezinye izinto eziguqukayo zolawulo ezifana nezakhiwo, ukwanda kwabemmi kunye nenkcitho karhulumente ziluchaphazela ngendlela engancumisiyo ukhulo loqoqosho. Zizakhono zabasebenzi kuphela ezifunyenwe zinefuthe elakhayo/elihle kuphuhliso loqoqosho. Iziphumo zexesha elifutshane zityhile ukuba abasebenzi, ukukhula kwenani labemi kunye nenkcitho karhulumente zinefuthe elibi nelikhulu ngokweenkcukacha-manani kukhulo loqoqosho. Naxa iziphumo zibonisa ukuba akukho kuzalana phakathi kokungalingani kwemivuzo kunye nokukhula koqoqosho kwixesha elifutshane, zizakhiwo kuphela ezafumaneka zinefuthe elithembisayo elibalulekileyo ngokweenkcukacha-manani kwixesha elifutshane. Ngokusekwe kwiziphumo, olu phando lucebisa abaqulunqi bomgaqo-nkqubo ukuba balandele imigaqo-nkqubo enciphisa ukungalingani kwemivuzo ukuze kuphucuke uqoqosho kwilizwe.

OKUYINGQIKITHI

Kule minyaka eyishumi edlule, ukwanda kokungalingani kwemali engenile kube yinselelo enkulu emazweni womabili athuthukile nasathuthukayo, iNingizimu Afrika ibalwa njengezwe elinokungalingani kakhulu emhlabeni. Ukungalingani ngokweqile kwemiholo okuholela ekuswelekeni kwemisebenzi ngokusezingeni eliphezulu kanye namazinga obugebengu ezweni. Yize iNingizimu Afrika ihlupheke ngokuqhubeka nokwenyuka kokungalingani kwemali engenayo kanye nokukhula komnotho kancane, kube nezifundo ezifinyeziwe ezenziwe kule ndawo. Ngakho-ke, lolu cwaningo lufaka isandla kulolo hlaka olukhona ngokuphenya ngamandla omthelela okungalingani kwemali engenayo ekukhuleni eNingizimu Afrika kusukela ngo-1991 kuya ku-2017, kusetshenziswa inqubo yokuhlola yemingcele ye-Autoregressive Distributed Lag (ARDL).

Imiphumela yesikhathi eside ikhombisa ukuthi ukungalingani kwemali engenayo kunomthelela omkhulu futhi omubi ekukhuleni komnotho. Lolu cwaningo luphinde lwathola ukuthi okunye ukuguquguquka kokulawula okufana nemali yokuqhuba umsebenzi ebonakalayo, ukukhula kwenani labantu kanye nezindleko zikahulumeni kubalulekile futhi kuthinta kabi ukukhula komnotho. Izimali zabantu kuphela ezitholwe zinomthelela omkhulu futhi omuhle ekukhuleni komnotho. Imiphumela yesikhashana ithole ukuthi imali yabantu, ukwanda kwabantu kanye nokusetshenziswa kwemali nguhulumeni kunezibalo futhi kunomthelela omubi ekukhuleni komnotho. Ngenkathi imiphumela ikhombisa ukuthi abukho ubudlelwano phakathi kokungalingani kwemali engenayo nokukhula komnotho esikhathini esifushane. Imali ebonakalayo kuphela etholakale inika ithemba futhi ibalulekile ngezibalo ngokuhamba kwesikhashana. Ngokuya ngokutholakele, lolu cwaningo luncoma ukuthi abenzi benqubomgomo kufanele balandele izinqubomgomo ezinciphisa ukungalingani kwemali engenayo ukuze kuthuthukiswe ukukhula komnotho ezweni.

DEDICATION

To my family and late grandmother Nomakhosazana Nduneni who called me an Economist since the age of six years.

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All glory, all honour and all adoration to the most high God.

LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation/Acronym	Meaning
ADF	Augmented Dickey Fuller test
AIC	Akaike Information Criterion
ANC	African National Congress
ARDL	Autoregressive Distributed Lag
ASGISA	Accelerated and Shared Growth Initiative for South Africa
BEE	Black Economic Empowerment
BER	Bureau for Economic Research
CDE	Centre for Development and Enterprise
CUSUM	Cumulative Sum of the Recursive Residuals
CUSUMSQ	Cumulative Sum of Squares of Recursive Residuals
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DF	Dickey Fuller test
DF-GLS	Dickey Fuller-Generalised Least Squares
ECM	Error Correction Model
FE	Fixed Effects
GCIS	Government Communication and Information System
GDP	Gross Domestic Product
GEAR	Growth, Employment and Redistribution
GMM	Generalised Method of Moments
IDC	Industrial Development Corporation
IES	Income Expenditure Survey
KZN	KwaZulu-Natal
LFS	Labour Force Survey
NDP	National Development Plan
NIDS	National Income Dynamics Survey
NGP	New Growth Path
OECD	Organisation for Economic Co-operation and Development

OLS	Ordinary Least Squares
PROVIDE	Provincial Decision-making Enabling
RE	Random Effect
RDP	Reconstruction and Development Programme
SAHO	South African History Online
SASSA	South African Social Security Agency
SIC	Schwarz Information Criterion
StatsSA	Statistics South Africa
TIPS	Trade and Industrial Policy Strategies
WDI	World Development Indicators
2SLS	Two-Stage Least Squares
3SLS	Three-Stage Least Squares
4IR	Fourth Industrial Revolution

CHAPTER 1
INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Background of the study

Over the past decade, the rise of income inequality (which is the uneven distribution of income among the population) has been a major challenge for both developed and developing countries, including that of South Africa. In South Africa, the high unemployment rate as well as the high crime rate, are believed to be attributable to the extreme income inequality that the country is experiencing (Claessens and Perotti, 2007). In addition, income inequality might lead to the formulation and implementation of poor policies that advance the interests of those who are rich, and decision making might be in the hands of a few people (Claessens and Perotti, 2007). This argument is supported by the unappealing summary of statistics on income inequality, unemployment, poverty, crime and political instability in the country.

According to the Centre for Development and Enterprise (CDE) (2017) and Quantec (2020), the income inequality in South Africa between 1993 and 2011, as measured by the Gini coefficient, increased from 59.3 to 63.4. It increased further to 65.8 in 2015 and 66.5 in 2018. As shown by recent economic reviews by the World Bank (2019a), South Africa consistently has an unenviable record of the country with the highest unequal distribution of income in the world. Such continuous rise of income inequality becomes a major policy challenge for countries (see, Dabla-Norris et al., 2015; World Bank, 2018a; 2018b).

Due to the potential impact of income inequality on economic growth and development, there are numerous academic debates on this topic. The pioneering work by Kuznets (1955), argued that the relationship between income inequality and economic growth depends on the development stage of a country. In particular, income inequality tends to rise at early stages of economic development, and it tends to decline at a later stage of economic development. Studies by Galor and Tsiddon (1997a), Helpman (1997) and Aghion et al. (1998) suggest that income inequality also depends on the development stage of technology in an economy. Other studies demonstrate that the relationship between income inequality and economic growth is negative (see, Ravallion, 1997; Kanbur, 2005). This unsettling debate has been

mirrored on the empirical front, where many studies show that the impact of income inequality on economic growth can be positive, negative or differential (see, for example, Alesina and Rodrik, 1994; Persson and Tabellini, 1994; Perotti, 1996; Partridge, 1997; Li and Zou, 1998; Barro, 2000; Forbes, 2000; Banerjee and Duflo, 2003).

1.2 Problem statement

The impact of income inequality on economic growth has been a never-ending discussion in South Africa and around the world. Theoretical studies suggest that income inequality is high during the early stages of growth and lower at the later stages of growth (see, Kuznets, 1955; Aghion and Howitt, 1997; Galor and Tsiddon, 1997a). Empirical studies also examine this relationship, with varying results. Some studies support the negative relationship (see, Perotti, 1993; Bhorat and Van der Westhuizen, 2012). Others support the positive relationship (Bourguignon, 1990; Forbes, 2000), while yet others found differential results (see, Banerjee and Duflo 2003; Castelló, 2010).

Added to these diverse empirical findings, this study investigates the effect of income inequality on economic growth in South Africa. In particular, by exploring the development of income inequality and economic growth in South Africa, it provides a comprehensive picture of income inequality and economic growth at both provincial and national levels. In addition, the study employs the autoregressive distributed lag (ARDL) bounds testing approach to empirically investigate the impact of income inequality on economic growth in South Africa at national level.

1.3 Objectives and hypotheses of the study

1.3.1 Objectives of the study

The main objective of this study is to investigate the impact of income inequality on economic growth in South Africa.

The specific objectives of this study are:

(i) to explore the development of income inequality and economic growth in South Africa at both national and provincial levels;

(ii) to provide a comprehensive literature review concerning the relationship between income inequality and economic growth both in the extant theories and the empirics;

(iii) to empirically examine the impact of income inequality on economic growth in South Africa.

1.3.2 Hypotheses of the study

The following hypotheses are tested in the study:

(i) There is a negative relationship between income inequality and economic growth in South Africa.

(ii) There is a positive relationship between human capital and economic growth in South Africa.

(iii) There is a positive relationship between physical capital and economic growth in South Africa.

(iv) There is a negative relationship between population growth and economic growth in South Africa.

(v) There is a positive relationship between government expenditure and economic growth in South Africa.

1.4 Significance of the study

Firstly, this study adds to the existing debate on the income inequality–growth nexus. A great number of studies have examined the income inequality–growth relationship. Some studies found negative results, some found positive results and some found differential results (see, for example, Persson and Tabellini, 1994; Barro, 2000; Forbes, 2000). Among those studies, most of them were based on developed countries, with a limited number of studies done in developing countries. Although South Africa has suffered from the continuing rise in income inequality and sluggish economic growth since the global financial crisis of 2008-2009 (OECD, 2013), there has been a limited number of studies done in this area (see, Bhorat and Van der Westhuizen, 2008; Bhorat et al., 2009; Akanbi, 2016; Niyimbanira, 2017). Among those studies, Bhorat and Van der Westhuizen (2008) and Bhorat et al., (2009) only provided the exploratory review of income inequality in South Africa, Akanbi (2016) focused on the causality between economic growth and income inequality, and Niyimbanira (2017) focused only on a particular province in South Africa. Therefore, this study enriches the highly-contested literature by empirically examining the effect of income inequality on economic growth in South Africa.

Secondly, to the best of my knowledge, this is the first study using the ARDL bound testing approach to examine the impact of income inequality on economic growth in South Africa. There are studies on South Africa which employed other methods of estimation such as panel causality test, panel fixed effect and pooled regression, distributional neutral measure, and definite integral method (see, Bhorat and Van der Westhuizen, 2008; Bhorat et al., 2009; Akanbi, 2016; Niyimbanira, 2017). This study employs the ARDL bound testing technique due to its advantages of good performance in small sample size, producing unbiased estimates and limiting the problem of endogeneity in the variables (see, Pesaran et al., 1996; Tang, 2004).

Thirdly, this study contributes to empirical literature by testing an augmented Solow growth model. Unlike the previous South African studies which focus on the variables of interest, this study examines the impact of income inequality on growth in the framework of the Solow growth model (Solow, 1956). This study includes the basic growth components such as capital and labour as control variables in the model. Furthermore, the model features other components such as human capital and government expenditure that are regarded as vital determinants of economic growth in the context of South Africa (see, Nelson and Phelps, 1966; Lopez et al., 1998; Chirwa and Odhiambo, 2016; Leshoro, 2017).

1.5 Study outline

The study consists of six chapters. Chapter one presents the introduction and background of the study. Chapter two explores the development of income inequality and economic growth both at provincial and national levels. Chapter three presents a review of the theoretical and empirical literature on the income inequality–growth relationship. The fourth chapter discusses the methodology used to examine the impact of income inequality on economic growth. Chapter five presents the interpretation of empirical findings of the study. Chapter six concludes the main findings of the study and provides policy recommendations.

CHAPTER 2
THE DEVELOPMENT OF INCOME INEQUALITY AND ECONOMIC GROWTH IN SOUTH AFRICA

2.1 Introduction

This chapter provides a detailed discussion of country-specific literature on income inequality, economic growth, and development trends in South Africa. The chapter begins the discussion at national level and disaggregates down to the provincial level. Section 2.2 introduces the development of income inequality in South Africa. This section has three sub-sections, which include the overview of income inequality in South Africa, factors contributing to income inequality and the consequences of extreme income inequality for the economy of the country and the welfare of its people.

Section 2.3 presents the economic performance of South Africa from 1995 to 2017. The section has two sub-sections, which identify the trends of economic development and the key sectors contributing to the economy of South Africa. Section 2.4 discusses the origin of income inequality at provincial level in South Africa. Furthermore, in this section the level of income inequality and economic performance in each province is discussed. Finally, section 2.5 concludes the chapter findings.

2.2 Income inequality in South Africa

2.2.1 Overview of income inequality in South Africa

South Africa has been named the most unequal country in the world, based on available statistics (World Bank, 2019b). South Africa has been ranked first among the top five most unequal countries in the world, which also included Botswana, Namibia, Haiti, and Suriname. According to the history of South Africa, inequality is rooted in racial inequality and wage inequality that characterised the country during apartheid.[1] As a result, wage inequality remains one of the leading factors that contributes to income inequality, due to the highly-skilled labour force at the top decile of income distribution, compared to the low-skilled labour force at the bottom decile of income

[1]Apartheid is a system that discriminated against the population based on race. In South Africa it was introduced in 1948 by the National Party, where the government implemented policies and laws that forced different race groups to live and develop separately, with unequal opportunities in education and employment (see, South African History Online (SAHO), 1994).

distribution (Bhorat et al., 2009). Furthermore, the World Bank (2019a; 2019b) and Ntuli and Kwenda (2013) observe that inequality is a legacy of apartheid, coupled with the nature of economic growth, that is not pro-poor and that does not create enough jobs.

Given the history of South Africa, this extremely high inequality is inherited from the apartheid period and it has been increasing over time. Studies by Van der Berg (2011) and Leibbrandt et al. (2012) show that the policies and structures of the apartheid government and racial discrimination that took place during the apartheid period modelled the development of inequality-perpetuated growth. As a result, privileges and benefits were determined and classified according to different race groups. This resulted in the long-term footprint of a persistent and increasing inequality that is hard to undo, because it influences the country's post-apartheid development strategies.

Poverty is one of the triple challenges that South Africa faces, that remained related to the form of discrimination that characterised the country during apartheid (Oosthuizen, 2013). Based on the National Income Dynamics Survey (NIDS) (2008), Argent et al. (2009) found that Africans are the most impoverished population group in South Africa at 62.8%, followed by Coloureds and Asians at 31.7% and 16.7% respectively, with the least impoverished being the white population group at 2.5%. Income inequality seems to follow the same trend. As a result, South Africa is characterised by high levels of poverty, unemployment, income inequality and unequal opportunities among the population of this country, especially among women and children.

Pillay et al. (2013) suggest that the current and persistent inequality in South Africa is a result of isolation, dispossession, displacement, and segregation of humans from benefitting in the economy during the apartheid era. Furthermore, current statistics on inequality between the period 1993 to 2011 shows an increase in the Gini coefficient from 59.3 to 63.4 (a 7% increase) (CDE, 2017).

The World Bank (2018a; 2018b) cautioned that inequality would increase further from 2017, due to rising unemployment and the fall in production outputs due to the impact of drought on the agricultural sector. The post-apartheid government has been trying

to correct the imbalances of the past by implementing various policies in attempts to achieve this objective. One of the recent policies implemented by former President Jacob Zuma, was the New Growth Path (NGP). The policy focused on addressing the triple challenges faced by South Africa, which are unemployment, (income) inequality and poverty. According to the Government Communication and Information System (GCIS, 2010), its strategy was to create 5 million sustainable new jobs in the economy through the private sector. However, although income inequality is persistently increasing, its nature has changed. Since the beginning of democracy, the 'between racial income distribution' has improved, while 'within racial group income inequality' increased (Chapman, 2012).

In post-apartheid South Africa, the driver of income inequality is attributed to 'within race group inequality' (Leibbrandt et al., 2000). A study by Bhorat and Van Der Westhuizen (2012) found that 'between race' and 'within race' inequality contributed equally to aggregate inequality, while Leite et al. (2006) found that 'within' group inequality contributed 86% to inequality between 1997 and 1998. Van der Berg (2011) contends that the cause of extreme income inequality within groups, especially among the African population, is due to the rapid growth in the black middle-income class, that is too large to be accommodated by the Black Economic Empowerment (BEE) policies. Furthermore, Bhorat et al. (2009) agree that the driving factor of the persistent income inequality is the difference in income between race groups. It means that the growing inequality among the African population can be due to increasing unemployment within the African population.

2.2.2 Factors causing income inequality in South Africa

The existing literature has established that at both local and international levels, income inequality is a defining challenge of our time. South Africa, together with developed countries and other developing countries are struggling with not just high, but increasing inequality, with South Africa ranked as the most unequal country in the world (see, Tregenna and Tsela, 2012; World Bank, 2012; World Bank, 2019b). As mentioned earlier, South Africa's income inequality is a legacy of apartheid, that discriminated against some races. As a result, the redistribution of income continues to be a debating point in South Africa among policy makers and academic researchers

(see, Bosch et al., 2010; Bernstein, 2010). The literature has identified factors that caused income inequality during apartheid, and factors that are causing income inequality in post-apartheid South Africa.

The apartheid period was defined by segregation, where people were categorised and treated according to different race groups. One race group (white community) had more opportunities and benefits than other race groups (Coloureds, Indians, and Blacks). This resulted in both economic and social inequality leaving black people worse off than their white counterparts. May (1998) and Chapman (2012) identified factors that gave rise to income inequality in South Africa during apartheid, as follows:

i) During apartheid, (income) inequality increased due to racial discrimination, as many people lost their assets (such as land, natural resources) to the apartheid government. This resulted in the distortion of social institutions and a destabilised economic growth and development (May, 1998; Chapman, 2012).

ii) The apartheid government's policies and structures perpetuated (income) inequality by relegating some races to underdeveloped areas, providing inadequate service delivery and a poor health system. The policies also prohibited access to resources, good education, and other opportunities (SAHO, 1994a; 1994b; May, 1998; Chapman, 2012).

iii) The system perpetuated (income) inequality, as some races were prohibited from acquiring the knowledge concerning their rights, which disadvantaged the majority of the South African society (SAHO, 1994a; 1994b; May, 1998; Chapman, 2012).

South Africa was liberated in 1994, the citizens started exercising their rights, and policies were put in place to redistribute income and to correct the imbalances of the past. However, despite all these measures, policies aimed at addressing poverty alleviation through economic growth, had limited effective results in addressing inequality. Previous policies that have been implemented had a content of redistribution. For example, in South Africa government transfers constitute close to

60% of government spending. These transfers are aimed at redistributing income and wealth from rich to poor by providing social grants, health care facilities, education, access to housing, electricity and sewerage and safety (Philip et al., 2014). As a result, the World Bank (2014) found that the impact of taxes and transfers resulted in a decline in inequality (Gini coefficient) from 0.77 to 0.59.

Despite all the efforts to reduce inequality, income inequality is persistently increasing in South Africa and the literature varies as to what factors are perpetuating this inequality. Philip et al. (2014) postulate two key mechanisms through which income inequality affects economic growth. Firstly, it is the employment and wage behaviour in the labour market. This is because employment and wages are positively influenced by economic growth. They arise from the performance of the public and private sectors and have an important role to play in reducing income inequality and poverty. Secondly, are the fiscal resources that the state receives from achieved growth for social benefit and reduction in poverty.

Furthermore, the literature shows that the following factors in the labour markets are also contributing to the increasing income inequality:

i) Labour markets characteristics

In South Africa, the labour markets are the channels through which income inequality persists to increase (Ntuli and Kwenda, 2013). Studies done by Leibbrandt and Woolard (2001), Landman et al. (2003) and Naudé and Coetzee (2004) suggest that the labour market is an important transmission mechanism in driving income inequality. Therefore, an improvement in the labour market is essential to reducing income inequality. Several previous studies found that the labour market factors are significantly important in explaining inequality. The characteristics of the labour market are: the degree of bargaining power, the unemployment benefit system, and the minimum wage level laws, have different impacts on income inequality. Some have a positive impact, and some have a negative impact (Tregenna, 2011). A study by Leibbrandt et al. (2012) found that the labour market contributes about 85% to income inequality. This is how impactful the labour market is to income inequality. Furthermore, in South Africa the level of

unemployment has remained above 20% over the decade, as income inequality impedes employment creation and inclusive growth (Philip et al., 2014).

The South African government has overlooked the challenge of unemployment. As a result, the ever-increasing unemployment may be caused by the government's focus on giving grants to the unemployed instead of creating sustainable jobs for people to earn an income and be economically active (Seekings and Nattrass, 2005; Chapman, 2012; Philip et al., 2014). This increases the incentive for those unemployed not to look for jobs to generate income, although not disputing the big role played by social grants in the poorest decile. For a country like South Africa, with its history, the social grants (transfers) seem to have little impact on income inequality and poverty for two reasons. Firstly, many people are unemployed compared to those employed, which means that few are contributing to innovation, production, and inclusive growth. Secondly, if the objective is to assist those who are unemployed through growth and development, the grant will not be successful (Samson et al., 2006; Chapman, 2012). With inequality rooted in the history of the apartheid legacy, it remains embedded in the structure of the economy.

In addition, former President Jacob Zuma once suggested a policy intervention aimed at providing grants for graduates who are unemployed. Even though it is regarded as a good tool to combat income inequality and poverty, this may be bad for growth and development as it will be an incentive for the graduates not to find work because of the obstacle of not finding a job (Noble and Ntshongwana, 2008). Therefore, Chapman (2012) argues that the government is treating the symptoms not the cause. This is because having an unemployment grant will destroy the aim of creating employment through economic growth and development. Therefore, it defeats the goal of addressing unemployment, poverty, income inequality and achieving economic growth.

ii) Labour unions

The labour unions play a role in negotiating wage increases which widen the income inequality gap and cause income inequality within the different sectors of the economy. This makes wage inequality the leading cause of income inequality because a wage is an important source of income, but the distribution of wages is skewed (Bhorat et al., 2009; Ntuli and Kwenda, 2013). A study by Naudé and Coetzee (2004) suggests that wage setting should be flexible. Allowing the trade unions to control the labour market stifles the effect of growth and international trade, which exacerbates the income inequality problem (RSA, 2011; Chapman, 2012). As a result, the labour market is named as the transmission mechanism through which globalisation encourages higher inequality. The negative impact of labour unions is attributable to rising income gaps and unemployment. This causes less income to be received by unskilled workers and hinders any improvements in reducing income inequality (Naudé and Coetzee, 2004).

iii) Wage inequality

Wage inequality is part of the debate where a question arises of whether South Africa is a high wage payer to the formal sector and a low wage payer to the informal sector employees. This is due to influences from trade unions, that negatively affect employment creation and in turn contribute to the ever-growing income inequality (Philip et al., 2014). Studies by Leibbrandt et al. (2000) and Bhorat et al. (2009) found that wages and salaries contribute mostly to the aggregate income inequality. Through the labour unions, workers have bargaining power, used to demand higher wages and salaries and better working conditions. This in turn widens the income inequality gap among those employed and therefore increases wage inequality.

iv) Sector dualism

Differences in income between sectors of the economy contribute to income inequality; this is also known as sector dualism (Chapman, 2012). South Africa is extremely affected by sector dualism due to the shift from the

agricultural sector to the more advanced sectors, such as the high technology industries. In addition, labour unions cause sector dualism as they cause income differences between employment sectors in the economy. There is an increase in income inequality, because of the workforce shifting from the agricultural sector to technologically advanced sectors. There is an increase in average income differences between these sectors, which then creates an income gap, as some of the workforce moves from low-paying jobs to high-paying jobs, with those left in the agricultural sector earning low wages. Therefore, sector dualism is one of the transmission mechanisms that is causing income inequality.

2.2.3 Consequences of income inequality in South Africa

The literature has shown that income inequality is a defining challenge of our time. South Africa is currently struggling with persistent increasing income inequality despite policy interventions implemented to reduce it. Reports by the World Bank (2018a; 2018b) predicted that income inequality would continue to increase further from 2017. This might be due to increasing unemployment and the fall in production outputs caused by both internal and external shocks that constrain economic growth in the country. Furthermore, due to the history of South Africa that had discriminating policies that perpetuated inequality, it resulted in the long-term footprint of a persistent and increasing inequality that is hard to undo (Leibbrandt et al., 2007; Van der Berg, 2011; Oosthuizen, 2013).

This left the country facing a number of consequences.

First, the World Bank (2012) found that income inequality results in unequal opportunities among society, which further influences inequality. This is because a section of the population will have fewer chances of getting quality education, good health facilities and other services (such as water and sanitation, electricity), and have fewer employment opportunities. It means that their potential to be productive is constrained and hence limits their contribution to the economy. Furthermore, income inequality negatively affects the well-being of people by limiting their opportunities and in the long run negatively affecting their human development, productivity and innovation (creativeness) resulting in low economic growth and development. The lack

of opportunities may lead to social instability and increases the likelihood of crime, strikes and riots that may later affect political stability and cause uncertainty (Philip et al., 2014).

Second, persistent levels of inequality in income and assets create social instability and perpetuate disturbing behaviour such as riots, crime and strikes, which then lead to uncertainty. Economic factors react to this uncertainty by reducing the scope of their activities, arranging their businesses so they are less exposed to risk and investing in inherently less risky enterprises (where their investments can be easily withdrawn or shifted to other activities). These reactions slow down economic growth (Keefer and Knack, 2000).

Third, high income inequality prevents the effects of economic growth in reducing unemployment and poverty and prevents development of the country. Furthermore, inequality results in conditions of poverty being less responsive to economic growth. In other words, inequality causes the poor not to benefit from growth, as redistribution is not taking place (World Bank, 2019a; 2019b).

2.3 Economic development in South Africa

2.3.1 Trends of economic growth and development

After South Africa's transition to democracy in 1994, the government led by the African National Congress (ANC) implemented new economic policies to rebuild and transform the economy, and to correct the imbalances created during apartheid. These policies included the Reconstruction and Development Programme (RDP), Growth, Employment, and Redistribution (GEAR), Accelerated and Shared Growth Initiative for South Africa (ASGISA) and the National Development Plan (NDP) (SAHO, 1994a; 1994b). These policies aimed to achieve higher growth, equal distribution, price stability, reduced poverty and decreased unemployment. Over the past twenty-five years after apartheid came to an end, South Africa has made progress in decreasing poverty by providing social grants to pensioners, orphans, people with disabilities, and children whose parents are unemployed. Furthermore, the new government provided services including, housing, water and sanitation, electricity, access to quality education, and business opportunities. However, despite all these initiatives the

country is still facing low and sluggish economic growth and is struggling to reduce inequality.

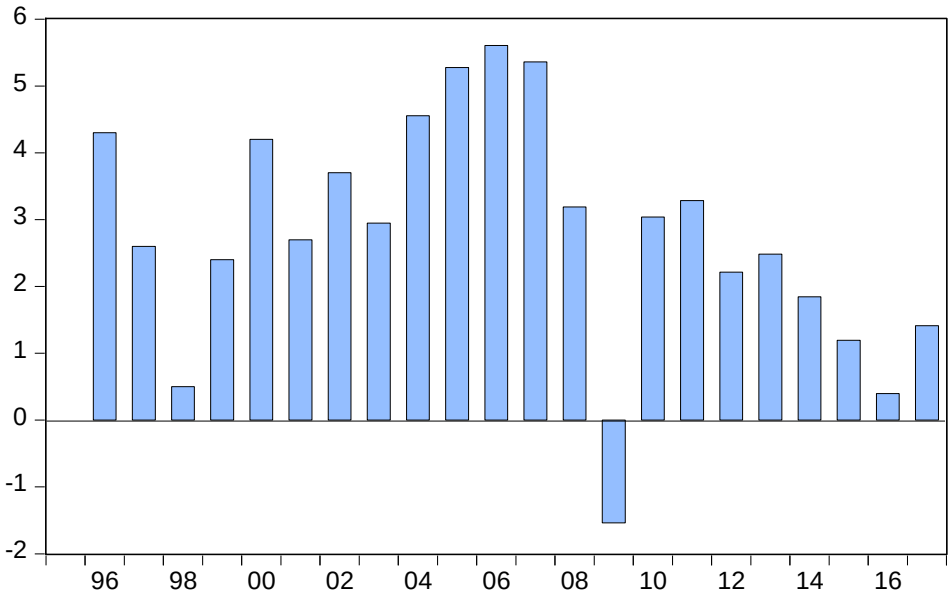
The growth rate experienced over the years had both an upward and a downward trend as the economy had upswings and downswings in economic activity. In 1994, growth slightly increased, which was followed by a sharp increase in 1996 with an average growth rate of 4.3%. This increase could have been caused by the policies that encouraged trade liberation, which opened South Africa to capital inflows and trade with the rest of the world. However, after 1996 the growth rate drastically fell to 0.6% in 1998 (World Bank, 2019b). This fall was mostly due to the Asian financial crisis that affected all countries. South Africa experienced an outflow of capital, putting pressure on the rand, and then the country's currency depreciated against other foreign currencies. In July 1998, the rand had depreciated by 14% against the dollar (Harris, 1999).

Between 1999 and 2000 the growth rates started to improve with an average growth rate of 2.5–4%, and it declined again between 2001 and 2003. From 2004, the growth rate increased, reaching 5.5% in 2006 (World Bank, 2019b). That was the highest growth rate recorded since 1984. In 2007, the United States of America (USA) experienced a financial crisis that was caused by deregulation in the financial industry. This financial crisis resulted in a global financial crisis that caused a great recession in many countries, and South Africa was also negatively affected (Baxter, 2008). This resulted in a decline in growth rates between 2007 and 2009 to 1.5%. In 2010 the economy came out of recession, with the growth rate rising to 3%. This increase in gross domestic product (GDP) was among other things, due to the 2010 FIFA Soccer World Cup tournament that contributed to the country's economy, through the tourism sector (Prinsloo, 2010). The growth rate continued to increase slightly to 3.2% in 2011. Thereafter, growth declined and continued to be on a downward trend until the current period.

This consistent downward trend on growth negatively affected companies that invested in South Africa, as they were getting less returns than they expected. This also affected domestic firms as they did not make enough profits. This negative growth discouraged investor confidence, which resulted in investors leaving South Africa to

invest in other countries (World Bank, 2018a, 2018b; IDC, 2019). The year 2019 was not different as South Africa was faced with an electricity supply crisis leading to load shedding by Eskom,[2] overall public sector mismanagement, poor performance of the manufacturing industry, low investment levels, and mining and industrial strikes, that resulted in businesses making losses. This affected both domestic and foreign firms operating in South Africa. This further affected investor confidence which caused the growth domestic product (GDP) growth to fall by 3.2%, which was regarded as the biggest drop recorded in ten years. The economy recovered in the second quarter and grew by 3.1% (StatsSA, 2019a; 2019b; 2019c). Figure 2.1 presents the annual percentage change in GDP at market prices (constant 2010 prices) during the period 1995-2017.

Figure 2. 1: South Africa's annual percentage change in GDP at market prices (constant 2010 prices), 1995-2017



Source: Author's own construction using data from Statistics South Africa (StatsSA, 2020a; 2020b)

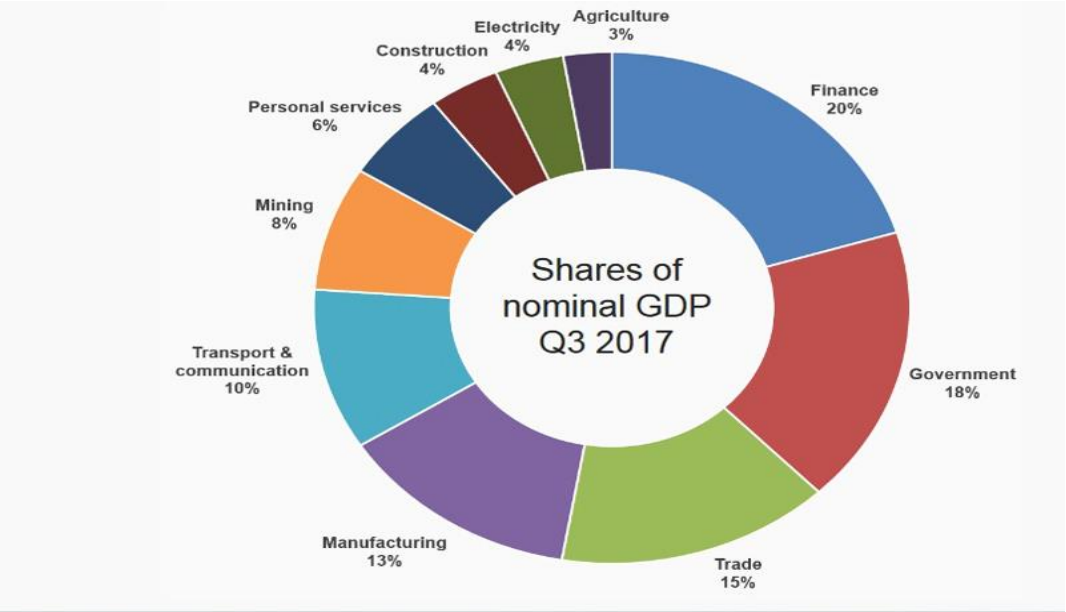
[2] Electricity Supply Commission (Eskom) is a South African state-owned enterprise that was established in 1923 by the South African government. The purpose of Eskom is to provide electricity efficiently (Eskom heritage, 1923).

2.3.2 Key growth sectors

Traditionally, the economy of South Africa has been supported by the primary sector because South Africa is endowed with a wealth of natural mineral resources and conditions that favour the agricultural sector. However, over the past decades the economy has experienced structural shifts. Since the early 1990s, due to economic structural shifts, growth in South Africa shifted from being driven by the tertiary sector, which include tourism, wholesale and retail, trade and communication. Furthermore, after 2000, the South African economy shifted its focus to technological improvement, e-commerce and financial sector. The key sectors constituting the engine for economic growth in South Africa are manufacturing, retail, financial services, communication, mining, agriculture, and tourism (South African Embassy in the Netherlands, 2013).

Figure 2.2 presents shares of nominal GDP growth for quarter 3 in 2017. It paints a clear picture of economic activities that form the engine to the growth of the country (Brand SA, 2018). In Figure 2.2, it shows the sectors that are economic drivers in South Africa and the contribution they made to nominal GDP in the third quarter of 2017. In South Africa there are ten sectors that contribute to growth, with the major contributing sectors being finance, government, trade, manufacturing, transportation, and communication, while the lesser contributors are agriculture, electricity, construction, personal services, and mining. The major sector that contributed to GDP was finance, which contributed 20% to nominal GDP. This might be due to the structural shifts of the economy as it moves from growth that is driven by the tertiary sector to an economy that is focused on e-commence, finance, technology and other services. The sector that contributed the least, was the agricultural sector. This might have been a result of the unfavourable agricultural conditions caused by the drought in 2016 which the sector was still trying to recover from.

Figure 2. 2: Quarter 3 nominal GDP South African key economic sectors for 2017



Source: Adapted from Brand SA, 2018.

2.4 Income inequality and economic development at provincial level in South Africa

This section presents an overview of the income inequality in South Africa from 1995 to 2018. It discusses the development of income inequality in the provinces of South Africa. It then reviews factors that link national inequality to provincial inequality and the consequences. Lastly, it discusses the development of the economy of the country.

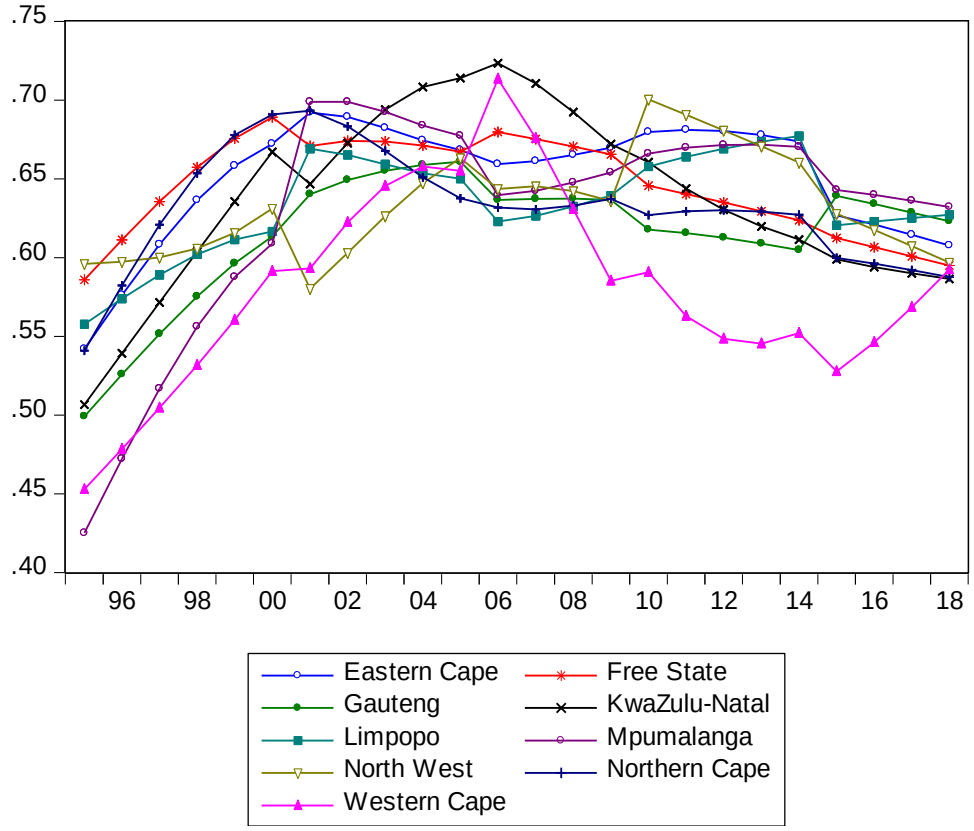
Before the democratic freedom in 1994, South Africa was divided into four provinces namely, Orange Free State, Transvaal, Natal, and the Cape Province (SAHO, 1994a; 1994b). Homelands were also created by the apartheid government and were divided according to the black people's ethnicity, namely Qwaqwa, Lebowa, KwaZulu, KwaNdebele, KaNgwane, Gazankulu, Venda, Transkei, Bophuthatswana and Ciskei. The provinces and homelands were formed to separate whites and blacks. The blacks in homelands where left with limited land and economic resources. The homelands were not developed, soil erosion and overgrazing caused the land to be in bad shape, and as a result, black people could not support their families. This caused black people to depend on whites, as many blacks had to leave their homes to go and work for

white people in industries, in mines and on farms where they were exploited and paid low wages. That was the origin of racial inequality, income inequality, wealth inequality and land inequality that South Africa is currently experiencing (SAHO, 1994a, 1994b; Makgatho, 2016).

Since 1994, the country was divided into nine provinces – Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West, and Western Cape. Policies have been implemented that where meant to address the imbalances that where created by the previous government. These policies aimed to achieve economic growth, equal distribution, price stability, reduced poverty and reduced unemployment, even though the results did not turn out as expected. However, redistribution, reduction in unemployment and reduction in poverty were not taking effect as expected. This is reflected by the statistics over the years, as shown by the Gini coefficient, that is used as the measure of equality and inequality (Quantec, 2018).

Income inequality has increased in all nine provinces in the last two decades despite increased economic growth. Figure 2.3 shows the provincial Gini coefficient in South Africa for the period 1995 to 2018. As shown in Figure 2.3, the provinces have been experiencing high income inequality (measured by the Gini coefficient) between 1995 and 2018, that remained above 0.50 over the years. However, the level of Gini coefficient does not indicate the economic performance and development status of the provinces. It shows that although provinces experience growth, the share of income is not distributed equally among the population. Against the above trend, it appears that economic growth is not an effective tool in achieving low inequality.

Figure 2. 3: Provincial Gini coefficient in South Africa, 1995-2018



Source: Author's own construction using data from Quantec (Easy Data), 2020

One of the aims of this study is to review the trend of the relationship between inequality and economic growth at provincial level and at national level. Therefore, one must first understand provincial inequality and economic growth, to analyse the determinants of economic growth and how the different economies of scale in each province impact economic growth, development and inequality in each province.

2.4.1 Eastern Cape

The province of the Eastern Cape is the second largest province in land size after Northern Cape and in 2011 was home to about 12.7% of the South African population (StatsSA, 2011). Due to migration, the population decreased to 11.4% of South Africa's population (Western Cape Provincial Government, 2019). According to the Provincial Decision-making Enabling (PROVIDE) (2005a), it is the fourth richest province in terms of total current income, but the eighth province in terms of per capita income which is caused by the skills level of the population residing in the province.

The province of the Eastern Cape is made up of two large former homelands, the Ciskei and the Transkei, that were historically disadvantaged with limited resources, infrastructure, and public services (SAHO, 1994a; 1994b). The economy of the Eastern Cape largely depends on manufacturing, which is based on the auto industry located in coastal metropolitan cities.

Even though it is the fourth richest in terms of current income, the province is experiencing high rates of unemployment and poverty. It is characterised by low-paying jobs and low employment over the years. As a result, it has experienced an increase in the number of migrants out of the province, who are moving to provinces with higher employment opportunities and better living conditions than the Eastern Cape (PROVIDE, 2005a). These growth constraining factors are traced back to the historical economic isolation of this province in resources, education, health, job opportunities and other public services (SAHO, 1994a; 1994b).

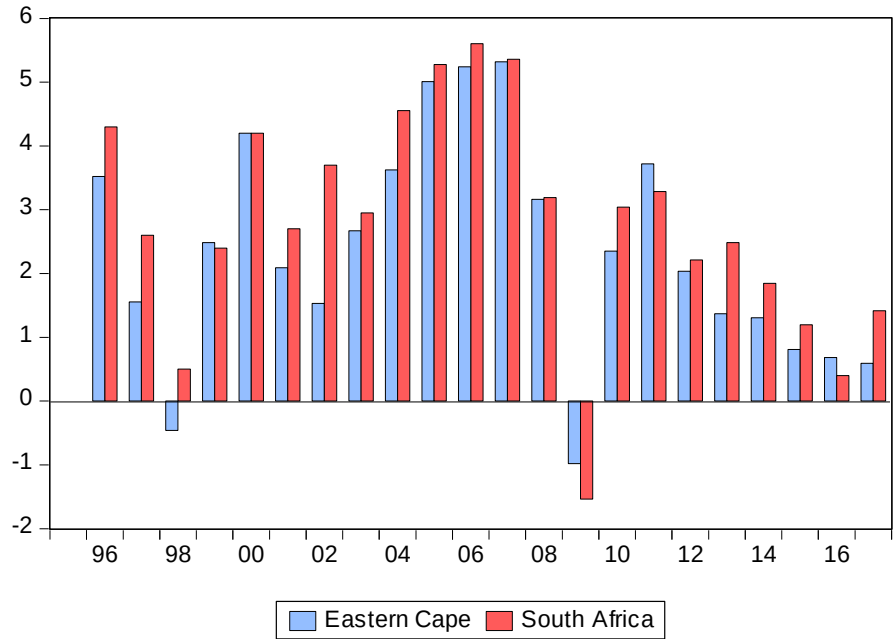
The impact of economic growth should be an improvement in the standard of living for the population of the country. This will be measured by the different socio-economic indicators, for growth to be inclusive. In the long-run socio-economic development indicators can in turn have a positive impact on economic growth (TIPS, 2016a). The apartheid history has an important impact on the structure of the economy of South Africa and on access to economic opportunities for South Africans. The above background shows the provincial structure of the economy and constraints to growth. The Eastern Cape is populated by many less-educated people, with limited economic opportunities and who are unable to enter the competitive labour market. Many other people situated in few of the cities, are skilled and educated and as a result have more economic opportunities and can enter the competitive labour market. Therefore, this perpetuates income inequality in the province and constraints growth. As a result, the province is experiencing slow economic growth and development, (SAHO, 1994a; 1994b; TIPS, 2016a).

In terms of growth and contribution, the economic activities in the Eastern Cape are centred around agriculture, manufacturing, construction and mining. In total, these sectors constituted 17% of the Eastern Cape's real outputs. The economy of the Eastern Cape primarily depends on manufacturing, which is the largest sector in the

province based on the auto industry located in its coastal metros. The sector makes up 11% of the provincial economy, followed by the construction sector at 4%, agriculture at 2% and mining at 0.2% of the provincial economy. However, in growth terms, though the manufacturing sector is the largest; significant growth was from the construction sector at 9% of the national construction, while the manufacturing sector followed at 7% of national manufacturing, agriculture and mining sectors at 6% and 0.3% of the national agriculture and mining sector, respectively (TIPS, 2016a; StatsSA, 2016).

Figure 2.4 shows the growth trends of the province from 1995 to 2017. The province showed growth of between 3.5% and 1.6% between 1996 and 1997 respectively, which was followed by a decline of -0.5% in 1998. This might have been caused by the structural shifts that took place since the country attained democracy in 1994. From 1999, provincial growth picked up again at varying percentages, where the province reached a high growth of 5.3% in 2007. However, in 2009 economic growth fell to -1.0% due to the 2008/9 global financial crisis that caused a contraction in the economy of the country. In 2010, the economy recovered and grew above 2% until 2015 where growth was below 1% (StatsSA, 2020a; 2020b). According to the Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) (Eastern Cape Provincial Government, 2017) economic factors that contribute to further growth in the short-term are low inflation, real growth in wages, increase in consumption spending, low drought conditions and a new electricity-generating capacity.

Figure 2. 4 Annual percentage change of real GDP of Eastern Cape and South Africa at market prices (constant 2010 prices), 1995-2017



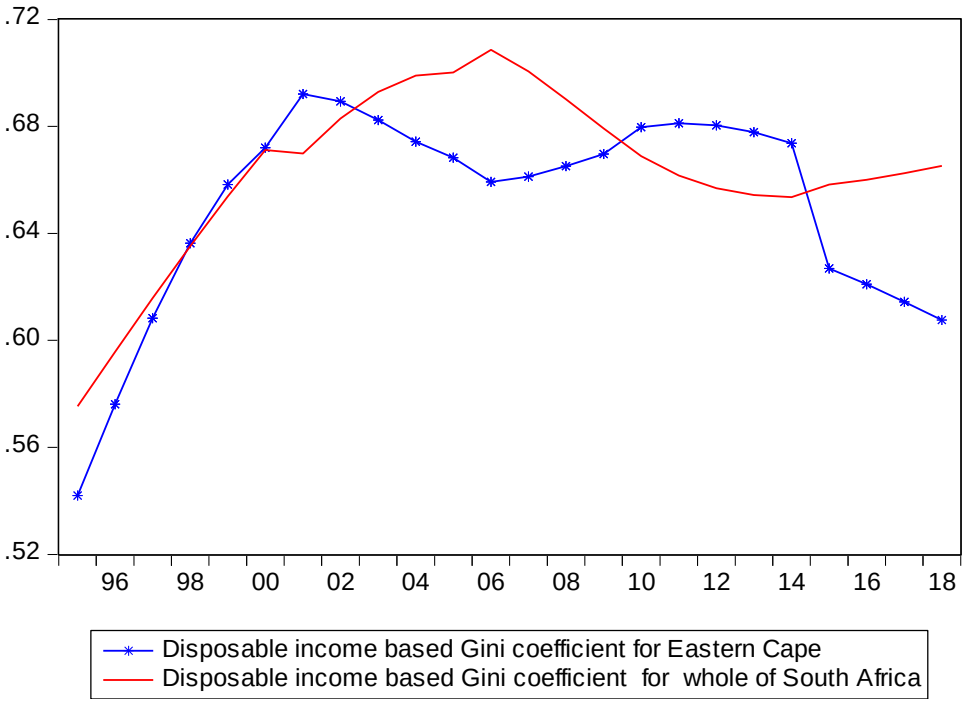
Source: Author's own construction using data from StatsSA, 2020a; 2020b

As is evident at national level, there is high income inequality; this is also reflected across the provinces of South Africa. The two leading provinces with the highest average income of R216 667 per annum and R199 231 per annum are Gauteng and Western Cape respectively, while the Eastern Cape is ranked as the 8th province with an average income of R71 520 per annum in 2001 and R89 544 per annum in 2011. Even though average income has improved in the province, the income is still low, which may be caused by lower number of job opportunities, low levels of education and low economic activities. Furthermore, as mentioned before, the province is made up of former homelands and average incomes are lower (Eastern Cape Provincial Government, 2017).

According to DEDEAT (Eastern Cape Provincial Government, 2017) estimations, there is high income inequality among the 8 districts of the Eastern Cape. Nelson Mandela Bay and Buffalo City have the highest income inequality; this might be caused by income differences in the labour market and migration from rural to urban areas of the province. Figure 2.5 presents the Gini coefficient for the whole of South Africa and that of the Eastern Cape. Looking at the overall provincial income

inequality, as presented in Figure 2.5, there was a slight decrease in the Gini coefficient of the province between 2002 and 2010, and between 2014 and 2018. To address this inequality, the Eastern Cape government embarked on a social welfare system that provides grants to the less fortune. As a result, the province has the highest number of grant recipients in South Africa at 16.2% of social grants (SASSA, 2016).

Figure 2. 5: National and provincial (Eastern Cape) disposable income based Gini coefficient, 1995-2018



Source: Author's own construction using data from Quantec (EasyData), 2020

Income differences between the unemployed and the employed, and between the employed in the labour market contribute to income inequality in the province, for example, between the formal sector, wholesale and retail trade, manufacturing and agricultural sectors. Income inequality increases due to the gap between the unemployed and the employed; at the same time income inequality also occurs among the employed. In the Eastern Cape, only 17% of the population in the former homelands were employed in 2015, relative to the 43% in the rest of the province. This indicates that employment in the former homeland regions is lower than that of the rest of the province. The Eastern Cape has an unequal distribution of income, because

of the gap between the skilled and unskilled labour force. As indicated before, the province is made up of, on the one hand, two large former homelands that are currently populated by a low-skilled population that relies on agricultural and farming activities and social grants to survive, and on the other hand, a few metros where a highly-skilled population lives and works. Those who work in agricultural sectors earn lower income than those who work in other sectors like manufacturing and construction (TIPS, 2016a).

2.4.2. Gauteng

The province of Gauteng was home to 23.7% of South Africa's population in 2011; due to migration the population increased. Gauteng is currently (2020) home to the largest proportion of the diversified population in South Africa, with 15.5 million inhabitants, which is about 26% of the population of South Africa (PROVIDE, 2009a; StatsSA, 2020c). This increase in the provincial population might be a result of high unemployment rates in other provinces. Therefore, people move to look for employment in this province.

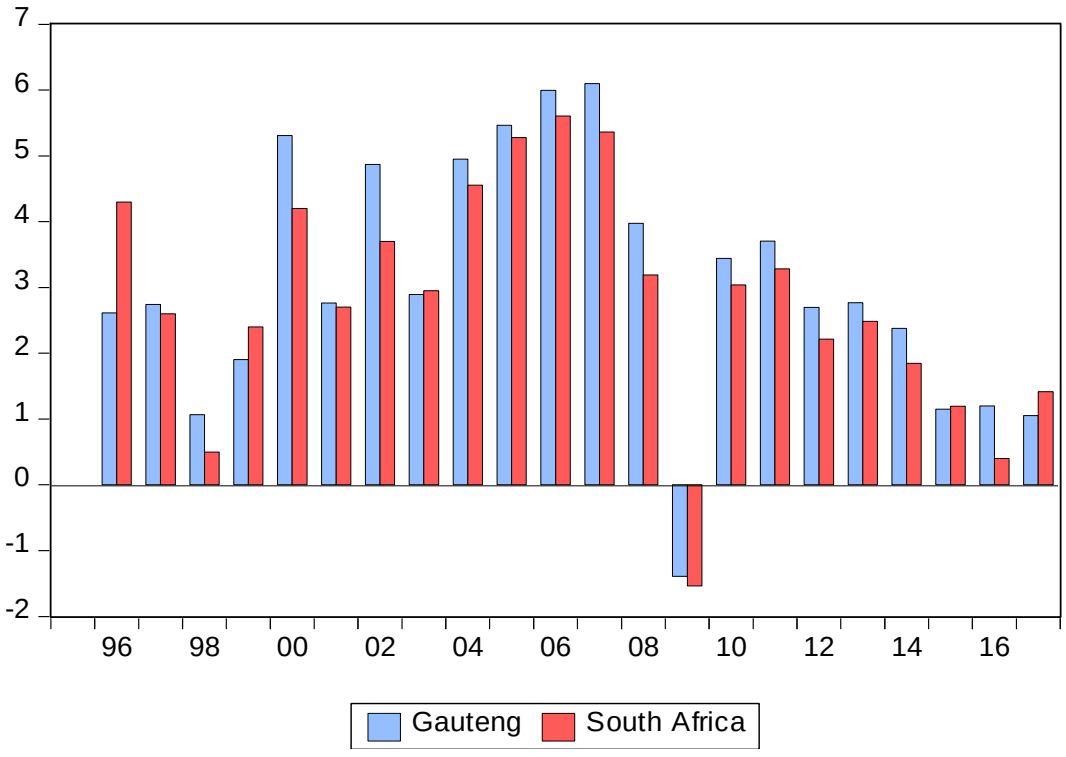
The Gauteng province has three major metros which are Johannesburg, Tshwane and Ekurhuleni. These metros have diverse industrial activities, which contribute about 34% to the Gross Domestic Product (GDP) of the country. This implies that Gauteng province is the main driver and the largest contributor to economic growth of the country (Kok, 1998; OECD, 2011a; Mushongera, 2013). In the province, there is a high level of heterogeneity in education level, skills and occupations. This creates a breeding ground for both social and economic inequality.

The Gauteng province has been established as the heartland of the country, because of the large concentration of industrial and financial development and the gold mining sectors. The agricultural sector is the smallest sector in the province, and it contributed about 0.46% through value added for the economy in 2006 (PROVIDE, 2009a). In 1992 the provincial economy was rated as the largest economy in Africa (Kok, 1998; Mushongera, 2013). According to the OECD (2011a) and Mushongera (2013), the provincial GDP grew at an average rate of 3.6% between 1995 and 2008, which was slightly higher than the national average. As a result, Gauteng has been considered

as the richest province in South Africa (Kok, 1998; Mushongera, 2013). Against the above background, it was expected that with a larger economy, benefits will trickle down to the poor, and there will be a more equal distribution of the income and wealth in the province. However, that has not been the case. The poor have not been benefitting from the economic growth realised in the province, due to the structural nature of inequality experienced in the country.

According to the Gauteng Provincial Government (2016), Gauteng's economic performance mimics that of the country. For example, in 2015 IHS Markit (Gauteng Provincial Government, 2016) estimated that provincial growth grew at the same rate as the national economy, by 1.2%. During this period, economic activity was driven by the City of Johannesburg, the City of Tshwane and the City of Ekurhuleni (which contributed about 32% in total to GDP).

Figure 2. 6: Annual percentage change of real GDP of Gauteng and South Africa at market prices (constant 2010 prices), 1995-2017



Source: Author's own construction using data from Statistics South Africa (StatsSA, 2020a; 2020b)

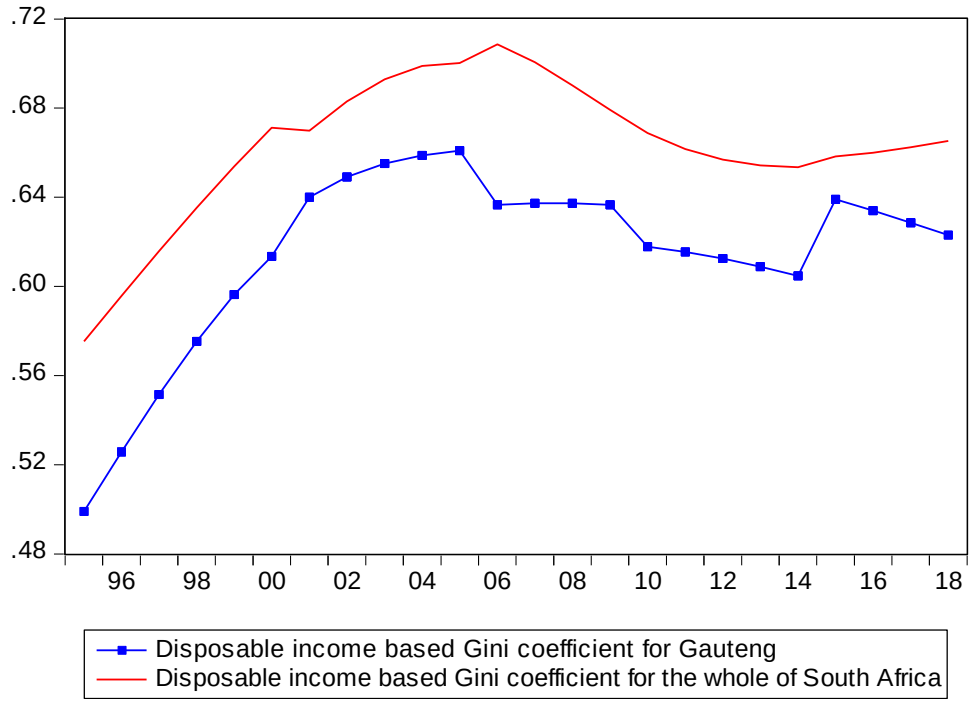
Figure 2.6 shows the real GDP growth rates of Gauteng and that of the rest of South Africa from 1995 to 2017. As shown in Figure 2.6, since 1996, Gauteng had a continuously increasing trend in economic growth until 2009 where the province experienced the first decrease in economic growth. The growth experienced after 1994, was due to changes in the economic structure and the implementation of new policies by the democratic government led by the African National Congress (ANC). In 2009 provincial economic growth declined by 1.4% at regional level and by 1.5% at national level. The decline was caused by the 2008/9 global financial crisis that caused a recession in the economy of the country, which further resulted in a recession at the provincial level. In 2010, the economy made a recovery and recorded a GDP growth of 3.4% for Gauteng and 3% for the rest of the country. Between 2010 and 2011, the economy of Gauteng grew more than the economy of the country, recording growth rates of 3.4% (3.0% for the country) and 3.7% (3.3% for the country) respectively. Since 2010, the economy remained on a growing trend until 2015 to 2017 when the growth rate decreased. This was caused by the severe drought conditions that caused the contraction in agricultural produce, electricity and gas industry that contracted by 1.0% (StatsSA, 2016).

The Gauteng province is the largest contributor to the country's gross value added, as it has more metros than other provinces. The economic activity in the province was characterised by mining and manufacturing, which made Gauteng the main industrial centre in South Africa, that made large contributions to the economic growth of the country. However, over the years, the contribution of these sectors has decreased due to a decrease in external demand, poor labour relations and high input costs. The provincial growth is derived from the financial sector, which has established Gauteng as a financial hub (Mushongera, 2013; Gauteng Provincial Government, 2016).

Since Gauteng province has been established as the heartland of the country, production has been designed to cater for international markets. Therefore, the labour sector requires highly skilled and specialised labour, that earns high salaries. This directs labour demand to the skilled workers and neglects the unskilled workers, which widens the income inequality gap in the province. Furthermore, this results in high poverty and unemployment, as attention will be shifted away from the poor, who often do not have the required skills to enter the competitive labour market due to the lack

of good educational opportunities. This system perpetuates an increase in income inequality (Mushongera, 2013; Gauteng Provincial Government, 2016). Figure 2.7 shows the Gini coefficient of Gauteng and that South Africa from 1995 to 2018. As shown in Figure 2.7, the overall Gini coefficient of Gauteng is below that of the national level. However, it is still high as it is above 0.60 for all the years. The Gini coefficient at country level is extremely high, showing how unequal income and wealth distribution is in South Africa. Looking at Figure 2.7, the income inequality between the country and Gauteng seems to be slightly similar, which implies that income inequality in Gauteng mimics that of the whole country.

Figure 2. 7: National and provincial (Gauteng) disposable income based Gini coefficient, 1995-2018



Source: Author's own construction using data from Quantec (EasyData), 2020

2.4.3 Western Cape

The Western Cape province is the fourth largest province based on geographical size and is home to 11.4% of South Africa's population. (Western Cape Provincial Government, 2019). The province has a good history of growth. Between 1999 and

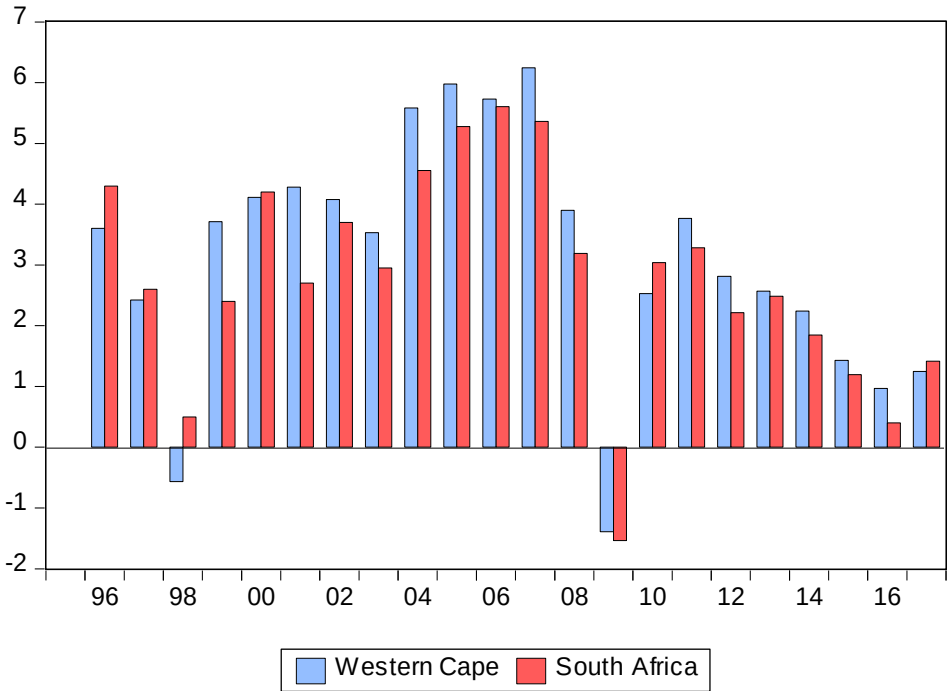
2003, it recorded a growth of 3.9% which was more than the national average of 3.1%. In 2003, the province was the largest contributor to national GDP, with a contribution of 14.5% (PROVIDE, 2005g). However, despite the good record of growth, the province faces challenges of low service delivery, increasing inequality and insufficient growth. The key sector to this province's growth is the tertiary sector. This sector contributed about 74% to provincial growth in 2017 and contributed 69% to the rest of country, while agriculture, forestry and fisheries, mining, and quarrying contributed about 5% to the provincial economy and 12% to the rest of the country (Western Cape Provincial Government, 2019).

In 2017, the growth of the Western Cape averaged 1.2%, having a 0.1% increase from 2016. However, the growth rate was lower than the national average of 1.5% in the same period (Western Cape Provincial Government, 2019). According to estimations by the Bureau for Economic Research (BER) (2019) and the Western Cape Provincial Government (2019), the provincial economy grew by 0.2% in 2018. The slow growth was due to the drought-related agricultural conditions, where the agricultural sector was affected, which resulted in a decline in outputs in the agricultural sector.

Figure 2.8 shows the real GDP growth rates of the Western Cape and those of the rest of South Africa from 1995 to 2017. As shown in Figure 2.8, since 1995, the provincial growth rate remained positive until 1998 where it fell to -0.6%. However, between 2004 and 2008, the provincial growth for Western Cape was growing higher on average than the rest of South Africa. In 2009, it drastically declined due to the global financial crisis which caused a contraction in the economy across countries. In 2010, the provincial economy recovered, growing at 2.2%, but was lower than the national average growth of 3%. This growth was due to the 2010 FIFA Soccer World Cup tournament which was held in South Africa that caused growth in the tourism sector, as an increased number of foreign nationals visited South Africa. The growth continued above 2% with the highest growth after the global recession in 2011 where provincial growth reached 3.9%. From 2015 onward, growth decreased below 2%, due to climate conditions that affected the rest of the country. The economic growth contracted in the first quarter of 2019 in South Africa, indicating growth challenges for the rest of the year. These contractions in growth caused low economic growth in real

income, which reduced consumer spending, investment spending of the private sector and lowered business confidence (Western Cape Provincial Government, 2019).

Figure 2. 8: Annual percentage change in GDP of Western Cape and South Africa at market prices (constant 2010 prices), 1995-2017



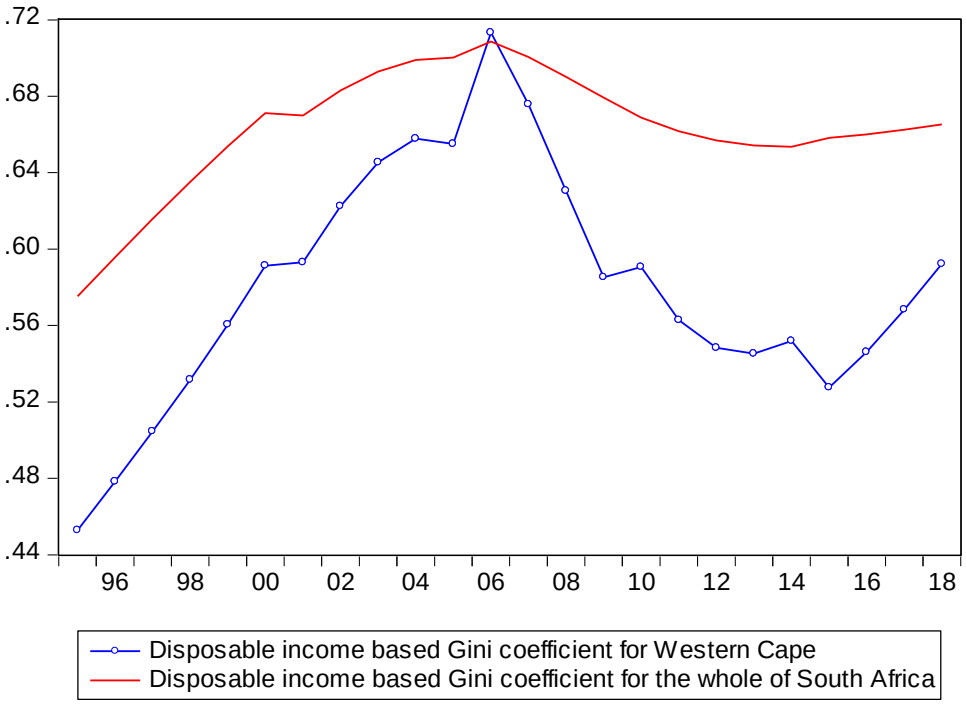
Source: Author's own construction using data from Statistics South Africa (StatsSA, 2020a; 2020b)

Inequality is debilitating, which, at its extreme, limits human capabilities. Hundenborn et al. (2016) found that labour income contributes about 84.4% to inequality in South Africa. Inchauste et al. (2015) observe that South Africa employs fiscal policy instruments (tax and government spending) to decrease income inequality in the labour market and poverty. This is due to restructuring from labour-intensive sectors that employed mostly low-skilled labour, to a capital-intensive sector that employs highly skilled labour. The Western Cape's tertiary sector has a higher rate of workers in highly skilled categories than other provinces. The labour market in the province provides fewer opportunities for unskilled workers. This then results in a skills shortage which increases income levels of skilled workers, and hence the increase in income inequality in the province (Western Cape Provincial Government, 2019). Another reason for increases in income inequality is the skills mismatch. As the tertiary sector gains dominance in the province, it is causing a wide gap in skills and income levels

in the province that is constraining growth. The tertiary sector is creating an intensified shortage of skills since it requires skilled workers. The skills shortage then increases the income levels of skilled workers, leaving unskilled workers with fewer job opportunities and earning low wages (Western Cape Provincial Government, 2003; 2005).

Figure 2.9 shows the Gini coefficient of the Western Cape and of the national level. As shown in the figure, the Gini coefficient of the province remained below that of the country, until 2006 where it was slightly above the national average of 0.70. After 2006, the Gini coefficient decreased once again to below 0.70. Considering the graph, the Western Cape income inequality trend seems to be slightly similar to that of the country until 2004. It implies that the factors causing income inequality in the country might also be the causes of income inequality in the province during that period.

Figure 2. 9: National and provincial (Western Cape) disposable income based Gini coefficient, 1995-2018



Source: Author's own construction using data from Quantec (EasyData), 2020

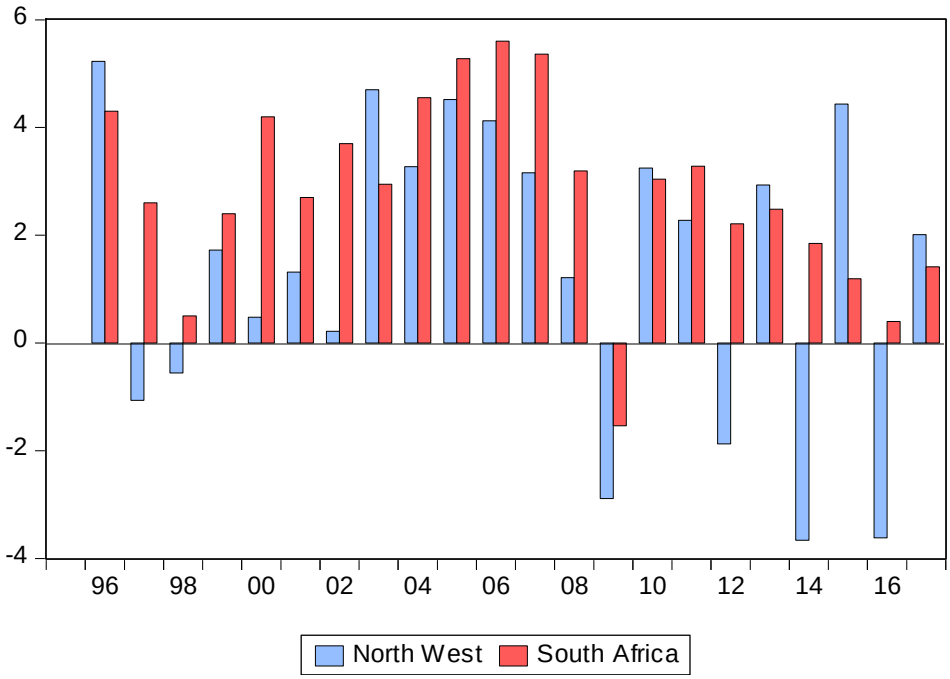
2.4.4 North West

According to the 2011 Census (StatsSA, 2011), the North West province was home to 6.8% of South Africa's population. Eight years later, the population has slightly increased to 6.9% of South Africa's population (Western Cape Provincial Government, 2019). The province ranked fifth in terms of current income and seventh in terms of per capita income (PROVIDE, 2005f). As in the rest of South Africa, the province experiences low levels of income and high income inequality that is reflected in the level of poverty and unemployment.

The economy of the North West is mainly driven by the mining sector with low economic activity from the manufacturing, construction and agricultural sectors. As a result, it relies on commodity prices for outputs to increase, which increased between 2003 and 2011, but drastically decreased between 2011 and 2014. The manufacturing sector was lagging and there was no development to boost the mining sector outputs. The sector depends on other provinces like Gauteng and imports from other countries, which makes it difficult to monitor the GDP growth in the province (TIPS, 2016d). According to Figure 2.10, the economic growth in the North West has been on a downward trend, since 2005. As a result of external shocks, the provincial economy fell sharply in 2009 due to the recession caused by the 2008/9 global financial crisis as commodity prices were extremely affected. Due to an improvement in economic activity, the provincial economy slightly increased in 2010 and sharply fell again in 2012 due to the prolonged miners' strike. The provincial growth has been lower than the average growth rate at national level (StatsSA, 2015; StatsSA, 2016).

The mining sector made a large contribution to the provincial economy at 25% in 2004 and increased to 35% in 2011. However, it declined in 2014 to 30% due to a fall in metal prices. Over the years, mining outputs have been decreasing due to the fall in commodity prices while the construction sector has been growing at a faster rate, with manufacturing slowly developing by 0.7% between 2011 and 2014 (StatsSA, 2016).

Figure 2. 10: Annual percentage change in GDP of North West and South Africa at market prices (constant 2010 prices), 1995-2017



Source: Author's own construction using data from Statistics South Africa (StatsSA, 2020a; 2020b)

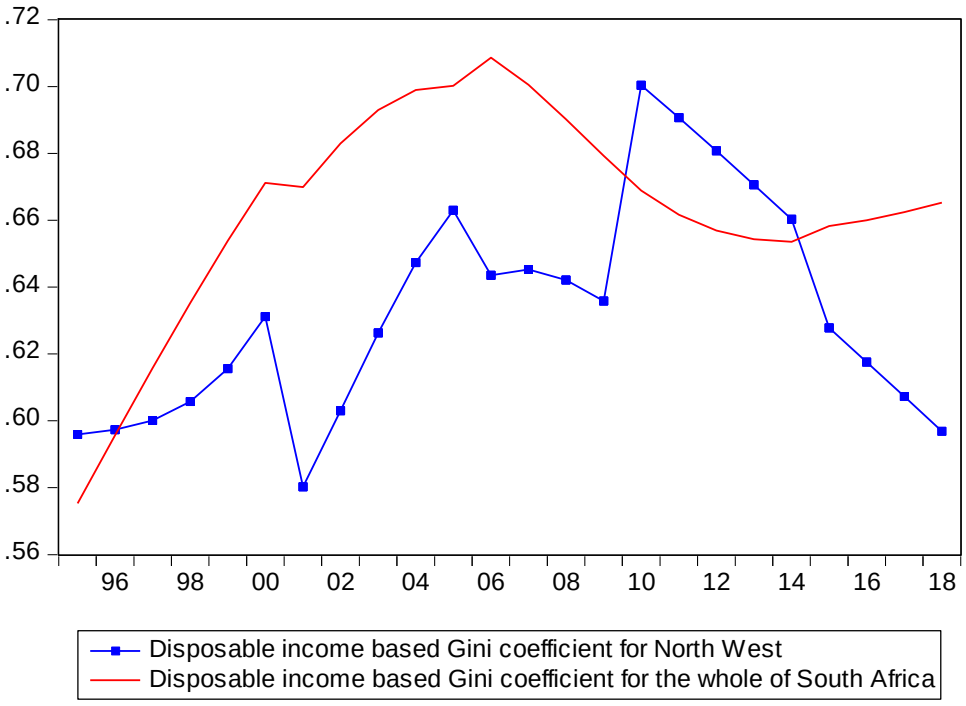
Figure 2.10 shows the real GDP growth rates of North West province and that of the rest of South Africa from 1995 to 2017. As shown in Figure 2.10, in 1996, the province experienced economic growth that was followed by two consecutive periods of a decline in growth in 1997–1998. This might have been caused by the restructuring of the provincial economic policies and the development of new provinces. From 1999 onward, the economy recovered and experienced growth until 2009 where it drastically declined to -2.9% due to the financial crisis. In 2010, the provincial economy increased which was attributed to the 2010 FIFA Soccer World Cup tournament that increased economic activity in the country. However, in 2014, 2015 and 2016 the North West economic growth drastically fell to -1.9%, -3.7% and -3.6% respectively. This was due to the mining strike and extreme drought conditions that caused a drastic decline in agricultural produce. The economy recovered again by growing at 2% in 2017.

Income inequality in the province is high due to wage distribution. The labour force working in the mining sector earns more than the labour force working in the construction, manufacturing and agricultural sectors. Another contributing factor is that

the majority of the provincial population live in rural former homelands that are populated by poorly-skilled people, with low wage levels and people dependent on the agricultural sector, which the province is not actively operating in. This caused provincial income per capita to be lower than national income per capita (TIPS, 2016d). PROVIDE (2005f) asserts that inequality is driven primarily by inequalities among racial groups. Furthermore, inequality in general is driven mainly by unequal distribution of land, capital and wages.

Figure 2.11 shows the distribution of income measured by the Gini coefficient between the North West and the rest of the country from 1995 to 2018. As seen in Figure 2.11, the province is experiencing inequality, with periods where it fell below 0.60 and with periods where it rose to 0.70. For the periods from 1995 to 2009, the provincial Gini coefficient has been lower than the Gini coefficient at national level. However, between 2010 and 2014 the Gini coefficient for the provincial level is higher than the national level. We also observe that the income inequality trend of the North West is totally different from that of the rest of the country.

Figure 2. 11: National and provincial (North West) disposable income based Gini coefficient, 1995-2018



Source: Author's own construction using data from Quantec (EasyData), 2020

2.4.5 Northern Cape

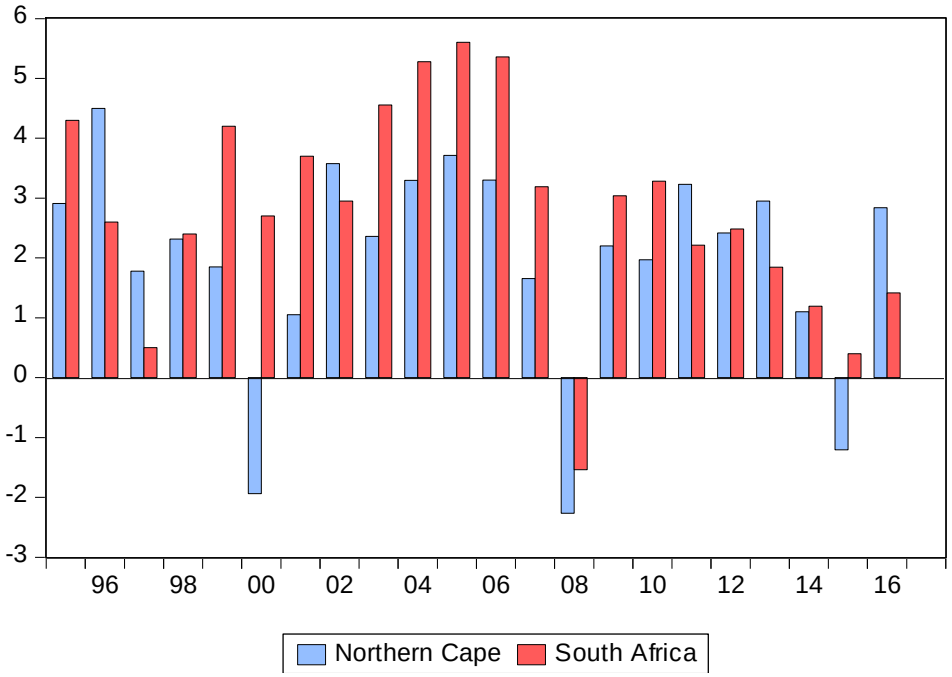
In 2011, the Northern Cape province was home to 2.2% of South Africa's population and it is the largest province in terms of area (StatsSA, 2011). Based on recent population estimations, it is currently home to 2.2% of South Africa's population. The Northern Cape has a low current income compared to other provinces. However, in terms of per capita income it ranks third following Gauteng and Western Cape (PROVIDE, 2005e; Western Cape Provincial Government, 2019). Like other provinces, although it has one of the highest per capita incomes, it is still experiencing income inequality, poverty and unemployment between various population groups. Even though its current income levels are high, there is inequality in distribution of income among the different population sub-groups in the province, which is reflected in the level of poverty of the province. Bhorat et al. (2009) assert that this is attributable to the province being affected by growing intra-racial income inequality.

According to PROVIDE (2005e), the Northern Cape province contributed about 2.4% to the national GDP, which is more than the population percentage in that province. This indicates that the province has a high per capita GDP which is higher than that of the national average. The IES/LFS (2000) and PROVIDE (2005h) estimate that the national average per capita income is R12 411 and that of the Northern Cape province is estimated to be R15 474, which is more than the national average. Despite the high earning reflected, income inequality and poverty persist in the province.

Figure 2.12 shows the provincial real gross domestic product compared to that of the rest of the country based on recent data from Statistics South Africa (StatsSA, 2020a; 2020b). The province experienced economic growth and few negative growth trends over the years. Between 1996 and 2000, the province experienced growth, where it grew by 4.5% in 1997, which was more than the average growth of 2.6% experienced at national level. In 2001, provincial growth fell to -1.9% following which provincial growth recovered again and remained above 3%. In 2008/9, the country was affected by the global financial crisis, which caused a fall in growth at country level and at provincial level. After the financial crisis, the growth of the province started picking up again in 2010, where it grew by 2.2% and remained above 2% until 2015. It fell again to -2.7% in 2016. The negative provincial economic growth might have been due to

the contraction in the agricultural sector, mining, electricity and transport industries (Northern Cape Provincial Government, 2018).

Figure 2. 12: Annual percentage change of real GDP of Northern Cape and South Africa at market prices (constant 2010 prices), 1995-2017



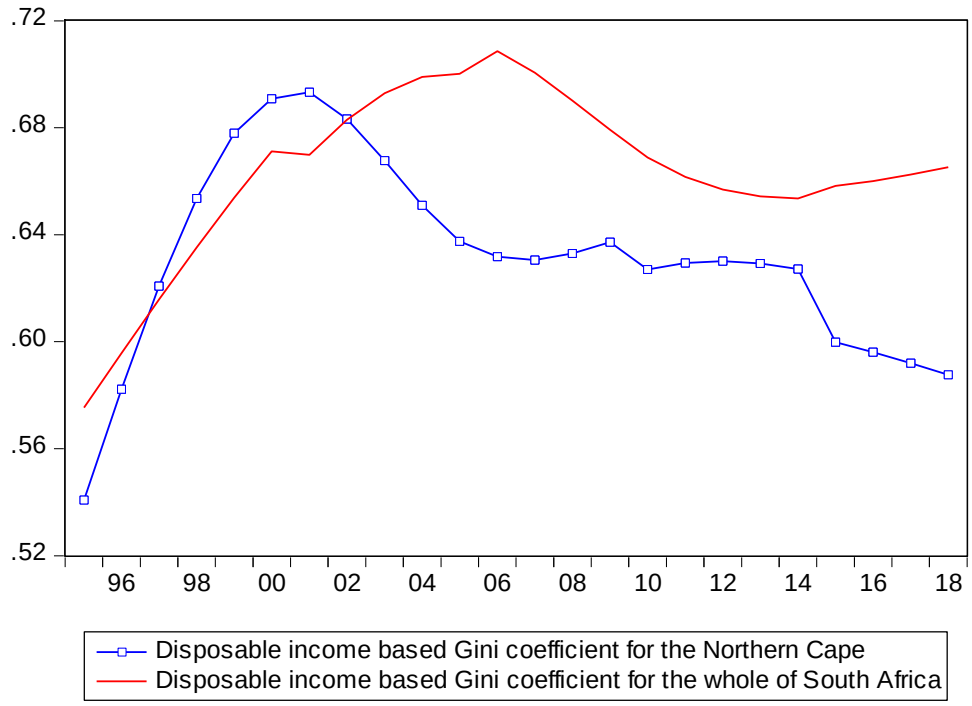
Source: Author's own construction using data from Statistics South Africa (StatsSA, 2020a; 2020b)

According to Northern Cape Provincial Government (2018) based on IHS Markit 2018 data, between 2015 and 2016, the sectors that contributed to provincial growth were the tertiary sector, community services and the primary sector, with the mining sector contributing the largest portion. Furthermore, it suggests that the negative growth experienced in 2016 was due to the negative growth rates in mining and agriculture. The industries that experienced growth were construction, finance, manufacturing and community services.

Figure 2.13 shows the Gini coefficient for Northern Cape and for the country from 1995 to 2018. Between 1998 and 2001 the Northern Cape had a Gini coefficient averaging between 0.65 and 0.69 which was higher than the national Gini coefficient of between 0.63 and 0.67. The unequal distribution of income in the province started falling from 2002 to 0.68, with that of the country increasing excessively from 2002 to above 0.79

(Quantec, 2020). The IES/LFS (2000) and PROVIDE (2005h) identified income from labour, gross operating surplus and transfers from households as the sources of income inequality in the province. This also applies across the provinces of South Africa that income from labour is considered the main driver of income inequality in South Africa. This is because there are inequalities in income distribution in the labour market, where high income is distributed to highly skilled people working in sectors like manufacturing and technology whereas low income is paid to those working in the agricultural sector. The differences in income widen the gap. Due to the history of South Africa, where races were treated differently, the country is still trying to correct the imbalance of the past. However, after twenty-five years of democracy, the country is still embedded with inequalities in land and capital ownership, which encourages the persistent increase in income inequality.

Figure 2. 13: National and provincial (Northern Cape) disposable income based Gini coefficient, 1995-2018



Source: Author's own construction using data from Quantec (EasyData), 2020

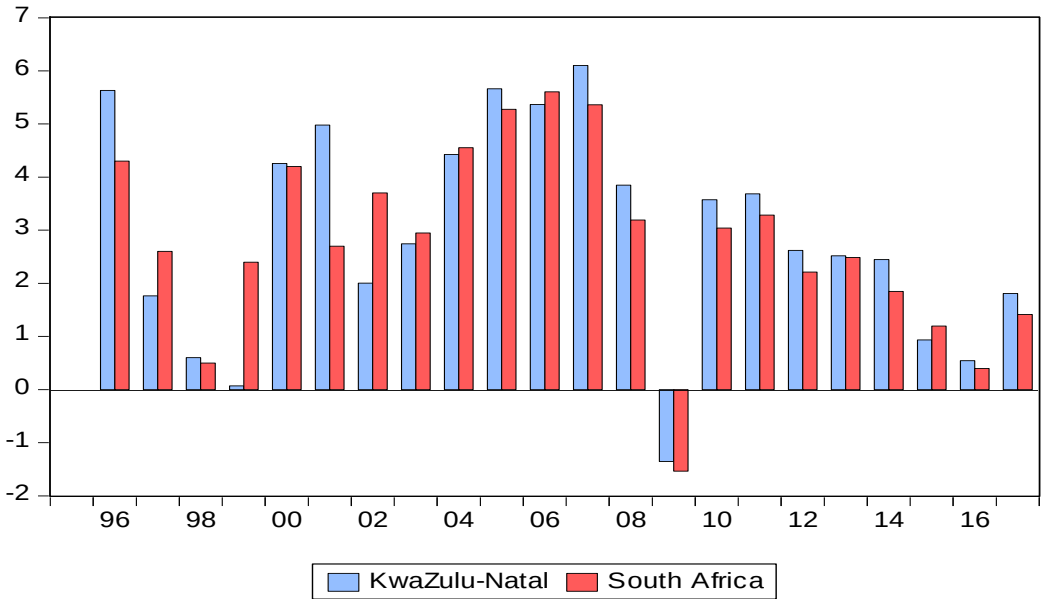
2.4.6 KwaZulu-Natal

The province of KwaZulu-Natal (KZN) is one of the largest provinces in South Africa. According to the 2011 National Census, it housed 19.8% of South Africa's population (StatsSA, 2011). Currently, almost a decade later, the province is home to 19.2% of South Africa's population and now it is the second largest province after Gauteng province (PROVIDE, 2005c; Western Cape Provincial Government, 2019). In terms of current income, the province was the third richest in the country and in terms of per capita it ranked the fourth (PROVIDE, 2005c). This means that while its population was technically well off, people on the ground were still affected by high income inequality, unemployment and poverty. The study by Leibbrandt and Woolard (2001) notes that labour market activities contribute to the movements into and off poverty in KZN province.

The main driver of economic growth in the province is eThekwini metro, that contributes about 61% to real GDP that is attributable to economic activities such as tourism, the sugar refinery industry, and harbour ports. The other districts such as uMgungundlovu and King Cetshwayo contribute about 10.5% and 6.9% respectively (KwaZulu-Natal Provincial Government, 2019). The KZN province ranked as the second largest economic hub in terms of its contribution to GDP growth in South Africa.

Figure 2.14 shows the real GDP growth rates of KZN and that of the rest of South Africa from 1995 to 2017. As shown in Figure 2.14, the province had a good trend of economic growth since 1996 until 2009, when the province had a fall in economic growth of 1.4%. Between 2010 and 2011 the province saw a recovery in economic growth where it grew by 3.6% to 3.7% in 2010. However, the province had a persistent fall in economic growth since 2012 where it recorded a 2.6% growth rate. The provincial economy grew slightly by a seasonally-adjusted 1.8% in 2017, which was a slight improvement from 0.5% growth in 2016. This improvement in growth was due to favourable weather conditions that increased production in the agricultural sector, which contributed to real GDP growth. However, the growth experienced was less than expected by the provincial growth and development plan made in 2018. This sluggish growth constrained employment creation opportunities, poverty and income inequality reduction (KwaZulu-Natal Provincial Government, 2019).

Figure 2. 14: Annual percentage change of real GDP of KwaZulu-Natal and South Africa at market prices (constant 2010 prices), 1995-2017



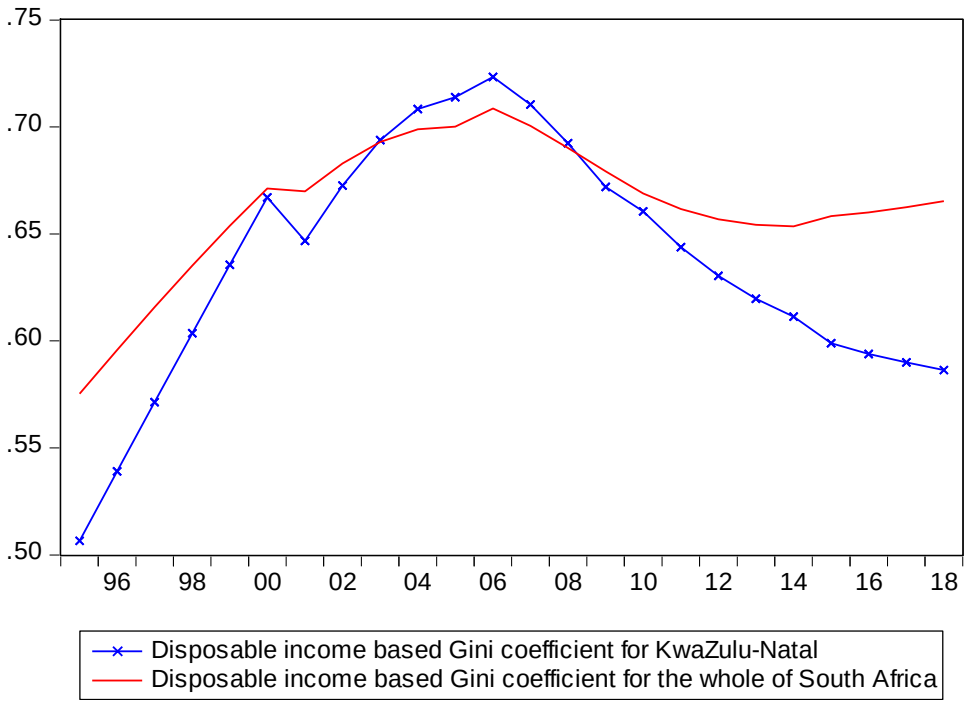
Source: Author's own construction using data from Statistics South Africa (StatsSA, 2020a; 2020b)

Regarding income distribution, the province has shown volatile movement. The shortage of skills among people, especially those who have no matric-level education, contributes greatly to increasing unemployment. The province is experiencing a problem in achieving economic growth that will be enough to create employment opportunities. The province was one of the seven provinces that recorded an employment increase of 13,000 people, following the provinces of Gauteng with 86,000, Free State with 33,000 and Western Cape with 26,000 additional employed people. Provinces such as Eastern Cape and North West, recorded the highest employment losses during the same period, at 15,000 and 6,000 jobs lost (StatsSA, 2018). The employment creation capacity of the province looks bleak, in order to keep up with the ever-growing labour force due to a slow growing economy and hence the province is also experiencing worrying unemployment (KwaZulu-Natal Provincial Government, 2019). Despite the rise in employment numbers, income inequality is extremely high in the KZN. Furthermore, IES/LFS (2000) and PROVIDE (2005h) identified income from labour, gross operating surplus and transfers from households as the sources of income inequality in the province. This is because there are inequalities in income distribution in the labour market, as high income is paid to highly

skilled people working in sectors like manufacturing and technology and low income is paid those working in the agricultural sector.

Against the above background, the province of KZN has had the highest increase in income inequality between 2004 and 2007. Figure 2.15 shows disposable income based Gini coefficient for KZN and for the country from 1995 to 2018. As shown in Figure 2.15, the Gini coefficient of KZN increased over time since 1995 and exceeded that of the national level between 2004 and 2006, with the Gini coefficient above 0.70. However, from 2006, the Gini coefficient started to fall below that of the country, reaching a low level of 0.59 in 2018. The rise in employment might have influenced income inequality to fall. This implies that achieving inclusive growth that creates employment opportunities has an impact on reducing income inequality.

Figure 2. 15: National and provincial (KwaZulu-Natal) disposable income based Gini coefficient, 1995-2018



Source: Author's own construction using data from Quantec (EasyData), 2020

2.4.7 Limpopo

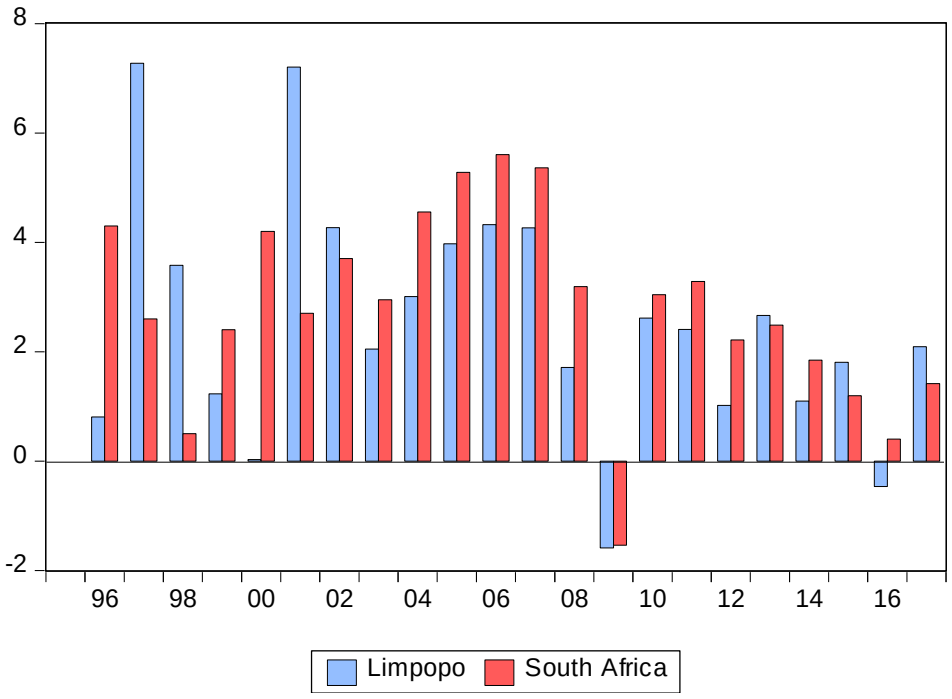
In 2009, the province was home to 5.7 million of South Africa's population (PROVIDE, 2009b). Based on the 2011 Census the population had declined to 5.4 million (StatsSA, 2011). Now, according to more recent statistics, the province is home to 5.983 million people, which represents about 10.2% of South Africa's population (Western Cape Provincial Government, 2019). The economy of the Limpopo province is the sixth largest in South Africa, with a GDP value of R224 million. The provincial economy is made up of five districts, namely Mopani, Vhembe, Capricorn, Waterberg and Sekhukhune. Three of these districts (namely, Capricorn, Mopani and Waterberg) have a high rate of human development and large economies as more economic activities are concentrated in these districts. However, when compared to other provinces, Limpopo has the lowest human development as it is characterised by rural areas. The province has low diversification in economic activities as the majority of economic activities are reliant on the mining sector, with the lowest manufacturing and industrial activities among all the provinces. This means that the economic performance of the province is driven primarily by the mining sector (Limpopo Provincial Government, 2019).

Therefore, economic performance in the province is explained by growth in the mining sector, which is the main driver of economic growth in Limpopo. In 2016, it contributed 28% to GDP, followed by community services that contributed 24%, and the finance and trade sectors with a contribution of 15% to GDP. The least contributing sectors to GDP were transport at 5%, electricity at 5%, construction at 3%, manufacturing at 3% and agriculture at 2%. Furthermore, in 2016, the mining sector drastically declined by 5.9%, contributing to a 1.6% fall in GDP growth in Limpopo in the same year. To improve economic performance, the province should venture into diversifying its economic activities to avoid an economic stand-still when the mining sector is affected by both internal and external shocks (Limpopo Provincial Government, 2018).

Figure 2.16 presents the real GDP growth rates of Limpopo province and that of the rest of South Africa from 1995 to 2017. Since 1996, the provincial economy had periods of growth until 2009 where the province recorded a fall in economic growth of 1.6%. This was due to the 2008/9 global financial crisis that affected both national and

regional economies, which resulted in a fall in economic activity in the whole country. In 2010, economic growth in the province recovered to 2.6%, due to the 2010 FIFA Soccer World Cup tournament that took place in South Africa which resulted in an increase in economic activities. The growth in Limpopo was also due to the growth in economic activities in some of the sectors (such as tourism). The provincial economy continued to experience growth until 2016, where it declined to -0.5%. The fall in growth was due to unfavourable agricultural conditions caused by extreme drought conditions in 2016, that affected agricultural outputs. Furthermore, a fall in commodity prices, the miners' strike experienced in 2015 also affected the economic growth of the Limpopo economy.

Figure 2. 16: Annual percentage change of real GDP of Limpopo and South Africa at market prices (constant 2010 prices), 1995-2017

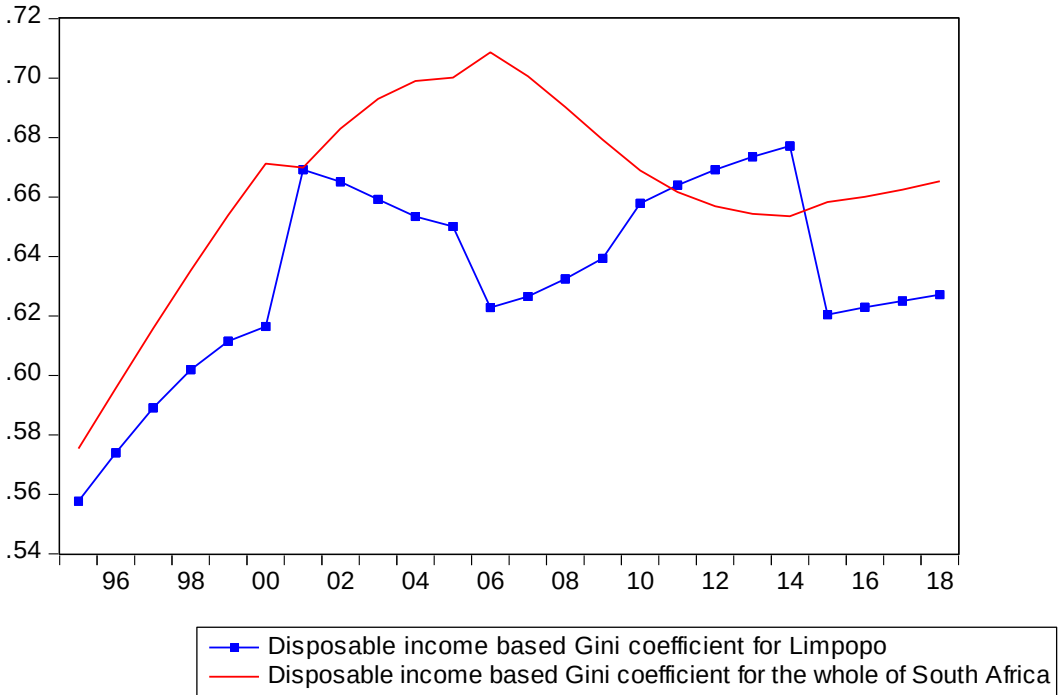


Source: Author's own construction using data from Statistics South Africa (StatsSA, 2020a; 2020b)

Figure 2.17 presents the Gini coefficient for Limpopo province and the national level from 1995 to 2018. From 1995 to 2011, the provincial Gini coefficient remained below the Gini coefficient of South Africa, which shows low inequality in the province compared to the rest of South Africa. However, from 2012 to 2014, the provincial Gini coefficient increased to 0.67, which was above the national average of 0.65. In 2017,

the province recorded a low Gini coefficient of 0.63, which was lower by 0.03 points, compared to the national coefficient of 0.66. However, the 0.60 is still a high coefficient. According to the Limpopo Provincial Government (2018), the race groups that have the highest Gini coefficients are Africans and Coloureds at 0.58 and 0.56, respectively, while the White and Asian groups have relatively lower Gini coefficients of 0.44 and 0.48, respectively.

Figure 2. 17: National and provincial (Limpopo) disposable income based Gini coefficient, 1995-2018



Source: Author's own construction using data from Quantec (EasyData), 2020

2.4.8 Mpumalanga

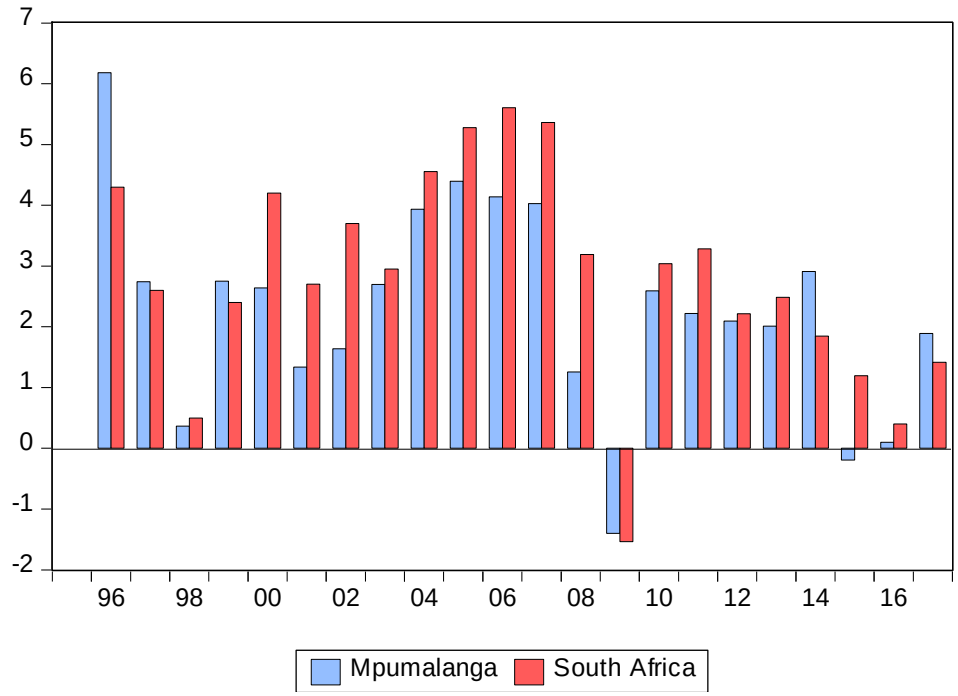
Based on the National Census of 2011 (StatsSA, 2011), the Mpumalanga province was home to 7.8 % of South Africa's population. Currently, the province is home to 7.8% of South Africa's population (Western Cape Provincial Government, 2019). According to the current income measures, the province has the fifth lowest income and the fourth lowest per capita income (PROVIDE, 2005d; StatsSA, 2011).

The economy of Mpumalanga is derived from mining minerals like coal used by Eskom to generate electricity. It experienced positive returns during the increase in commodity

prices between 2003 and 2011. The economy is also supported by commercial agricultural activities. The industry has driven growth in this province since 2011 until 2016, when the sector contracted due to extreme drought conditions that hit the whole of South Africa. In 2014, 40% of the provincial outputs came from agriculture, mining, manufacturing and construction. It contributed 22% to national mining, 8% to national manufacturing, 9% to the national agricultural sector and 6% to national construction sectors. This shows that each province has an important role to play in the growth of its country (TIPS, 2016c). Over the years, the economy of Mpumalanga has not grown as required, and income inequality remained at 0.61 between 2014 and 2017 (Mpumalanga Provincial Government, 2018).

Figure 2.18 shows the real GDP growth rates of Mpumalanga and that of the rest of South Africa from 1995 to 2017. As seen in Figure 2.18, since 1996, Mpumalanga experienced economic growth above 6% which slightly increased at a decreasing rate from 1997 to 1998. This was due to the political transition that took place in 1994 when South Africa had its first democratic elections. From 2000 until 2008, the province experienced an upward trend in economic growth. Between 2004 and 2007, the economy grew by 4.1% on average. In 2009, there was a drastic decline in the provincial growth rate to a low of -1.4%. This decline was mostly attributed to the global financial crisis that affected the whole country. Thereafter, economic growth recovered and remained on an upward trend until 2014 after which economic growth fell to -0.2% in 2015. It recovered slightly again to 0.1% in 2016 and to 1.9% in 2017. This decline was attributed to the extreme drought conditions that affected agricultural outputs and caused a decline in contributions to growth by the agricultural sector.

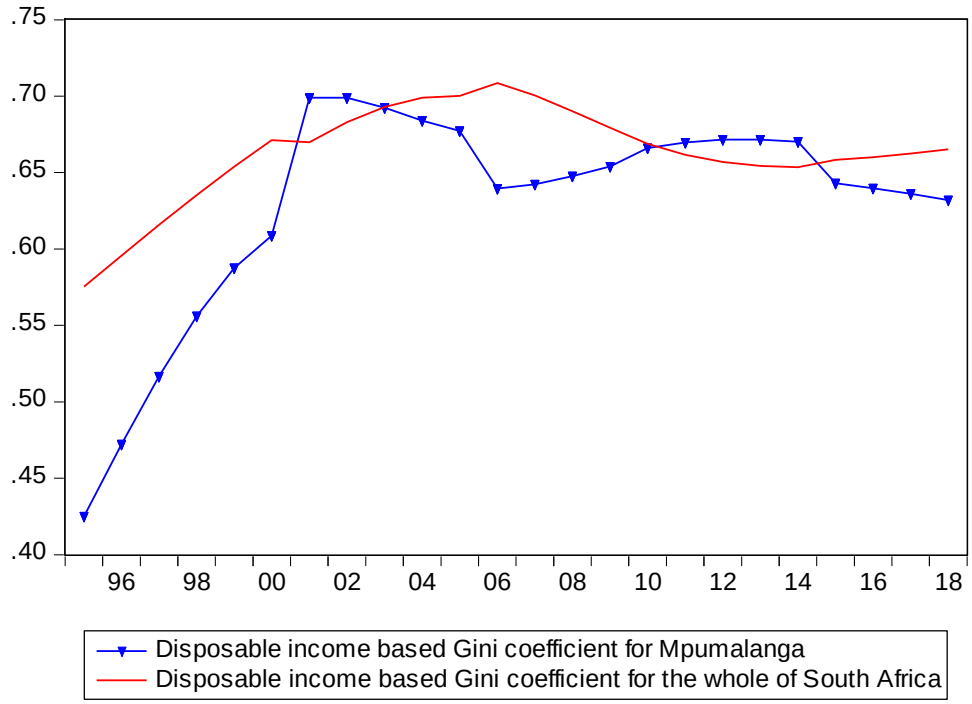
Figure 2. 18: Annual percentage change of real GDP of Mpumalanga and South Africa at market prices (constant 2010 prices), 1995-2017



Source: Author's own construction using data from Statistics South Africa (StatsSA, 2020a; 2020b)

Due to the political transition, redistribution through transfers reduced poverty at some level, but the transfers did not have a great effect on income inequality. Furthermore, analyses done on Mpumalanga show that income inequality is originated primarily by the labour markets (Mpumalanga Provincial Government, 2011). Figure 2.19 shows the Gini coefficient of Mpumalanga and that of the national level from 1995 to 2018. As shown in Figure 2.19, Mpumalanga had a volatile trend of income inequality compared to the national level. Since 1995, the provincial income inequality gap has steadily increased, reaching a coefficient of 0.70 in 2001 and 2002, which was above the national coefficient of 0.67 and 0.68, respectively. The income inequality gap averaged 0.66 which was below the national coefficient that averaged 0.70 between 2004 and 2007. However, between 2012 and 2014, inequality increased rapidly with an average 0.67, which is above the national average of 0.65 during the same period.

Figure 2. 19: National and provincial (Mpumalanga) disposable income based Gini coefficient, 1995-2018



Source: Author's own construction using data from Quantec (EasyData), 2020

2.4.9 Free State

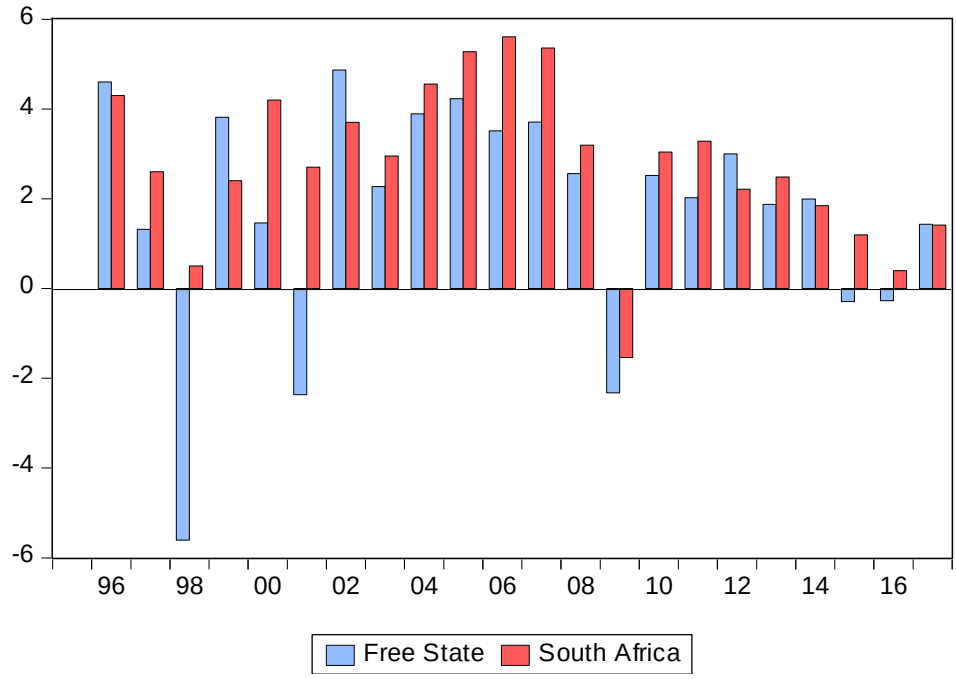
Based on the National Census of 2011 (StatsSA, 2011), the province was home to 5.3% of South Africa's population. Eight years later, the province is home to 4.9% of South Africa's population (Western Cape Provincial Government, 2019). The province is experiencing high rates of unemployment and poverty that are even higher than the rest of the country with diversities in population groups (PROVIDE, 2005b; OECD, 2011b).

In the Free State, there is a skills mismatch between labour demand and supply created by higher education and training that constrains employment creation. Thus, it results in a high unemployment rate in the province and hence constrained economic growth (OECD, 2011b). The economy of the Free State is driven by mining, agriculture and limited economic activity in manufacturing and construction. However, over the years, there has been a fall in mining which slowed growth as outputs declined and

unemployment increased in the province. In 2014, the largest contributor to provincial economy was the mining sector at 11%, followed by the manufacturing sector at 9%, the agricultural sector at 4% and the construction sector at 3%. The overall contribution made by the economic sectors of the Free State to economic outputs at national level was, agriculture at 10%, mining at 7%, manufacturing at 4% and construction at 3.5% (TIPS, 2016b).

The economic growth for Free State has been bleak. The provincial economy was growing lower than the average national growth rate of 2.1% between 2011 and 2015. In 2016, the province experienced a decline in economic growth and entered a recession due to agricultural shocks (drought) that affected the agricultural outputs at provincial and at national level. However, some commodities like gold, coal and manufacturing boosted the provincial economy slightly (TIPS, 2016b). Figure 2.20 presents the real GDP for the Free State and the rest of the country for the period from 1995 to 2017. The province experienced growth over the years that was accompanied by five periods of decline in economic growth, which were 1998, 2001, 2009, 2015 and 2016. The periods of negative growth were due to various economic factors, such as structural changes since South Africa transitioned to democracy in 1994, the 2008/2009 global financial crisis that negatively affected the whole country, resulting in the economy entering a recession, and the unfavourable agricultural conditions due to drought that caused a fall in outputs in the agricultural sector (SAHO, 1994a; 1994b). Economic activity picked up in 2010 resulting in a rapid economic recovery in the Free State and in the rest of the country. The boost in economic activity came with the FIFA World Cup tournament held in South Africa, resulting in an inflow of capital from the various sectors into the economy.

Figure 2. 20: Annual percentage change of real GDP of Free State and South Africa at market prices (constant 2010 prices), 1995-2017



Source: Author's own construction using data from Statistics South Africa (StatsSA, 2020a; 2020b)

Figure 2.21 presents the Gini coefficient of the Free State and that of South Africa. It is evident that from 2000 income inequality of the province has been lower than the national inequality, with two consecutive periods of extreme inequality. Between 1995 and 2000, provincial inequality mirrored that of the rest of the country and increased above the national level, reaching an average of 0.68 between 1999 and 2000. It remained above 0.65 until 2009 with income inequality of 0.67, after which the income inequality gap developed a decreasing trend until 2018 with an income inequality gap of 0.59. Even though the Gini coefficient is slightly below 0.60, 0.59 is still a high coefficient.

Figure 2. 21: National and provincial (Free State) disposable income based Gini coefficient, 1995-2018

Source: Author's own construction using data from Quantec (Easy Data), 2020

2.5 Conclusion

This chapter discussed income inequality and growth in South Africa at national level and further disaggregated into provincial level. In section 2.2, the chapter discussed in detail the concept of income inequality in the context of South Africa, considering factors that cause income inequality in South Africa. Furthermore, it discussed the impact of income inequality on the economy and the South African society at large. In this section it was found that although inequality is a legacy of apartheid, recently, it has changed its nature where income inequality is increased by intra-racial inequality rather than between racial groups. It further noted that there are four factors causing a persistent increase in income inequality, namely labour markets, wage inequality, sectoral differences in income, and labour unions. Therefore, policies to be formulated and implemented should be aimed at addressing these factors.

Section 2.3 presented the analysis of economic growth trends that showed the growth and development of the country since its liberation. The section further discussed the key sectors that are the engines of economic growth and how these sectors contribute to the overall GDP growth of the country. Section 2.4 traced the origin of income inequality in the nine provinces of South Africa. In this section, it was acknowledged that inequality is the legacy of apartheid. In addition, it elaborated that income inequality across the provinces is caused by income from labour, gross operating surplus and transfers from households. As a result, income from labour (wages and salaries), is considered the main driver of income inequality in South Africa. Furthermore, the chapter considered the skills mismatch that increases income inequality. It also noted that as the tertiary sector grows in several provinces, it requires skilled labour that consequently leads to increasing shortage of skills and hence increases the need for higher income in the labour market.

CHAPTER THREE
THE RELATIONSHIP BETWEEN INCOME INEQUALITY AND ECONOMIC GROWTH: REVIEW OF THEORETICAL AND EMPIRICAL LITERATURE

3.1 Introduction

This chapter provides a discussion of the relevant literature concerning the relationship between income inequality and economic growth. This chapter critically explores what has already been done theoretically and empirically. Section 3.2 reviews the theoretical framework on income inequality and economic growth. This section is split into two sub-sections. Firstly, a discussion on economic growth theory follows. Secondly, the section provides a theoretical review of the linkage between income inequality and economic growth. In addition, section 3.3 provides a review of empirical evidence concerning the link between income inequality and economic growth in developed and developing countries. Section 3.3 is divided into four sub-sections that represent the evidence based on results of the studies, and the last sub-section reviews studies done in South Africa. Lastly, section 3.4 provides a conclusion to the chapter.

3.2 The relationship between income inequality and economic growth: The theory

3.2.1 Economic growth: The theoretical framework

The development of a country rests on how it grows economically because it is vital for every country. Economic growth is one of the macroeconomic objectives that South Africa aims to achieve and a major policy issue for policy makers. Economic growth is determined by various factors supported by different theoretical underpinnings, due to lack of agreement in general theory concerning the process of economic growth (see, Artelaris et al., 2007; Arvanitidis et al., 2007). For example, the Solow-neoclassical theory of economic growth, which is based on the Solow growth model was introduced in 1956 (Solow, 1956). The theory advocates that growth is a result of physical capital (investment), this implies that technological improvement results in a steady growth. The model assumes constant returns to scale, diminishing marginal productivity of capital and technological progress that is determined exogenously (Solow, 1956; Artelaris et al., 2007). This model is based on a production function that asserts that

an increase in the outputs of an economy can be attributed to the following factors: an increase in inputs (labour and capital) used in the production process, technological improvement that encourages productivity using the same amount of inputs, and a driver of economic growth in the long run (Snowdon and Vane, 2005).

On the other hand, the endogenous growth theory emerged, which assumes that there are constant returns to capital accumulation, and technological improvement is determined endogenously. This theory treated technological progress as an endogenous variable to the growth model, meaning that technological change had a direct impact on growth as it is one of the channels that could result in growth. This theory further emphasises that improvement of human capital through knowledge and skills training results in sustainable growth (see, Romer, 1986; Lucas, 1988; Palley, 2003; Snowdon and Vane, 2005). Following the theoretical framework of endogenous growth, studies by Barro (1990), Romer (1990), Grossman and Helpman (1991), and Aghion and Howitt (1992) identified public infrastructure, new knowledge, and innovation as the sources of economic growth.

Additionally, Dixit (2004) and Acemoglu et al. (2005) suggest that institutional factors are the drivers of economic growth. These institutional factors are related to how societies and the economy interact. This is because the quality of institutions enables efficient allocation of resources and improves effectual decision making which will eventually increase growth in the long run. The institution's role is to consider the following factors: ensure property rights protection, enforce contracts, decide how legal systems can be implemented and be made effective, ensure quality regulation, implement governance transparency and corruption control (Sala-i-Martin, 2002; Mbulawa, 2015).

In addition to the economic factors that affect growth, other theoretical frameworks found that there are also non-economic factors that influence economic growth. These are proximate and fundamental sources of economic growth. Proximate sources of growth refer to the accumulation of physical and human capital, technological change and other variables that influence productivity of these inputs. Fundamental sources of growth refer to variables that influence the country's capacity to accumulate factors

of production. For example, the political and social environment, the financial sector, and population growth (Snowdon and Vane, 2005; Artelaris et al., 2007).

3.2.2 Theoretical review of the linkage between income inequality and economic growth

This section critically discusses the theoretical literature on income inequality and economic growth. A large number of theories have emerged to explore how income inequality influences economic growth. The existing literature has identified the following variables as channels through which income inequality affects economic growth:

i) Development stage

The pioneering study of Kuznets (1955) discussed the inequality-growth nexus, where he pointed out that the relationship between inequality and growth depends on the stage of economic development. At early stages of development, inequality is high because labour shifts from the agricultural sector to other industries in the market. This shift will increase per capita income of the individual moving to the other industry, while those in the agricultural sector will be earning low wages. At later stages of development, inequality is low because the wage rate will increase as more labour moves from the agricultural sector to other industries since there is a low supply of labour and probably higher demand for labour. Kuznets (1955) describes the relationship between inequality and economic growth as the inverted U-hypothesis. The hypothesis implies that inequality first rises at the early stage of development and eventually falls at the later stage of economic development.

ii) Sectoral change

Ravallion (1997) and Kanbur (2005) suggest that the relationship between economic growth and income inequality is negative. As an economy develops, more people move from the agricultural sector to the industrial sector. As a result, the wage rate increases as the supply of labour falls in the agricultural sector, meaning that workers in both sectors will earn high income. Therefore, high economic growth results in a fall in income inequality.

iii) Technological advancement

In addition to sectoral change, Galor and Tsiddon (1997a), Helpman (1997) and Aghion et al. (1998) observe that inequality depends on the technological stage of development when the invention of technology is introduced into the economy. They argue that the poor sectors may be using old technology. The mobility for industries to move from old to new technology requires training for workers to be familiar with the new technology. As a result, technological innovation such as computers and advanced machines tend to increase inequality. This is because few people will get a share of the high per capita income in the technologically advanced sector, while others receive low income in the sector that uses old technology.

This implies that at the early stage of technological development (which contributes to economic growth and development) income inequality increases. The more people acquire the necessary training and skills and move to the technologically advanced sector, inequality tends to increase. However, at a later stage of technological development income inequality tends to fall. Those who remain in the agricultural sector with old technology will have an increase in per capita income as labour and other resources are moving to the advanced technological sector. Therefore, inequality depends on the technological stage of development when the invention of technology (that will increase productivity and the capacity of firms to produce) is introduced into the economy.

In addition, the influence of technology on income inequality and economic growth is explored further by looking into the fourth industrial revolution (4IR) as one of the factors through which the income inequality gap is widen and affects growth. The 4IR refers to the changes in how business and production processes are to run, as it comes with highly advanced technology. The 4IR has effects that could be harmful to economic growth, increase inequality and employment in the long run. It causes a fall in the number of repetitive low- and medium-term jobs. Therefore, those who work in customer services, sales, and clerical work will be badly affected as their jobs may be replaced by machines. Furthermore, it increases demand and income for highly-skilled workers, while demand and income for unskilled and semi-skilled workers decrease (Kuzmenko, 2017).

A study by Krueger (1993) states that technological improvement influences income distribution and it increases the income inequality gap between the skilled and the unskilled. Additionally, Acemoglu (2002) argues that technological improvement is skill-biased as it raises the demand for capital labour and discourages human labour due to the automated technology used, hence the increase in income inequality and unemployment.

iv) Credit markets imperfection

The credit market is a financial market where participants can issue new securities and previously-owned securities. This market has some imperfection because of asymmetric information, where both the lender and borrower do not have enough information about each other to make informed decisions. Due to limited ability to borrow, the rate of return on investment is not equal. For example, because of imperfect law, it may be difficult for creditors to collect defaulted loans and the collection of defaulted loans may also be constrained by bankruptcy law that protects the assets of the debtor, which hinders the collection of debt. This will limit access to credit for some individuals and as a result, investment opportunity will depend on the individual's level of income and assets. Poor households will forego investment opportunities that have high returns, such as human capital investment, as the income they have can only support their homes. In this case, high inequality reduces investment, leading to a decrease in productivity, hence a decline in economic growth. Therefore, a redistribution of income and assets from rich to poor will increase investment and enhance economic growth (see, Galor and Zeira, 1993; Piketty, 1997).

v) Political economy

Political economy models show that if the mean income in the economy is more than the median voter, people will tend to favour a redistribution of resources from the rich to the poor. The redistribution of the resources may be through large transfer payments and public expenditure, like education. Such redistribution is not good for economic decisions, as it results in a decline in investment and innovation, and it retards economic growth in the long run (Perotti, 1993; Alesina and Rodrik, 1994; Barro, 2000). Higher inequality results in people demanding more redistribution, which reduces economic growth. Inequality may have a negative effect on growth, even if there is no transfer of resources. This occurs when the rich try to prevent the

redistribution through lobbying, resulting in the consumption of resources and the promotion of corruption, which retards economic performance (Perotti, 1993; Persson and Tabellini, 1994; Panizza, 2002; Banerjee and Duflo, 2003).

vi) Socio-political unrest

Higher inequality causes the majority voting system to favour redistribution from the rich to the poor, which will reduce the income of the rich. The rich will try to prevent the redistribution by rent-seeking, lobbying and promoting corruption by buying votes which will increase the inequality of income and wealth even further. A rise in wealth and income inequality encourages the poor to engage in criminal activities, riots and other activities that are disruptive, as in the case of South Africa. The revolutions that occur threaten political stability, causing great uncertainty on the governance of the country. These disruptive activities result in the direct wastage of resources, as the protesting people are usually not involved in productive activities, hence productivity will decline as a result. In this case, inequality results in low investment, low productivity and hence low economic growth (see, Venieris and Gupta, 1986; Benhabib and Rustichini, 1996; Barro, 2000; Iyke and Ho, 2017).

However, higher inequality can also have a positive impact on growth. Self-interested politicians and leaders will be in favour of redistribution (that is, the transfer of amounts of payment) from the rich to the poor, as this will result in a fall in crime, riots and political instability. This would provide social safety nets for the society and the government (this would restore the society's faith in the government). Therefore, uncertainty will diminish and as a result investment will increase, more people will be involved in productive activities, that will mean less wastage of resources, high productivity and hence a rise in economic growth (Venieris and Gupta, 1986; Benhabib and Rustichini, 1996).

vii) Savings

The savings rate depends on the level of income, that is, if income increases, the rate of savings increases as well and if income falls, savings decrease. Therefore, the savings rate of the rich is higher than the poor due to the higher income they hold. The redistribution of resources, wealth and income from the rich to the poor will reduce the

savings rate of the rich, which will also reduce the aggregate level of savings in the economy (Shin, 2012). In terms of the belief that the savings rate increases with income, this implies that high inequality increases aggregate savings rates, hence the increase in economic growth (Mirrlees, 1971; Bourguignon, 1981; 1990; Rebelo, 1991; Aghion et al., 1999; Madsen et al., 2018).

viii) Role played by institutions

Institutions are regarded as the key drivers of long-run economic growth. This is because economic institutions influence the outcomes of economic processes (Smith, 1776; Acemoglu et al., 2005; Weil, 2008; Wanjuu and Le Roux, 2017). Institutions influence economic growth by determining the incentives for key economic participants in the economy (Easterly, 2008). These incentives, influenced by institutions, include investing in physical and human capital, technological progress, and organised production (Acemoglu et al., 2005). Furthermore, economic institutions also influence economic growth through the redistribution of income, wealth and the redistribution of both physical and human capital. This maintains order in the country (less riots and crime) (Wanjuu and Le Roux, 2017). In turn, economic growth leads to good quality institutions, since economic growth influences the standard of living (Valeriani and Peluso, 2011).

On the other hand, Stiglitz (2012) maintains that income inequality results from political issues and economic forces. It is the government that sets and implements public policies that have an impact on distribution outcomes. These outcomes could increase or reduce income inequality. Therefore, policy makers and institutions influence the extent of income inequality and economic performance. Furthermore, Hoff and Stiglitz (2004) and Sonin (2003) assert that an equal redistribution of income and resources promotes good institutions, whereas the low-quality institutions (that experience rent seeking, lobbying and bureaucratic behaviour) result in wastage of resources and perpetuates unequal distribution. As a result, an unequal distribution of income may be detrimental to long run economic growth (see, for example, Alesina and Rodrik, 1994; Persson and Tabellini, 1994; Deininger and Squire, 1998; Sylwester, 2000; Ivaschenko, 2002). Studies suggest that good quality institutions are prone to low inequality because the redistribution of income, wealth and other resources is taking

place, and hence increase in economic activity and productivity that will result in economic growth.

3.3 Empirical evidence

Due to the persistent and continuous increasing income inequality since the 1950s, the impact of income inequality on economic growth and development has been a continuous debate among researchers, resulting in a large number of empirical studies that analysed this relationship. This section reviews relevant empirical evidence found on the association between income inequality and economic growth in both developed and developing countries. The empirical studies seek to confirm the validity of the theory that suggests that there is a relationship between income inequality and economic growth in South Africa, and across countries. Due to the lack of a theory that is unified where all researchers agree, availability of data, and methodology used, the existing literature offers different results. There are four different views on the relationship between these two variables. Some studies found that income inequality is negatively correlated with economic growth, while other studies found a positive correlation. Yet other studies yielded inconclusive results. In addition, a few studies focused on the causality between income inequality and growth. These studies found a uni-directional causality, while others found a bidirectional causality between income inequality and economic growth.

3.3.1 Studies with negative results on the relationship between income inequality and economic growth

The study conducted by Alesina and Rodrik (1994) investigated the relationship between distributive politics and economic growth in a cross-country study, including 46 countries, from 1960 to 1985. The study employed the ordinary least squares (OLS) and two-stage least squares (2SLS) methods and found a negative relationship between income inequality and economic growth – that is, greater income inequality results in low growth.

Persson and Tabellini (1994) investigated the impact of inequality on growth using ordinary least squares (OLS) and two-stage least squares (2SLS) from 1960 to 1985 in 56 countries across the world. The study found that income inequality has a

significant negative growth impact and it results in policies that do not protect property rights and limits returns of private appropriation.

Perotti (1996) investigated the relationship between income distribution, democratic institutions and growth in 67 countries, using cross-sectional data for the period from 1960 to 1985 using ordinary least squares (OLS) and two-stage least squares (2SLS). Firstly, the findings revealed that countries with low inequality are prone to have high rates of investment in human capital and hence higher rates of economic growth. Secondly, countries with high inequality are prone to political and social instability that results in uncertainty and low rates of investment and therefore, low economic growth.

Birdsall and Londono (1997) reassessed the World Bank's approach to poverty reduction by focusing on the impact of asset inequality on the approach in 43 countries from 1960 to 1992. The study employed ordinary least squares (OLS). Their findings show that an unequal distribution of assets (human capital) negatively affects the income of the poor and also affects the overall economic growth, while a fair distribution of assets increases the income of the poor and therefore, reduces poverty. Furthermore, the study found that reducing the negative impact of income inequality on economic growth will in turn raise aggregate growth and decrease poverty. Overall, the study found that high income inequality is negatively related to long-term economic growth.

Deininger and Squire (1998) explored the interaction between inequality (income and asset distribution) and growth and how changes in both variables affect poverty reduction using cross-country samples from 1960 to 1992. Based on their data, they found that income inequality is not a strong determinant of long-term growth, and that asset inequality (e.g. land distribution) is a robust determinant of all samples. By employing ordinary least squares, the study found several results. Firstly, they found a negative relationship between inequality in asset distribution and future growth. Secondly, high inequality negatively affects the income of the poor, while that of the rich continues to increase. Lastly, the results found less support for the Kuznets hypothesis, due to the data used.

Castelló and Doménech (2002) explored the impact of human capital inequality on economic growth, using a broad panel of countries from 1960 to 2000. By employing ordinary least squares, the study had two major results. Firstly, they found that human capital inequality has decreased over time across countries, and that the population in the countries under study are gaining skills and knowledge, hence the improvement in human capital equality. Secondly, the inclusion of regional dummies causes the negative impact of income inequality on growth to be less robust, while the data showed that human capital inequality has a negative effect on growth rates. The overall findings of the study suggest that education inequality results in low investment and lower growth of income.

Panizza (2002) reassessed the relationship between income inequality and economic growth in America from 1940 to 1980, using both standard fixed effect (FE) and the generalised method of moments (GMM) estimation. The study found a negative relationship between income inequality and economic growth. Secondly, the results revealed that the relationship between income inequality and growth in America does not respond strongly to changes in the data.

Cingano (2014) explored the impact of income inequality on growth in OECD (Organisation for Economic Co-operation and Development) countries during the period from 1980 to 2012, using the generalised method of moments (GMM) estimation technique. The study found a significant negative impact of income inequality on economic growth in the OECD countries. The study further found that human capital is the channel through which income inequality affects economic growth.

Iyke and Ho (2017) investigated the relation between income inequality and growth in Italy during the period 1967 to 2012. The study employed the autoregressive distributed lag (ARDL) model. The study found that both in the short run and the long run, income inequality affects economic growth negatively. Overall, the results proved that income inequality retards economic growth in the country.

In addition to studies that examined the relationship between income inequality and growth, few studies focused on the causality between these two variables. For

instance, Vo et al. (2019) analysed the link between income inequality and economic growth in middle-income countries over the period 1960 to 2014. The study employed the Granger causality test and the generalised method of moments (GMM). The results show a bi-causality effect between income inequality and economic growth during the period of the study in the middle-income countries. Additionally, the study further found a negative effect of income inequality on economic growth in the middle-income countries during the period of the study. Table 3.1 below presents an empirical summary of a negative association between income inequality and economic growth in both developed and developing countries.

Table 3. 1: Summary of studies on negative impact of income inequality on economic growth

Author (s)	Region/country	Measures of income inequality	Method(s) used	Results
Alesina and Rodrik (1994)	46 countries 1960 to 1985	Gini coefficient	OLS; 2SLS	Negative relationship between income inequality and economic growth.
Persson and Tabellini (1994)	56 countries 1960 to1985	Share of the fourth quintile	OLS; 2SLS	Significant negative impact of income inequality on growth.
Perotti (1996)	67 countries 1960 to1985	Share of third and fourth quintiles	OLS; 2SLS	Income inequality is negatively associated with growth.
Birdsall and Londono (1997)	43 countries 1960 to1992	Gini coefficient	OLS	Income inequality negatively affects economic growth.
Deininger and Squire (1998)	66 countries 1960 to1992	Gini coefficient Coefficient; land distribution	OLS	Inequality in asset distribution negatively affects long-term growth. Extreme inequality negatively affects the poor (more than the rich).
Castelló and Doménech (2002)	108 countries 1960 to1990	Gini coefficient	OLS	Income inequality negatively affects growth.
Panizza (2002)	America 1940 to 1980	Gini index	Standard FE; GMM	Income inequality has a negative impact on growth.
Cingano (2014)	OECD countries 1980 to 2012	Gini index	GMM	Income inequality negatively affects economic growth.

Iyke and Ho (2017)	Italy 1967 to 2012	Gini coefficient	ARDL	Income inequality has negative impact on growth both in the short- and long-run.
Vo et al. (2019)	158 middle-income countries 1960 to 2014	Gini coefficient	Granger causality test; GMM	Income inequality has a negative impact on economic growth.

3.3.2 Studies with positive results on the relationship between income inequality and economic growth

In addition to studies that found a negative impact of income inequality on economic growth, some studies found a positive relationship. Partridge (1997) examined whether inequality benefits or is harmful for growth in American states, from 1960 to 1990. Using open-pooled ordinary least squares (OLS), the study found a positive relation between inequality and economic growth in American states. This implies that states with high income inequality experienced an increase in economic growth during that period. Furthermore, the study found that there is a positive relation between the well-being of the median voter and economic growth. This implies that an increase in the standard of living of the population (through redistribution of income and resources), will result in an increase in economic activity and hence, economic growth.

In another study by Li and Zou (1998), the relationship between inequality and growth is re-examined using expanded data from developed and developing countries during the period 1947 to 1994. The study employed fixed effect (FE) and random effect (RE) methods. Based on theoretical review, the study found that income inequality leads to an increase in economic growth. Additionally, empirically the study found that income inequality positively affects economic growth.

Forbes (2000) re-assessed the relationship between inequality and growth in 45 countries, during the period 1966 to 1995, by using the first difference generalised method of moments (GMM) estimation technique. The study challenged the empirical literature that suggests that inequality and growth have a negative relationship with economic growth by using the panel estimation technique. The results show that in both the short-term and the medium-term, an increase in income inequality in a country has a positive relationship with economic growth. Table 3.2 below provides an empirical summary of a positive relationship between income inequality and economic growth, in both developed and developing countries.

Table 3. 2: Summary of studies on positive impact of income inequality on economic growth

Author (s)	Region/country	Measures of income inequality	Method(s) used	Results
Partridge (1997)	American states 1960 to1990	Gini coefficient	Open-pooled OLS	Income inequality has positive impact on economic growth.
Li and Zou (1998)	46 countries 1960 to1990	Gini coefficient	FE; RE	income inequality positively affects growth.
Forbes (2000)	45 (mid-high income) countries 1966 to1995	Gini coefficient	First-difference GMM	Income inequality is positively related to growth in short- and medium-term.

3.3.3 Studies with differential results on the relationship between income inequality and economic growth

In another series of studies, some found inconclusive results on the income inequality-growth nexus, suggesting that the relationship between income inequality and growth differs at the different stages of economic development. For example, Barro (2000) investigated the relationship between inequality and economic growth in a panel of countries from 1965 to 1995, by employing the stage least squares (SLS) technique. The results advocate for a positive relationship between inequality and growth in rich countries, while the study found a negative relationship in poor countries. This implies that high inequality in rich countries (as measured by GDP per capita), results in increased economic growth, and in poor countries (as measured by GDP per capita), high inequality slows down economic growth.

Likewise, Banerjee and Duflo (2003) investigated the relationship between inequality and growth from 1965 to 1995, using the kernel regression, and the Arellano and Bond technique. The results from the kernel regression suggest that high inequality negatively affects growth, while low inequality also negatively affects growth. Furthermore, results from the Arellano and Bond technique suggest that a reduction in inequality has a positive relationship with growth. The robustness of the relationship relies on differences in control variables and the estimation methods used.

Furthermore, by employing the generalised method of moments (GMM) system, Voitchovsky (2005) investigated income distribution's relation with economic growth in 21 developed countries over the period 1975 to 2000. Results from the study revealed that at the upper decile of income distribution, income inequality is positively related to economic growth, while at the lower decile of income distribution, income inequality has a negative effect on economic growth.

Castelló (2010) investigated the impact of income and human capital inequalities on economic growth across several countries from 1990 to 2000. The study employed the system generalised method of moments (GMM) in the estimation of a dynamic panel data that controls for country specific impacts. The findings exhibited that both income and human capital inequalities have a negative impact on economic growth for the low- and middle-income countries. However, in high-income countries, income

and human capital inequalities have positive effects on the economic growth during the period of the study.

Fawaz et al. (2014) investigated the relationship between income inequality and economic growth in relation to credit constraints in high- and low-income developing countries, for the period 1960 to 2010. The study employed the system generalised method of moments (GMM) technique. Results of the study confirmed a negative relationship between income inequality and economic growth in low-income developing countries, while a positive relationship was found in the high-income developing countries.

Halter et al. (2014) introduced a theoretical model that will study the impact of income inequality on economic growth and further investigated the relationship empirically by employing the system generalised method of moments (GMM) and the first difference generalised method of moments (GMM) in 106 countries from 1965 to 2005. Their findings advocate that high inequality improves economic performance in the short run. However, in the long run, high inequality will reduce growth in GDP per capita. That is inequality has a positive impact on growth in the short run, while inequality has negative effects on growth in the long run.

In another study, Ostry et al. (2014) examined the relationship between redistribution, inequality and growth across countries. The study compiled a data set that differentiated between market inequality, and net inequality and also used the data to calculate redistributive transfers for different countries. The study has the following main findings: firstly, societies embedded with high inequality tend to seek more redistribution, therefore it is important to understand market inequality and net inequality to be able to implement the correct policies. Secondly, for a given level of redistribution, low net inequality is strongly related to an increase in economic growth (high inequality has a negative impact on growth). Lastly, in general, redistribution has an insignificant impact on growth. However, when redistribution is extremely high, it may directly affect growth negatively.

Nemati and Raisi (2015) examined the inequality-growth nexus in 28 developing countries during the period 1990 to 2010 by employing ordinary least squares (OLS).

They found that per capita income has a positive impact on income inequality. Furthermore, the results validated the Kuznets hypothesis that suggests that during the early stages of development, inequality increases, and subsequently reduces during the later stages of development. Lastly, in the developing countries included in the study, as the economy grows, income inequality worsens (positive relation) and in the long run, as the economy continues to expand, inequality diminishes (negative relation).

Few studies have investigated the relationship between income inequality and economic growth, mainly focusing on factors (such as credit market imperfections, education expenditure, savings, investment, production knowledge) that cause the link between income inequality and economic growth. In 2009, Tabassum and Majeed examined the relation between growth and inequality and the role of credit market imperfection at aggregate and regional levels in 69 developing countries, during the period 1965 to 2003. The study employed the fixed effect technique. Their findings show that if income inequality increases with the increase in growth, in the long run the increase in economic growth will not reduce poverty. This implies that high-income inequality will dampen the growth effect on poverty, that is, income inequality has a negative effect on growth. Additionally, in the short run, income inequality has a positive impact on growth. However, in the long run, income inequality has a negative impact on growth due to credit market imperfections. The study concluded that high income inequality will not necessarily result in an increase in economic growth in all the developing countries in the region surveyed.

Recently, Madsen et al. (2018) examined the impact of income inequality on savings, investment, education and production knowledge through which income inequality is transmitted to economic growth in 21 OECD countries during the period 1870 to 2011. Using the two-stage least squares (2LSL) method, the findings of the study reveal that at low stages of financial development, income inequality hampers economic growth, while at high stages of financial development, income inequality improves economic growth. Table 3.3 below presents a summary of empirical studies with inconclusive results on the link between income inequality and economic growth.

Table 3. 3: Summary of studies with differential results on the impact of income inequality on economic growth

Author(s)	Region/country	Measures of income inequality	Method(s) used	Results
Barro (2000)	84 countries 1965 to1995	Gini coefficient	3SLS	High inequality negatively affects growth in poor countries. High inequality is positively related to growth in rich countries.
Banerjee and Duflo (2003)	45 countries 1965 to1995	Gini coefficient	Kernel Regressions; Arellano and Bond Technique	High inequality has a negative impact on growth. Low inequality has a negative impact on growth. Decreasing inequality has a positive impact on growth.
Voitchovsky (2005)	21 developed countries 1975 to 2000	Gini coefficient	System-GMM	Lower decile income distribution: Income inequality negatively affects economic growth. Upper decile income distribution: Income inequality positively affects growth.
Tabassum and Majeed (2009)	69 developing countries 1965 to 2003	Gini coefficient	FE	Short run: Income inequality has a positive impact on growth.

				Long run: Income inequality has a negative impact on growth.
Castelló (2010)	102 countries 1960 to 2000	Gini coefficient, Distribution of education by quintiles	System GMM	Low- and middle-income countries: Income and human capital inequalities are negatively related to growth. High income countries: Income and human capital inequalities are positively related to growth.
Fawaz et al. (2014)	111 high and low- income developing countries 1960 to 2010	Gini coefficient	System GMM	Low-income developing countries: Income inequality negatively affects growth. High-income developing countries: Income inequality positively affects growth.
Halter et al. (2014)	106 countries 1965 to 2005	Gini coefficient	System GMM; First-difference GMM	Short-run: High inequality is positively related to growth. Log-run: High inequality is negatively related to growth.
Ostry et al. (2014)	90 countries 1960 to 2010	Gini coefficient	System GMM	Low net inequality positively affects growth. Extreme redistribution negatively affects growth.
Nemati and Raisi (2015)	28 developing countries 1990 to 2010	Gini coefficient	OLS	The results validated the Kuznets hypothesis.

				Developing countries included in the study: As the economy grows, income inequality worsens. In the long run, as the economy continues to expand, inequality falls.
Madsen et al. (2018)	21 OECD countries 1870 to 2011	Gini coefficient	2SLS	Income inequality negatively affects growth at low stage of financial development. At high stages of financial development, income inequality improves growth.

3.3.4 Empirical evidence on the relationship between income inequality and economic growth in South Africa

To gain more understanding of the impact of income inequality on economic growth in South Africa, there are a number of studies that analysed the relationship and found varying results. For example, Bhorat and van der Westhuizen (2008) examined the relationship between economic growth, poverty and inequality in South Africa from 1995 to 2005. The study employed a distribution neutral measure, poverty inequality elasticity estimates, and the marginal proportional rate of substitution. Firstly, their results revealed that there has been a fall in absolute and relative poverty measures; however, the levels of inequality have increased. Secondly, the study revealed that 'between race' inequality is the driver of the increase in the levels of inequality. Thirdly, the study found that shifts in distribution occur during the process of growth and hence inequality increases when there is an increase in growth. Overall, the study found that high levels of income inequality are the key constraints to economic growth and development in South Africa.

Bhorat et al. (2009) analysed the impact of income and non-income inequalities in post-apartheid South Africa from 1995 to 2005 by employing the definite integral method by Swokowski (1992). Firstly, the study found that 'between race' income inequality, specifically wage income, is the main cause of rising income inequality. On the other hand, the impact of income from self-employment on income inequality decreased. Secondly, the study found that between 1995 and 2005 non-income inequality decreased. In addition, the results show that growth benefits the top-end, rather than the bottom-end of distribution. Thirdly, the study found that the growth effects of poverty reduction are undermined by the increase in income inequality; as a result, over time, economic growth has become less pro-poor. Therefore, to counteract the rising income inequality, higher growth is required.

Akanbi (2016) empirically studied the long-run causality and relationship between economic growth, poverty and inequality in nine South African provinces during 1995 to 2012. The study employed the panel cointegration test and the panel causality test. The results of the study showed that a bi-directional causality between growth and income inequality was found. This implies that there is a growth-inequality disconnect, where economic growth results in unequal income distribution, and that increasing

income inequality causes a fall in growth. However, a uni-directional causality exists between economic growth and land inequality and between economic growth and education inequality.

Niyimbanira (2017) studied the impact of economic growth on income inequality and poverty in Mpumalanga, one of the South African provinces, from 1996 to 2014. The study employed the fixed effect (FE) method and the pooled regression model, using data from 18 municipalities in Mpumalanga. The study found that economic growth results in reduced conditions of poverty, but they did not reduce income inequality. Table 3.4 presents an empirical summary of the literature on the relationship between income inequality and economic growth in South Africa.

Table 3. 4: Summary of studies on the relationship between income inequality and economic growth in South Africa

Author(s)	Region/country	Measures of income inequality	Method(s) used	Results
Bhorat and Van der Westhuizen (2008)	South Africa 1995 to 2005	Gini coefficient	Distribution neutral measure	Inequality positively correlated to growth.
Bhorat et al. (2009)	South Africa 1995 to 2005	Gini coefficient	Definite integral method	Income inequality negatively related to economic growth.
Akanbi (2016)	Nine South African provinces 1995 to 2012	Gini coefficient	Panel co-integration test and panel causality test	Bi-directional causality between growth and income inequality.
Niyimbanira (2017)	Mpumalanga – 18 municipalities 1996 to 2014	Gini coefficient	FE and pooled regression	No relationship between growth and income inequality.

3.4 Conclusion

This chapter presented both a theoretical and empirical literature review on the relationship between income inequality and economic growth. The theoretical literature identified the income inequality and economic growth theoretical framework. The studies suggested several outcomes. Theoretical studies on growth framework found that capital accumulation, human capital (skills and knowledge), technological improvement, public infrastructure, innovation and increase in inputs (labour and capital) are the drivers of economic growth across countries. However, for these factors to result in sustainable growth, they depend on taxes, and the implementation of regulatory policies, and also external and internal shocks that are unique to each country. Furthermore, the quality of institutions that facilitate how the society and the economy interact, was also found to be an important determinant of growth.

Apart from the theoretical framework on economic growth, the study found a number of studies linking income inequality to economic growth through various transmission channels. During the early stages of economic development (technological advancement), income inequality tends to be at its extreme and during later stages of growth and development (technological advancement), it tends to decrease. However, this relationship depends on the stage of economic development of each country. In addition, studies suggested that sectoral change, credit markets imperfection, political economy, socio-political unrest, savings and role played by institutions, are also channels through which income inequality affects economic growth. Any change in these factors results in a change in the distribution of income, which then affects the growth rate in the long run.

Against the above theoretical background, the study found a number of empirical studies that analysed the impact of income inequality on economic growth. Studies done in other developed and developing countries suggested savings, investment, human capital, credit market imperfection, and institutions, as the macroeconomic factors that cause income inequality to have an effect on economic growth. Furthermore, due to different samples of data and econometric models employed, the evidence suggested contradictory results, with some studies finding that income inequality positively affects growth, while others found that income inequality

negatively affects growth. On the contrary, some results are inconclusive. In the case of South Africa, reviewed studies did not provide enough evidence concerning the impact of income inequality on economic growth. Therefore, given that the evidence is highly inconclusive, this study is re-investigating the impact of income inequality and economic growth in South Africa. In addition, the study is important because it examines a country that is faced with persistently increasing income inequality and stagnant growth in recent decades.

CHAPTER 4

METHODOLOGY AND ANALYSIS OF THE STUDY

4.1 Introduction

This chapter focuses on the scope of the methods used in the study to investigate the impact of income inequality on economic growth in South Africa. Firstly, the chapter discusses the specification of the model in section 4.2, where the chapter specifies the general empirical model. In section 4.3 the estimation methods and their specifications are covered, which include stationarity test techniques, the autoregressive distributed lag (ARDL) model for cointegration test and the error correction model (ECM). Section 4.4 presents the definition and measurement of variables and the sources of data. In section 4.5 the chapter is concluded.

4.2 Model specification

4.2.1 Specification of the general empirical model

The objective of this study is to investigate the impact of income inequality on economic growth. To do this, the study employs the growth model that is derived from the Solow-neoclassical growth model (Solow, 1956), which includes labour and capital. In addition, the model features income inequality, human capital and government expenditure. With reference to the studies of Galor and Zeira (1993); Galor and Tsiddon (1997b); Barro (2000); Castelló and Doménech (2002); Voitchovsky (2005); Castelló (2010); Cingano (2014) and Iyke and Ho (2017), this study specifies the growth model as follows:

$$Y_t = \beta_0 + \beta_1 lnGINI_t + \beta_2 lnHC_t + \beta_3 lnK_t + \beta_4 lnPOP_t + \beta_5 lnGOVT_t + \mu_t \quad (4.1)$$

Where Y is the growth rate of real gross domestic product (GDP), β_0 the constant coefficient, lnGINI is the natural logarithm of income inequality, lnHC is the natural logarithm of human capital index, lnK is the natural logarithm of physical capital, lnPOP is the natural logarithm of population growth (labour), lnGOVT is the natural logarithm of government expenditure, β_1, β_2, β_3, β_4 and β_5 are the coefficients, μ is the error

term, t denotes the period of time and ln is the natural logarithm operator. Equation 4.1 stipulates that Y is a function of income inequality, human capital, physical capital, population growth and government expenditure. This study takes the natural logarithm of the explanatory variables to smooth the trend in time series variables. Nonetheless, this study does not take the natural logarithm of the dependent variable, real GDP growth (Y), due to a number of negative observations during the study period. Therefore, in this case this is a linear log model.

4.3 Estimation methods

4.3.1 Unit root testing

Before the study investigates the relationship between income inequality and economic growth, the study examines the stationarity of the variables. The unit root test is important for observing the stationarity properties of the time series. It is important to examine the stationarity of the time series to observe if the variables return to the long run value or not. As the study uses the autoregressive distributed lag (ARDL) model, it is important to conduct the unit root test, as the variables are required to be of the integration of order zero and one, I(0) and I(1) or a mix of both.

This study employs two unit root tests. The first unit root test is the Augmented Dickey Fuller test (ADF) and the second unit root test is the Dickey Fuller-Generalised Least Squares (DF-GLS). To conduct the unit root test, the Augmented Dickey Fuller (ADF) test has been commonly used, which is an improved version of the Dickey Fuller (DF) test that helps mitigate the issue of serial correlation. This method tests for stationarity by including the lagged value of the dependent variable in the equation to remove autocorrelation in the model (see, Gujarati, 2003; Mahadeva and Robinson, 2004; Asteriou and Hall, 2011).

With reference to Dickey and Fuller (1979), the ADF test is based on the following equation:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha i \, \Delta Y_{t-i} + \mu_t \qquad (4.2)$$

Where ΔY_{t-i} = ($Y_{t-1} - Y_{t-2}$), μ_t is the pure white noise error term, t is the trend variable, β_1 and β_2 are the estimated coefficients. The number of lagged difference term to be included is determined empirically (Gujarati, 2003). The ADF test in equation 4.2 tests the null hypothesis that the time series is non-stationary:

$$H_0: \delta = 0$$

Against the alternative hypothesis that the time series is stationary:

$$H_1: \delta < 0$$

The ADF test had a few draw backs. This test is sensitive to lag length. It adds a higher order regressive process in a model. It tends to reject null hypothesis when the data has a larger moving average. It requires more work to provide consistent results. There is uncertainty about the number of lags to be included and uncertainty about the version to use, that is, whether to include intercept and time trend or not (Schwert, 1986; Perron, 1989).

Due to the drawbacks mentioned above, the study also uses a second unit root test in addition to the ADF. It is the Dickey Fuller-Generalised Least Squares (DF-GLS). The DF-GLS is a modified version of the Dickey Fuller test with the application of generalised least squares rationale. This statistical test was proposed by Elliott et al. (1996), where they stated that the test provides good results even when applied in a small sample size and has high power when the mean and trend are unknown, which out-performs the traditional Augmented Dickey Fuller test (Schwert, 1986; Stock, 1994; Elliott et al., 1996). Elliott et al. (1996) specified the following equation to estimate the DF-GLS regression:

$$\Delta \gamma t = \alpha + \beta y_{t-1} + \delta t + \sum_{i=1}^{k} \rho i \, \Delta y_{t-i} + \mu t \qquad (4.3)$$

Where α, β, δ, and ρ are the coefficients to be estimated, Δ is the difference operator, y_t is the generalised least squares of the variables, k is the number of lags and t is the time trend. The optimal number of lags is based on Akaike Info Criterion (AIC) or Schwarz Info Criterion (SIC). In equation 4.3 the DF-GLS tests the null hypothesis that the time series is non-stationary:

$$H_0: \beta = 0$$

Tested against the alternative hypothesis that the time series is stationary:

$$H_1: \beta < 0$$

4.3.2 Cointegration testing approach: The autoregressive distributed lag (ARDL)

In this section the study tests for cointegration to detect the steady state equilibrium between income inequality and economic growth. By performing cointegration, the study is recovering long-run information that was lost during the differencing stage where it combines short-run dynamics with long-run steady state equilibrium. To do this, the study employs the autoregressive distributed lag (ARDL) bounds testing approach as suggested by Pesaran and Shin (1999) and Pesaran et al. (2001). To test for the presence of a long-run relationship, empirical studies have commonly adopted, among others, Granger (1981), Engle and Granger (1987), Johansen and Juselius (1990) and the ARDL bounds testing techniques.

The ARDL bounds test has been preferred to Granger (1981) and Engle and Granger (1987) because of certain advantages. Firstly, the ARDL technique does not require the variables to be of the same order of integration. That means that the variables can be of order of integration of zero, one or a combination of both (Pesaran and Shin, 1999). Secondly, the ARDL technique produces estimates that are unbiased, and its t-statistic results are valid even if some of the explanatory variables are endogenous (Harris and Sollis, 2003). Lastly, the ARDL approach is preferred to other statistical models because it performs better even when applied to a small sample size due to its finite sample properties (Pesaran et al., 1996; Tang, 2004). Based on the consideration that this study has a limited sample size, the potential problem of endogeneity and mixed order of cointegration in the variables, the ARDL bounds technique is the optimal choice. Existing theoretical and empirical literature elucidated that economic growth affects income inequality, and income inequality in turn affects economic growth. Therefore, income inequality and economic growth cause each other. The causality between income inequality and economic growth leads to endogeneity (see, Kuznets, 1955; Akanbi, 2016).

The general ARDL model to cointegration is specified as follows:

$$Y_t = c_0 + \sum_{i=1}^{n} \rho 1i\, \Delta Y_{t-i} + \sum_{i=0}^{n} \rho 2i\, \Delta lnGINI_{t-i} + \sum_{i=0}^{n} \rho 3i\, \Delta lnHC_{t-i} + \sum_{i=o}^{n} \rho 4i\, \Delta lnPOP_{t-i} + \sum_{i-0}^{n} \rho 5i\, \Delta lnK_{t-i} + \sum_{i=0}^{n} \rho 6i\, \Delta lnGOV_{t=i} + \alpha_1 Y_{t-1} + \alpha_2 lnGINI_{t-1} + \alpha_3 lnHC_{t-1} + \alpha_4 lnPOP_{t-1} + \alpha_5 lnK_{t-1} + \alpha_6 lnGOVT_{t-1} + \mu_t \quad (4.4)$$

Where c_0 is the constant coefficient, ρ is the short-run coefficient, α is the long-run coefficient, n denotes the number of lags, ln is the logarithm operator and μ is the error term. In addition, t is the time span and ∆ denotes the difference operator. In this study, the optimal number of lags is based on Akaike Information Criterion (AIC) or Schwarz Information Criterion (SIC).

The first step of the ARDL technique is to tests for cointegration to find the long run relationship among the variables. The null hypothesis for no cointegration correlation is presented as:

$$H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = 0$$

That is tested against the alternative hypothesis for a cointegration correlation given by:

$$H_1: \alpha \neq 0$$

The long run relationship among the variables is determined by computing the bound F-statistic that has a non-standard distribution. The F-statistic is compared with two critical values suggested by (Pesaran et al., 2001 and Pesaran and Pesaran, 2009). It is assumed that the critical values in the ARDL test are integrated of order zero I(0) and other critical values are integrated of order one I(1). When the F-statistic is below the lower bound, the study cannot reject the null hypothesis. However, if the F-statistic is more than the upper bound, the null hypothesis is rejected. If the F-statistic is

between the lower and upper bound, the study cannot make a conclusion, making the test results inconclusive.

The second step of the ARDL approach is to estimate the long run coefficients, provided that the variables are found to be co-integrated. Then the study will proceed to estimate an error correction model. The error correction model of the study is presented as follows:

$$\Delta Y_t = c_0 + \sum_{i=1}^{n} \delta 1i\, \Delta Y_{t-i} + \sum_{i=0}^{n} \delta 2i\, \Delta lnGINI_{t-i} + \sum_{i=0}^{n} \delta 3i\, \Delta lnHC_{t-i} + \sum_{i=0}^{n} \delta 4i\, \Delta lnPOP_{t-i} + \sum_{i=0}^{n} \delta 5i\, \Delta lnK_{t=i} + \sum_{i=0}^{n} \delta 6i\, \Delta lnGOVT_{t-i} + \varphi EMC_{t-1} + \mu_t \quad (4.5)$$

Where c_0, Δ, δ, and φ are the constant coefficient, the difference operator, the short run coefficients and long run coefficient, respectively. ECM is the error correction term and μ_t is the error term. The expected sign of the ECM coefficient is negative, which measures the speed with which variables can adjust back to long run equilibrium.

The stability of the long run coefficients is tested by applying the Cumulative Sum of the Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ) after the error correction model is estimated. The CUSUM and CUSUMSQ validate the stability of the parameters (Pesaran and Pesaran, 1997; Nkoro and Uko, 2016).

4.4 Sources of data, definition and measure of variables

4.4.1 Sources of data

This study makes use of annual time series data for South Africa, that covers the period from 1991 to 2017. The period of the study is dictated by the availability and quality of data. The data for this study is sourced from the following reliable sources, the World Development Indicators (World Bank), Quantec EasyData, Penn World 9.1 and *Chartbook of Economic Inequality* by Atkinson et al. (2017). Despite the limited data on income inequality, the study made significant efforts to source more data from various sources to increase the number of observations. In addition to Quantec data for income inequality that covered the period from 1995 to 2017, the study has sourced

some data from *Chartbook of Economic Inequality* by Atkinson et al. (2017) that covered the period from 1991 to 1994. Time series data from other sources was not available on consecutive years, and therefore was not feasible for this study.

4.4.2 Variables: Definition and measurements

In this study, the following variables are included in the regression to be estimated:

Economic growth is the dependent variable. The variable is measured in terms of current growth rate of real GDP (annual percentage). The study uses growth rate to see year-on-year change in GDP and is regarded as a reliable proxy of economic growth for this study. Y is used to denote economic growth.

Income inequality is the independent variable. It is defined as the disparity in the distribution of income with a large portion of income received by those at upper decile of income, while those at lower decile of income receive a small percentage of income. The Gini coefficient is a measure of distribution with a coefficient that varies between 0 (perfect equality) and 1 (perfect inequality). In this study the current Gini coefficient is used to measure income inequality and is denoted as GINI.

Although the study is interested in the relationship between income inequality and economic growth, other independent variables are included as control variables to make the regression more realistic. They include human capital, physical capital, labour, and government expenditure.

Human capital (HC) represents the skills, knowledge and experience that a population of a country has. The proxy used to measure human capital is the current human capital index (HC). Previous literature showed that human capital has a significant impact on the growth of a country (see, Nelson and Phelps, 1966; Barro, 1991; Castelló and Doménech, 2002). According to Lopez et al. (1998), it states that countries achieve sustainable economic development by investing on human capital that accounts for the role of education. Furthermore, to sustain competitiveness in a country, human capital is an instrument used to encourage productivity and achieve long-term growth (Bhorat et al., 2016). Human capital affects growth by contributing through knowledge, skills and innovative thinking which has an impact on productivity

and hence growth (Fedderke and Simkins, 2009). In Mirestean and Tsangarides (2016), the study found that human capital has a positive impact on economic growth.

Labour is proxied by current annual population growth (annual percentage) (POP) and physical capital proxied current capital stock (K). These variables are the standard variables in the Solow-neoclassical growth model. The Solow-neoclassical growth model is based on production function that states that aggregate output depends on labour and capital stock. Therefore, an increase in labour results in a fall in productivity and hence the decrease in growth in the long run. This is because as the population grows faster compared to the national income, it will cause a burden in the society as it reduces the availability of capital per head. This in turn reduces the productivity of labour and hence negative impact on growth (see, Solow, 1956; Mankiw et al., 1992; Mankiw, 2009; Iyke and Ho, 2017). A study by Chirwa and Odhiambo (2016) and Mankiw et al. (1992) found that an increase in the population has a negative impact on economic growth in South Africa which confirms what is suggested by theoretical literature.

According to Abramovitz (1956) physical capital plays a vital role in the growth of an economy. Physical capital includes all the resources that are used in the production process, for example, investment in machines, equipment and other inventories. An increase in physical capital will improve productivity and an increase in output in the long run and hence economic growth. The existing literature suggests that higher investment in physical capital results in higher economic growth rates (see, Mankiw et al., 1992; Mirestean and Tsangarides, 2016; Iyke and Ho, 2017). Studies by De Long and Summers (1991; 1993) confirm that investment in physical capital is the key to long-run growth in per capita output. Moreover, physical capital has been one of the key drivers of economic growth in South Africa during the periods of the 1970s, 1980s and 1990s, and the decline in growth rate of real output was caused by the declining investment in physical capital (Fedderke, 2005).

Government expenditure (GOVT) includes money spent by the public sector in a country to buy goods and services and also to provide services such as health, education, social safety for its citizens. In this study, government expenditure is measured by current general government final consumption expenditure (annual

percentage of GDP). Regarding the relationship between government expenditure and growth, the literature has found that in South Africa government expenditure has been used as an instrument to address the imbalances of the past and is the largest contributor in influencing economic stabilisation and therefore an important determinant of growth (Chirwa and Odhiambo, 2016; Leshoro, 2017). According to Keynes (1936) government expenditure is an exogenous variable that is used to increase economic growth. On the other hand, Wagner (1958) postulated that government expenditure tends to rise with increase in national income. On the contrary, Chirwa and Odhiambo (2016) and Barro (2003) found that government expenditure has a negative impact on economic growth in the long run. In addition, Landau (1985) found that among developed countries an increase in government expenditure results in a decline in economic growth. Table 4.1 provides a summary of definitions, variables, measurements, sources, expected sign of the coefficients and the time span of data.

Table 4. 1: Definitions, measures, sources, expected signs of coefficients, time span

Variables	Definition	Source(s)	Expected signs	Time span
Economic growth	Growth rate of real GDP (GDP growth annual percentage) (US$ at constant 2010 prices)	World Bank		1991-2017
Income inequality	Gini coefficient (GINI)	Quantec EasyData (2018; 2020); Atkinson et al. (2017)	-	1991-2017
Human capital	Human capital index (HC)	Penn World 9.1	+	1991-2017
Labour	Population growth (annual percentage) (POP)	World Bank	-	1991-2017

Physical capital	Capital stock (K)	Penn World 9.1	+	1991-2017
Government expenditure	General government final consumption expenditure (% of GDP) (GOVT)	World Bank	+	1991-2017

Source: Author's compilation

4.5 Conclusion

The chapter covered the empirical methodology adopted by the study to investigate the impact of income inequality on economic growth in South Africa. The chapter discussed the model specification that presented the general empirical model. In addition, the estimation methods were discussed which included the unit root test specification, the ARDL bound cointegration test approach and the error correction model. Lastly, the chapter discussed the definition of variables and their measures and the sources of data.

CHAPTER 5

ESTIMATIONS AND ANALYSIS OF EMPIRICAL RESULTS

5.1 Introduction

This chapter provides the analysis of empirical results of the impact of income inequality on economic growth. The empirical estimation is OLS and the bound test is employed to test for the existence of cointegration. Section 5.2 provides a descriptive analysis of the variables, which is followed by a discussion on the stationarity results of the variables in section 5.3. By conducting a unit root test, the study determines the order of integration of each variable. Section 5.4 presents the empirical findings of the ARDL bounds testing approach and the error correction model. In section 5.5, the chapter is concluded.

5.2. Descriptive analysis

This section discusses the background features of the variables. Table 5.1 presents background features of the dependent and independent variables, which are real growth rate, Gini coefficient, human capital, physical capital, population growth and government expenditure.

Table 5. 1: Descriptive statistics of economic growth, income inequality, human capital, physical capital, population growth and government expenditure, 1991-2017

South Africa	Y	LNGINI	LNHC	LNK	LNPOP	LNGOVT
Mean	2.452	4.192	0.822	14.445	0.456	2.962
Median	2.700	4.203	0.808	14.387	0.400	2.953
Maximum	5.604	4.261	1.033	14.768	0.915	3.035
Minimum	-2.137	4.052	0.655	14.227	0.197	2.880
Standard deviation	1.987	0.049	0.122	0.180	0.227	0.046
Skewness	-0.589	-1.138	0.245	0.440	0.906	0.115
Kurtosis	2.954	4.197	1.676	1.778	2.629	1.922
Jarque-Bera	1.562	7.443	2.242	2.550	3.846	1.367

Probability	0.458	0.024	0.326	0.279	0.146	0.505
Number of observations	27	27	27	27	27	27

Source: Author's computation from eviews 9.5

The statistical analysis of the variables shows big differences, with the standard deviations varying across the variables. The mean is an average of values and it represents the position of variable in the distribution (central tendency of variables). For example, 4.2 is the average Gini coefficient for the period 1991-2017. The skewness values are mostly around zero, with some being negative while others are positive. It shows that economic growth, the Gini coefficient, and population growth are moderately skewed, while human capital, physical capital and government expenditure are approximately symmetric. The kurtosis indicator is mostly around 3, except for the Gini coefficient. The level of Jarque-Bera results shows high probability for all the variables, except for the Gini coefficient. This means that the null hypothesis that states that the data is normally distributed cannot be rejected.

5.3 Stationarity results of the variables

The study performed the unit root test that examined the stationarity of the variables using two unit root tests. These tests are the Augmented Dickey Fuller test (ADF), as proposed by Dickey and Fuller (1979) and the Dickey Fuller Generalised Least Squares test (DF-GLS), as proposed by Elliott et al. (1996). The stationarity results of the variables are presented in Table 5.2 as intercept, and trend and intercept.

Table 5. 2: Unit root test of all variables

Augmented Dickey Fuller Test (ADF)					Dickey-Fuller Generalised Least Squares Test (DF-GLS)			
Variables	Order of integration at level I(0)		Order of integration at first difference I(1)		Order of integration at level I(0)		Order of integration at first difference I(1)	
	Intercept	Trend and Intercept	Intercept	Trend and Intercept	Intercept	Trend and Intercept	Intercept	Trend and Intercept
Y	-3.060***	-2.909	-	-	-2.475**	-2.810	-	-
LNGINI	-5.451***	-5.235***	-	-	-4.330***	-4.830***	-	-
LNHC	0.461	-3.298*	-4.688***	-1.471	-1.951*	-3.695**	-	-

LNK	0.371	-4.292**	-	-	-1.810*	-6.539***	-	-
LNPOP	-2.917*	-4.211**	-	-	-3.456***	-6.559***	-	-
LNGOVT	-1.615	-2.496	-5.006***	-5.154***	-1.600	-2.634	-4.947***	-5.144***

Source: Computed by author based on eviews 9.5; Note: *, ** and *** denote stationarity of variables at 10%, 5% and 1% level of significance, respectively; – denotes not applicable.

The unit root test is necessary for the study due to one of the requirements that should be met before the ARDL model is used. The ARDL model requires that the variables be integrated of order zero, I(0), or integrated of order one, I(1), or a mix. The variables should not be integrated of order two, I(2). Table 5.2 shows the detailed results and the order of integration of the variables. For example, economic growth and government expenditure are stationary in first differences and integrated of order I(1) as shown by the results of the ADF and DF-GLS test results. For the Gini coefficient and population growth, the ADF and DF-GLS test results show that the variables are stationary in levels and integrated of I(0). For the human capital and physical capital, the results show that they are largely stationary in levels and integrated of order I(0). The results of the DF-GLS show that human capital and physical capital are stationary in levels and integrated of order I(0) in intercept as well as trend and intercept. The results of ADF show that both data series are stationary in levels and integrated of order I(0) in trend and intercept.

5.4 Findings of autoregressive distributed lag (ARDL): Bounds testing approach to cointegration

After the study found the order of integration of the variables, the study tested for cointegration to determine the existence of a long-run relationship between the variables. To do this, the study employed the ARDL bounds testing approach, as proposed by Pesaran et al. (1996), Pesaran and Shin (1999), and Pesaran et al. (2001). Table 5.3 provides the results for the ARDL bounds test approach for cointegration.

Table 5. 3: ARDL bounds test for cointegration

Country	Dependent variable	Function	F-statistic	Status of cointegration

South Africa	Real growth rate	F (Growth| lnGINI, lnHC, lnK, lnPOP, lnGOVT)	8.793***		Cointegrated	
The asymptotic critical value (k=5)						
Pesaran et al. (2001: p.300)	1%		5%		10%	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	3.41	4.68	2.62	3.79	2.26	3.35

Source: Computed by author based on eviews 9.5

Note: *** denotes 1% level of significance

The result for the computed F-statistics is 8.793. The lower bound critical value is 2.26 at 5% level and the upper-bound critical value is 3.79 at 5% level, reported in Table CI(iii) Case III by (Pesaran et al., 2001). The results show that the variables used in the model are cointegrated, because the F-statistic is greater than upper bound critical value. This implies that there is a long-run relationship among variables.

Having found that the variables are cointegrated, the study estimates the regression model using the ARDL bounds test procedure. The first step is to determine the optimal lag length for the model in the study country using the Akaike Information Criterion (AIC). The selected lag lengths for the model given the AIC criteria are 2, 2, 1, 2, 2, 1 for Y, lnGINI, lnHC, lnK, lnPOP, lnGOVT, respectively. Table 5.4 shows the long-run and the short-run estimated results for the variables.

Table 5. 4: Long run and short run estimation results of the model

Panel A: The long-run coefficient results
Dependent variable: Y

Regressor	Coefficient	Standard error	t-statistics	Probability
lnGINI	-18.381***	5.603	-3.281	0.010
lnHC	81.100***	23.167	3.501	0.007
lnK	-53.713***	13.917	-3.860	0.004
lnPOP	-6.008***	1.733	-3.467	0.007
lnGOVT	-15.738**	5.889	-2.672	0.026

Panel B: The short run coefficient results

Dependent variable: ∆Y				
Regressor	Coefficient	Standard Error	t-statistics	Probability
∆Y(-1)	0.801***	0.159	5.049	0.001
∆lnGINI	-12.339	7.580	-1.628	0.138
∆lnGINI(-1)	19.946**	6.925	2.880	0.018
∆lnHC	-129.793**	50.302	-2.580	0.030
∆lnK	95.509**	41.922	2.278	0.049
∆lnK(-1)	-95.072**	38.036	-2.500	0.034
∆lnPOP	-104.487***	18.365	-5.690	0.000
∆lnPOP(-1)	100.676***	14.437	6.973	0.000
∆lnGOVT	-15.922***	4.483	-3.552	0.006
C	2061.326***	226.886	9.085	0.000
CointEq(-1)*	-2.458***	0.271	-9.059	0.000

R-squared	0.935	Mean dependent var	0.138
Adjusted R-squared	0.888	S.D. dependent var	1.921
S.E. of regression	0.643	Akaike info criterion	2.254
Sum squared resid	5.784	Schwarz criterion	2.790
Log likelihood	-17.176	Hannan-Quinn criter.	2.403
F-statistic	20.032	Durbin-Watson stat	2.514
Prob(F-statistic)	0.000		

Source: Computed by author based on eviews 9.5

Note: ** and *** denote stationarity of variables at 5% and 1% level of significance, respectively; ∆ is the first difference operator.

The long-run results for the estimated regression presented in Table 5.4 show that the Gini coefficient is statistically significant at 1% and has a negative impact on economic growth. The results are consistent with the expected results. This implies that in the long run, an increase in the Gini coefficient will result in a decrease in economic growth by 0.184%.[3] These finding are supported by existing studies both theoretical (see, Kuznets, 1955; Ravallion, 1997; Kanbur, 2005) and empirical literature (see, Alesina and Rodrik, 1994; Persson and Tabellini, 1994; Perotti, 1996; Birdsall and Londono, 1997; Deininger and Squire, 1998; Castelló and Doménech, 2002; Panizza, 2002; Bhorat et al., 2009; Cingano, 2014; Iyke and Ho, 2017).

The results also reveal that human capital is statistically significant at 1% and has a positive impact on economic growth. The result came out as expected by the study. This suggests a percentage increase in human capital (through improvement in

[3] In Chapter four, the study shows that the empirical model used is a linear log model. Therefore, if the explanatory variable increases by one percent, the dependent variable (Y) will increase by (β1/100) unit of Y.

education, skills, and competency) will lead to an approximate increase of 0.811% in economic growth in the long run. As the population of the country acquires new skills, further education and training will improve the productive capacity of labour and the potential to produce more outputs. The results are consistent with other existing studies that also found that human capital affects economic growth positively, both theoretically and empirically (see, Romer, 1986; Lucas, 1988; Romer, 1990; Grossman and Helpman, 1991; Aghion and Howitt, 1992; De La Fuente and Doménech, 2000; Snowdon and Vane, 2005; Fedderke, 2005; Pelinescu, 2015).

The unexpected yet interesting findings revealed by the study, are that of the negative impact of physical capital on economic growth in South Africa, which is different from most of the existing studies (see, De Long and Summers (1991, 1993); Mankiw et al., 1992; Mirestean and Tsangarides, 2016; Iyke and Ho, 2017). The results further show that physical capital is statistically significant at 1%. This implies that a percentage increase in physical capital will lead to a 0.537% decline in economic growth in South Africa in the long run. The level of knowledge, training and skills that provides the labour force with the capabilities to put the available physical capital to good use, might be another factor that leads to the negative impact. Due to the lack of knowledge and skills, physical capital is underutilised and as a result, causes a fall in productivity that in the long run leads to a decline in outputs (Fedderke, 2005).

The results further reveal that population growth, which is the proxy for labour, is statistically significant at 1% and has a negative impact on economic growth. The findings are consistent with expectations of the study. This implies that a 1% increase in population growth in South Africa will result in a fall in economic growth by 0.060% in the long run. The negative impact of population growth might be due to the fact that as the population grows, without being accompanied by growth in state resources, will cause few resources to be available to the population, thus, causing a burden on society that results in a fall in capital available per head. A fall in capital per head will cause a fall in the capacity of labour to be productive, and as a result, a fall in economic growth in the long run. These findings are consistent with findings in the extant literature (see, Solow, 1956; Mankiw et al., 1992; Mankiw, 2009; Iyke and Ho, 2017). Mankiw et al. (1992) and Chirwa and Odhiambo (2016) found that as the population increases, it leads to a fall in economic growth in the long run.

Regarding government expenditure, the long run coefficient is negative and statistically significant at 1%. The results are not in line with the expectations of the study. These results imply that an increase in government expenditure, will lead to a 0.157% decrease in economic growth, in the long run. This may be due to the fact that as the government increases its spending, it may impede investment. This is because the government might impose high tax rates to finance its spending, and by implementing programmes that would perform well in the private sector and perform poorly in the public sector, causing low productivity and hence a decline in growth in the long run. These findings are supported by existing literature (see, Landau, 1985; Barro, 2003; Chirwa and Odhiambo, 2016).

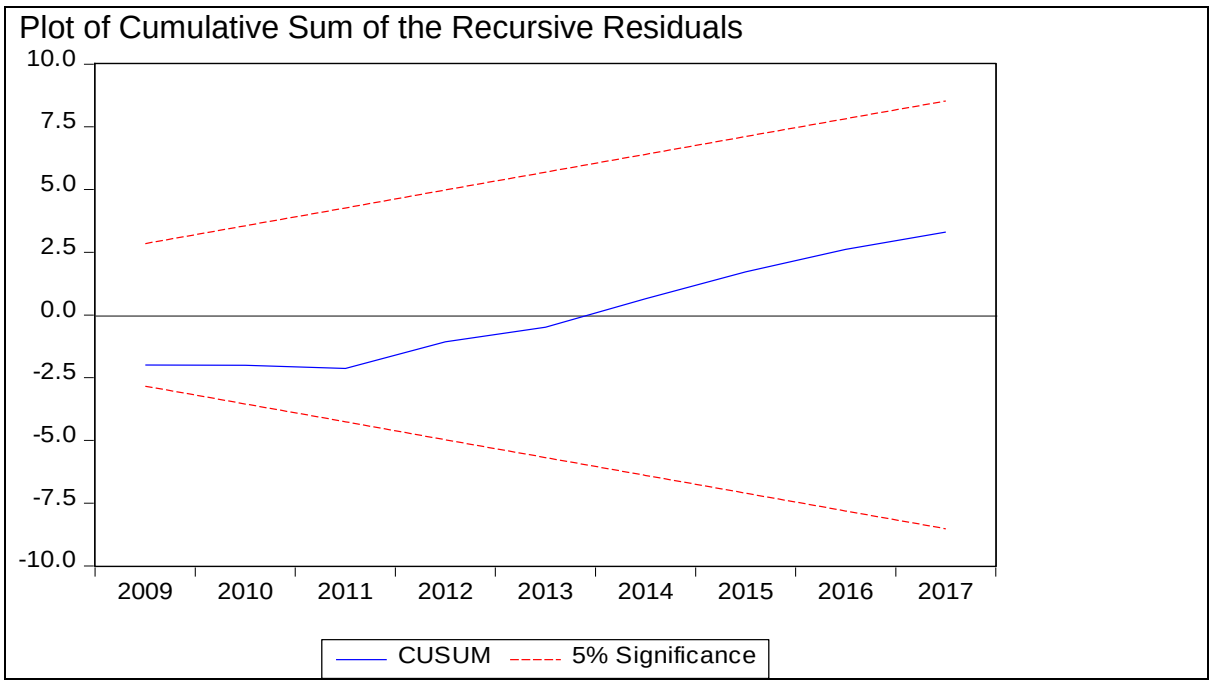
In the short-run results, the study shows that the Gini coefficient is negative and statistically insignificant, which suggests no relationship between income inequality and economic growth in the short run. The results showed that human capital negatively affects economic growth and is statistically significant. The negative coefficient implies that a percentage increase in human capital will lead to a 1.298% fall in economic growth in the short run. For physical capital, a positive impact on economic growth was found and the coefficient is statistically significant. That means that, in the short run, a 1% increase in physical capital will increase economic growth by approximately 0.955%.

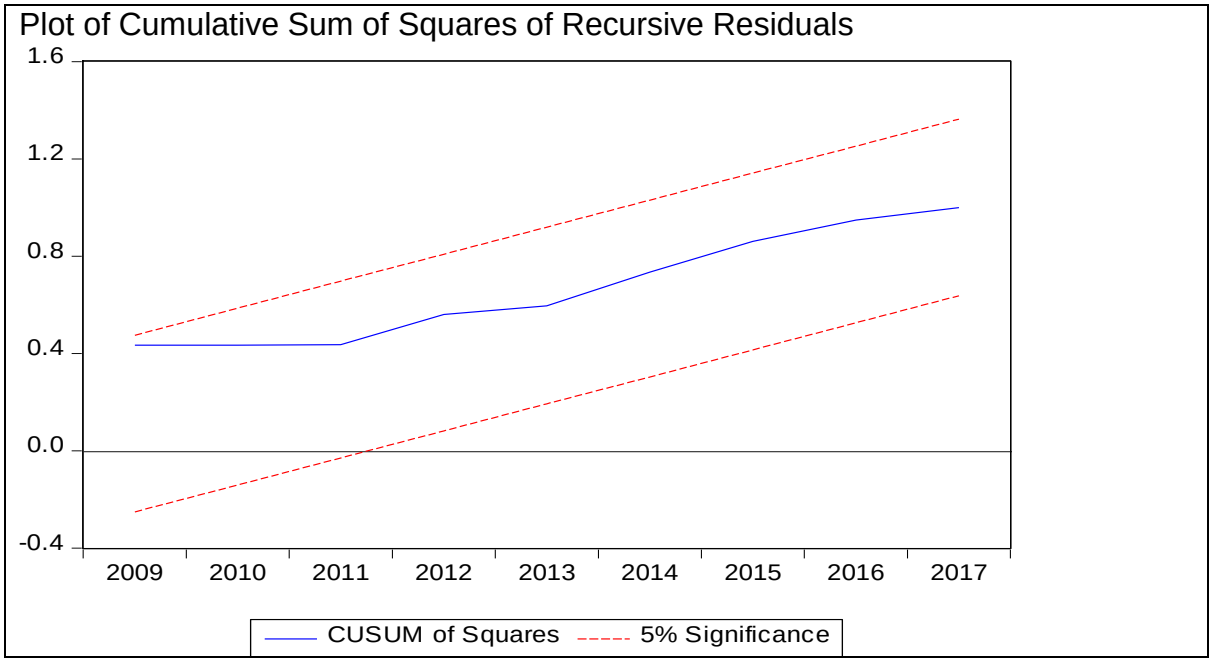
The coefficient for population growth has a negative impact on economic growth and it is statistically significant. A percentage increase in population is found to lead to a fall in economic growth by 1.045% in the short run. The short-run results regarding government expenditure were found to be negative and statistically significant. This implies that a 1% increase in government expenditure would result in a fall in economic growth by 0.159% in the short run.

In addition, the coefficient of the error correction term is statistically significant and is negative. This implies that when the variables deviate away from the equilibrium, they adjust back to equilibrium by 0.025%. This means that they return to equilibrium at a slow pace.

Overall, the regression for the underlying ARDL model fits well. The R squared and adjusted R- squared are 0.935% and 0.888%, respectively, implying that the data fits the model, that is, the explanatory variables explain most of the variation of the dependent variable. The model also passes the diagnostic tests performed for heteroskedasticity, functionality form, and normality. In terms of stability, Figure 5.1 shows the plot of the estimated cumulative sum of recursive residuals and the plot of cumulative sum of squares of recursive residuals of the model. The reported plots of CUSUM and CUSUMSQ indicate that the long-run coefficients are stable. This is because the CUSUM and CUSUMSQ lines lie between the two lines of the 5% level of significance.

Figure 5. 1: Plot of estimated CUSUM AND CUSUMSQ





Source: Authors own compilation.

Note: The straight lines represent critical bounds at 5% significant level

5.5 Conclusion

Using the ARDL bounds testing procedure, the study empirically investigated the impact of income inequality on economic growth in South Africa for the period 1991 to 2017. In the model, the study included control variables which are human capital, physical capital, population growth, and government expenditure. Their impact on growth was also tested. Section 5.2 of this chapter provided the descriptive analysis of the variables. In section 5.3, the unit root test was conducted to test the stationarity of the variables. The variables were found to be integrated of order zero, I(0), or of one, I(1). Following the stationarity test, the study estimated the long run relationship among the variables in section 5.4. The results showed that the variables have a long-run relationship, that is, the variables were cointegrated. Having found the long-run relationship, the study continued and estimated the error correction model. The results determined the impact of the explanatory variables on the dependent variable in the long run and the short run.

The long-run results showed that the Gini coefficient, physical capital, population growth and government expenditure are statistically significant and negatively affect economic growth in the long run. For human capital, the impact on economic growth

is positive and statistically significant in the long run. The short-run results found that human capital, population growth and government expenditure are statistically significant and negatively influence economic growth in the short run. The short run results for the Gini coefficient show that there is no correlation between income inequality and economic growth. Only physical capital was found to be positive and statistically significant in the short run. In addition, the coefficient of the error term was negative and statistically significant.

CHAPTER 6
CONCLUSION AND POLICY RECOMMENDATIONS OF THE STUDY

6.1 Introduction

This chapter summarises the findings of the study and suggest policy recommendations based on findings from previous chapters. Section 6.2 provides the summary of the study, followed by the summary of empirical findings in section 6.3. In section 6.4, the chapter provides policy recommendations, followed by the limitations of the study and suggested areas of future research in section 6.5. Section 6.6 concludes the chapter.

6.2 Summary of the study

The main objective of this study was to investigate the impact of income inequality on economic growth in South Africa for the period 1991 to 2017. The significance of this study lies in the coexistence of extreme income inequality and sluggish economic growth experienced in South Africa and the unsettling debate on the inequality-growth nexus in the existing literature.

To address the main objective, the study has three specific objectives. Firstly, the study explored the development of income inequality and economic growth in South Africa, particularly focusing on national and provincial levels. In chapter two, it provided an overview of the development of income inequality at the national level. It identified and discussed the factors that cause income inequality and the adverse consequences of income inequality in an economy and in the society at large. In addition, this chapter presented the trends of economic growth over the years and discussed the key sectors that drive economic growth at national level. Moreover, it provided a discussion of the development and trends of income inequality and growth in all the provinces of South Africa.

In this chapter, it found that income inequality has changed its face. It is not only a legacy of apartheid but is also driven by other factors such as the labour markets, labour unions, wage inequality, sectoral differences in income and within race group inequality (see, Leibbrandt et al., 2000; Leibbrandt and Woolard, 2001; Landman et

al., 2003; Naudé and Coetzee, 2004; Chapman, 2012; Philip et al., 2014). In addition, it found that the provincial income inequality is caused by income from labour (wage inequality), gross operating costs, transfers from households and skills mismatch.

Secondly, the study provided a comprehensive theoretical and empirical literature review. In chapter three, it discussed the theoretical framework of income inequality and economic growth. It discussed the transmission mechanism concerning the link between income inequality and economic growth. It found that there are six channels through which income inequality affects economic growth, namely credit market imperfections, political economy, socio-political unrest, savings, institutions and the 4IR (see, Galor and Zeira, 1993; Perotti, 1993; Benhabib and Rustichini, 1996; Piketty, 1997; Aghion et al., 1999; Barro, 2000; Banerjee and Duflo, 2003; Easterly, 2008; Madsen et al., 2018). Furthermore, the study provided empirical evidence that revealed various results of a positive, negative and differential impact of income inequality on economic growth.

Thirdly, the study empirically investigated the impact of income inequality on economic growth. In chapters four and five, the study investigated the impact by specifying the Solow growth model as the general empirical model. The study included capital and labour, which are the basic components of the Solow growth model, as the control variables. In addition, the study included other control variables, such as human capital and government expenditure, that have an influence on economic growth in South Africa. The study employed two unit root tests, namely the Augmented Dickey Fuller (ADF) test and the Dickey Fuller Generalised Least Squares (DF-GLS) test, to test the stationarity of the variables. The stationarity results showed that the variables are integrated of order either zero or one. Having found the stationarity of the variables, the study employed the ARDL bound testing approach to test for the long run and short run relationship between the dependent variable and the explanatory variables.

6.3 Summary of empirical results

The empirical results of the study showed the following: firstly, the long-run results revealed that income inequality, physical capital, population growth and government expenditure have a negative impact on economic growth and the coefficients are

statistically significant. Human capital was found to have a positive and significant impact on economic growth.

Secondly, the study found that in the short run, income inequality is negative and statistically insignificant. This implies that in the short run there is no relationship between income inequality and economic growth. The results are contrary to the long-run results. Human capital has a significantly negative impact on economic growth in the short run, while it positively affects growth in the long run. For physical capital, the study found a positive and statistically significant impact on economic growth in the short run, while it negatively affects growth in the long run. Furthermore, the study found a negative and statistically significant impact of growth in population on economic growth, which is the same impact that is found in the long run. Lastly, similar to the long-run findings, government expenditure was found to have a negative and statistically significant impact on economic growth in the short run.

6.4 Policy recommendations

First, based on the findings of the study, income inequality has a negative impact on economic growth in the long run. Therefore, the study recommends that policy makers should pursue the implementation of policies that will not only focus on boosting the economy, but policies that will also encourage distribution of income. Due to South Africa being a dual economy, some parts of the country are more developed while the majority of the country is underdeveloped and is lagging behind. Such development perpetuates social and income inequality. Thus, the study recommends that policy makers pursue policies that improve previously disadvantaged provinces. In addition, due to the high heterogeneity in the level of education and skills in the labour market, this fuels income inequality. Policies that will reduce this heterogeneity should be pursued, which in turn will reduce income inequality in the country.

Second, the findings of the study suggest that human capital has a positive impact on economic growth. Therefore, policies that encourage human capital through education, skills development and competencies should be pursued.

Third, the study found physical capital to have a negative effect on economic growth in the long run. That is, as capital increases, outputs diminish. This may be the result of a lack in the level of knowledge, skills development and competencies. Due to the limited ability of the labour force in using the machinery for production purposes and to its full capacity, they are unable to be productive or are underutilised. The study suggests that policy makers pursue policies that will encourage the development of education and skills (i.e. human capital) in workplaces.

Fourth, based on the findings of the study, population growth leads to a decline in economic growth in the long run. The study suggests that policy makers pursue policies that will limit population growth. For example, it is known that immigration is one of the factors causing population growth. Therefore, stringent migration measures and policies should be put in place to prevent the large influx of unskilled labour into the country.

Lastly, for the period under review, the findings on government spending suggest that government expenditure hampers economic growth in the long run. The study suggests that policy makers should encourage the cautious use of government finances, in order to reduce its growth. In addition, policy makers should aim at the implementation of policies that will encourage public expenditure on projects that the public sector will perform effectively.

6.5 Limitations of the study and suggested future research areas

The limitations of the study lie in the lack of availability of relevant data and materials on income inequality. The period of the study is determined by the availability of this data. Despite the study's efforts to source relevant data from various sources, the limited data on income inequality determined the time span of the study and the frequency of the data used for the analysis. Therefore, future research may use a longer time span of available data, or quarterly data, if the data becomes available, and assess how that will affect the results.

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