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Austerity measures and their role on infrastructure and economic development in South Africa: a review of the period 1996 – 2019

by

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DECLARATION

I declare that **"Austerity Measures and their role on Infrastructure and Economic Development in South Africa: A review of the period 1996 – 2019."** is my work, that it has not been submitted for any degree or examination in any university, and that all the sources that I have used or quoted have been indicated and acknowledged by complete references.

Kukhanyile Mali

Signature: **…….**

Date: **……..**

ACKNOWLEDGMENT

I would like to make a special thanks to my research supervisor, Professor Johannes Sheefeni who made this journey bearable. The words of support and encouragement were greatly appreciated. Without him, the completion of this dissertation would not have been possible.

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To Kholisa Memory Qambata. “What happens when an unstoppable force meets an immovable object?” these words ring within my ears whenever I try and gather the appropriate words to say in appreciation of you. Your contribution to my journey has been insurmountable. So let me start where it all began:

Ndinjenjenje nguMama, ndiliyokoyoko ndinje nguMama!!! Kholisa Memory Qambata MaMqocwa, MaZikhali, ndiyinkukhu esikwe umlomo, andazi ukuba ndiqala ngaphi ukukubulela ngendima oyidlalileyo ebomini bam ukuze ndizokufika kulendawo ndikuyo namhlanje. Isikhukukazi sona sithi xa sibona uKhetshe siwafake phantsi kwamaphiko amantshontsho aso, ukuwakhusela ekuxhwilweni. Wena wakhe wayibona inja ibambe amantshontsho ayo ngamazinyo ukuwasusa engozini, igragramele nabanina, nantonina esondelayo kuwo? Wenze njalo ke wena Jojo, Tiyeka, Bhizana, Butsolo Bentonga, Zikhali-Mazembe, ndiyambulela uThixo naManyange ngokukhetha wena ukuba ube nguNozala wam.

You have always said that the question of the “immovable object” will be answered by us when we grow up and become older and more educated. So, to answer your question Mama, an unstoppable force cannot exist in the same reality as an immovable object; just as your love for your children can never exist in the same reality as any force formed against it.

Enkosi Mama

ABSTRACT

The global economy is a complex system. Due to globalization, the South African economy has become interconnected and integrated into the global economic system. Thus, it is a complex system influenced by domestic and international activities. South Africa is also a country that has been troubled with many challenges in the past. It is a nation that emerged from apartheid, a discriminatory Afrikaner system that legislated the discrimination, disinvestments, and exploitation of blacks, mainly Africans, by whites in all spheres of society (Christie and Collins, 1982). Despite the democratic breakthrough that was achieved by the ANC and its allies through struggle and negotiations, South Africa still faced a triple threat of unemployment, poverty, and inequality along racial lines.

After the first democratic elections, the shift from the RDP to GEAR introduced the era of austerity measures in South Africa. In Europe, austerity measures had devastating consequences while in South Africa they have failed to resolve the challenges of unemployment, poverty, and inequality. Despite this, austerity measures have received both condemnation and admiration. The study investigates the austerity-development nexus.

Therefore, the primary objective of the study is to examine austerity measures and their role in infrastructure and economic development. The secondary research objectives of this research paper are to establish whether austerity measures promote economic development, improve infrastructure development, and whether they exacerbate infrastructure backlogs. The theoretical framework used will be Complexity Theory and Neoclassical Theory. The methodology used is both a qualitative and a quantitative research method, sourcing secondary quarterly data from the SARB. The VAR model is used to analyse data between 1994 and 2019 comprehensively. The results showed that austerity measures have a significantly negative role in economic development. Also, they slow down investments that are crucial for infrastructure development. The results also pointed to the exacerbation of infrastructure backlogs caused by austerity measures.

KEYWORDS: Austerity, Economic Development, Fiscal Policy, Neoliberalism, Infrastructure

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
ANC	African National Congress
ASGISA	Accelerated and Shared Growth Initiative for South Africa
DPME	Department of Planning Monitoring and Evaluation
ECM	Error Correction Model
ECT	Error Correction Term
EU	European Union
FDI	Foreign Direct Investments
FEVD	Forecast Error Variance Decomposition
FPE	Final Prediction Error
GDE	Gross Domestic Expenditure
GDP	Gross Domestic Product
GEAR	Growth Employment and Redistribution
GIRF	General Impulse Response Function
GMM	Generalized Method of Moments
GNU	Government of National Unity
HDI	Human Development Index
HQ	Hannan-Quinn
IMF	International Monetary Fund
IPAP	Industrial Policy Action Plan
IR	Impulse Response

JIPSA	Joint Initiative on Priority Skills Acquisition
KPSS	Kwiatkowski-Phillips-Schmidt-Shin
LP	Local Projections
LR	Likelihood Ratio
MTBPS	Medium-Term Budget Policy Statement
NDP	National Development Plan
NGP	New Growth Path
NHI	National Health Insurance
NPC	National Planning Commission
OECD	Organization for Economic Cooperation and Development
PP	Phillips-Perrons
PPP	Private-Public Partnerships
QIDS	Quality Improvement and Development Strategy
R&D	Research and Development
RDP	Reconstruction and Development Programme
RDPWP	RDP White Paper
RGDP	Real Gross Domestic Product
RSA	Republic of South Africa
SADC	Southern African Development Community
SC	Schwarz information criterion
SOE	State-Owned Enterprise
SSA	Sub-Saharan Africa
SVAR	Structural VAR

TB	Tuberculosis
TBVC	Transkei-Bophuthatswana-Venda-Ciskei
UK	United Kingdom
VAR	Vector Autocorrelation
VAT	Value Added Tax
VECM	Vector Error Correction Model
WEF	World Economic Forum

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CHAPTER ONE: INTRODUCTION

1. Introduction

This chapter introduces the topic of the study by providing a background that analyses and contextualizes austerity and its role in the development of the South African economic system. This is followed by a synopsis of austerity measures coupled with the development of neoliberalism in South Africa. A brief trend analysis is presented of government expenditure, debt, infrastructure spending, and tax rates. The chapter also outlines the research problem, the three research objectives and the study's hypothesis. Finally, the significance of the study is provided, narrating the importance of the study and the research gap filled upon completion.

1.1 Background to the study

The global economy is a complex system.[1] Due to globalization, the South African economy has become interconnected and integrated into the global economic system. Thus, it is a complex system influenced by domestic and international activities.[2] The South African economic system is the main system of interest within this study. South Africa is a country that has been troubled with many challenges in the past. A nation that emerged from apartheid, a discriminatory Afrikaner system that legislated the discrimination and exploitation of the black majority, particularly Africans, by whites in all spheres of society (Christie and Collins, 1982). This system led the country's economy into one of the gravest economic crises in its history (Bengu, 1993). Apartheid, as a socio-economic system, entrenched the under-development of the black majority while simultaneously developing and resolving the developmental challenges of the white minority.[3] It also directly resulted in gross levels of unemployment, large volumes of people in absolute squalor, deprivation, and lead to a crisis in education and other social services – this was the nature of the abhorrent apartheid system (Bengu, 1993). Despite the democratic breakthrough achieved by the African National Congress (ANC) and its allies through struggle and negotiations, South Africa still faces a triple threat of unemployment, poverty, and inequality along racial lines.

A closer look into the political economy of the democratic government reveals that the legacy of the apartheid system persists in content but not in form. This is well illustrated in the government's

[1] It acquires its complexity through its ability to change and evolve due to its interaction with its constituency parts.

[2] South Africa thus becomes a sub-system of the global economic system.

[3] Apartheid as a system sought to develop South Africa along racial lines hence separate development became a cornerstone of their socio-economic program.

25-year review of South African democracy. In that review, they highlighted that they (the South African democratic government) inherited a country that legislated laws through a white-only parliament, entrenched white and patriarchal privileges through this parliament, and orchestrated the structural underdevelopment of the black majority and women (Department of Planning Monitoring and Evaluation (DPME), 2019). Additionally, Terblanche (2002) argued that the cornerstone of the apartheid socio-economic and political system was separate development (racially orientated segregation), racial capitalism, and white superiority. Thus, the socio-economic development and political system of apartheid were characterized by whites receiving a superior education, health, shelter, employment, and other factors that were crucial for the sound quality of life, whereas the Black majority received the exact opposite (Bengu, 1993; Ornellas, Martinez-Roman, Tortosa-Martinez, Casanova, Guerreiro and Engelbrecht, 2017).

Moreover, the review of South African democracy showed that unemployment was concentrated amongst Africans. This was a direct consequence of the education policy toward Africans during apartheid, which was developed to produce unskilled African labour, resulting in a shortage of high-level skills (Marrioti, 2012). Additionally, according to the DPME (2019) section on infrastructure, in 1996, roughly 16% of South Africans had piped water, and 11% had access to basic sanitation. Also, more than half of South Africans did not have adequate sanitation, and almost two-thirds of South African households did not have electricity (DPME, 2019). Furthermore, a 1996 survey found that approximately 59% of schools were without electricity, 34% did not have access to on-site water supply, 12% were without toilets, 61% were without telephone lines, and 82% were without libraries (DPME, 2019). Economically, Festus, Kasongo, Moses, and Yu (2015), found that in 1994 less than 45% of Africans were participating in the labour market. Therefore, in addressing the content and form of apartheid, Bond (2000) affirmed that the content was predicated on the economic deprivation, uneven development, and underdevelopment of the Black majority. In contrast, its form was through legislating the white minority rule through the parliamentary system. The latter was abolished after the 1994 democratic elections, while the former struggled to break from the chains of the past.

1.1.1 Austerity in South Africa

Both economic and political pressure marred the penultimate years of apartheid. Globally, the economy was shifting towards a new economic paradigm (Bond, 2000), whereas politically, sanctions and disinvestment campaigns against the apartheid regime were underway (Svenbalrud,

2012). This was also the same period as the re-emergence of neoliberal orthodoxy and the subsequent dominance of the Reagan-Thatcher agenda.[4] The South African economic system had profound consequences which ushered in a new economic configuration through the Washington consensus (Harvey, 2005 and Bond, 2000). Over time, neoliberalism became more hegemonic within the global economy and, by extension, in the South African economy, despite arguments about its inherent negative features (Harvey, 2005).

Due to bad infrastructure investments in the 1980s, the infrastructure projects were not sustainable, resulting in a decline in infrastructure spending (DPME, 2019). Therefore, at the dawn of democracy, South Africa had a series of political, social, and economic hurdles that it had to overcome. Of all these challenges, what received scrupulous attention from the World Bank and other institutions was the macroeconomic policy that would be pursued in South Africa (Bond, 2000; Powers, 2019). These concerns were based on fears of a resurgence of Socialism and Communism in Southern African nations that received support from the Soviet Union (Bond, 2000; Harvey, 2005; Gumede, 2007; Powers, 2019). Adopting what was perceived as socialist-orientated policies at the advent of democracy in South Africa exacerbated these fears.

Nevertheless, the government adopted the Reconstruction and Development Programme (RDP) as a macroeconomic policy geared toward the reconstruction of South African society (Gumede, 2007). According to the Republic of South Africa (RSA) (1994), the de jure independence that Transkei-Bophuthatswana-Venda-Ciskei (TBVC) states enjoyed, allowed them to "incur debt and deficits that fell to the National Government" (RSA, 1994). Thus, the democratic government was burdened with the careless borrowing of the previous regime (Bond, 2000 and MERG, 1993). Bond (2000) went as far as criticizing the ANC negotiators for their failure to renegotiate the burdensome debt that the apartheid regime had accumulated. The rising debt levels became a precursor for implementing austerity measures, as the logic was that rising debt levels led to negative economic consequences (Sibeko, 2019).

Nonetheless, the RDP received overwhelming grassroots level support derived from the intense community and labour struggles that were continuously being fought (Gumede, 2007). Due to its multi-level participation and being people orientated, it was labelled a socialist policy and

[4] Thereafter, the Washington Consensus was the new agenda driven by the developed Western countries (often referred to as the west).

subsequently linked to failed socialist states that had supported the ANC during apartheid (Bond, 2000). According to MERG, Bond as well as Gumede (1993, 2000, and 2007), this sparked fear amongst government officials that if sound economic policies were not pursued, both domestic and international investors would remain skeptical about the long-term economic prospects of South Africa. This prompted the government to dismiss the RDP and capitulate to international pressure by adopting a more neoliberally friendly economic policy framework termed the Growth, Employment and Redistribution (GEAR) (Bond, 2000; Gumede, 2007; Powers; 2019).

The new macroeconomic policy argued that it would pick up where the RDP left off and realise the objectives set up (Bond, 2000; Gumede, 2007; RSA, 1994). Part of these objectives was the reduction in budget deficits, expansion of infrastructure development, and a burst of economic activity (Department of National Treasury, 1996). GEAR sought to accelerate growth, employment, and redistribution, as the name suggests. In addition, GEAR argued for the restructuring of public enterprises, deregulating the financial markets, and the minimizing involvement of the state in the economy (Bond, 2000; Harvey, 2005; Gumede, 2007). It also argued that the restructuring of public enterprises would be in the form of a "total sale of assets, a partial sale to strategic equity partners or the sale of the asset with the government retaining a strategic interest".

Additionally, the government imposed austerity measures by committing to cutting expenditures to reduce the budget deficit (Department of National Treasury, 1996). The reduction in government expenditure had unintended consequences on the government's developmental imperatives. The government concedes to this fact by acknowledging in its *25-year review of South African democracy* that despite attempts to address the infrastructure challenges, it still has infrastructure backlogs that delay economic development, subsequently forgoing economic growth (DPME, 2019).

After the shift from RDP to GEAR, periods of fiscal austerity impacted the economy (Bond, 2000 and Powers, 2019). This included a mixture of public expenditure cuts and increases in regressive tax to balance the budget (Sibeko, 2019). Within the ruling party, there was an accepted reality that the government had to cooperate with the Bretton Woods institutions and the private sector to ensure development through private-public partnerships (Gumede, 2007; Forrer, Kee, Newcomer and Boyer, 2010; Iosa and Martimort, 2012; Trebilcock and Rosenstock, 2015). While the RDP's fiscal position argued for broad socio-economic development through reprioritized public

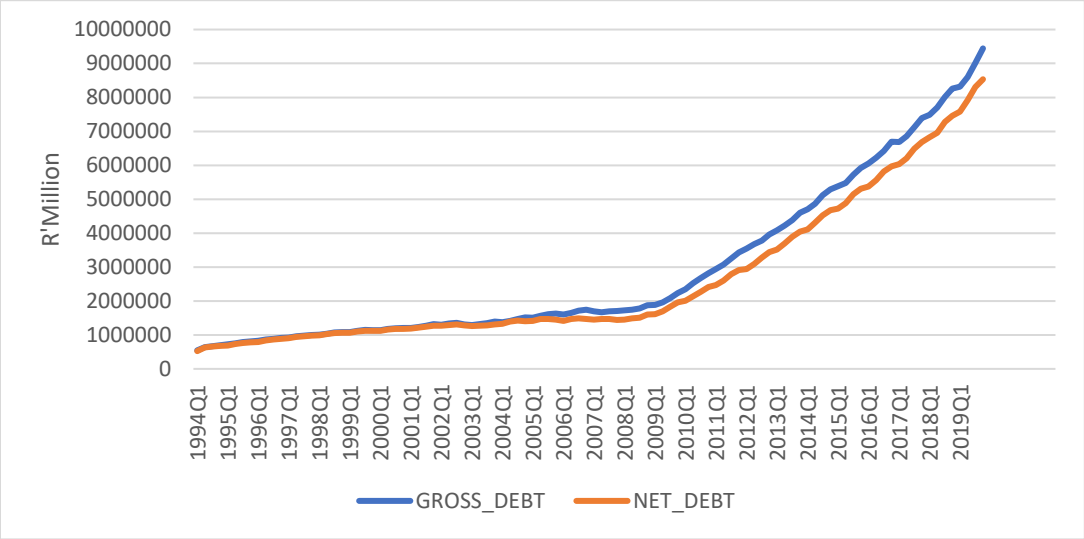
expenditure, GEAR from the onset asserted that there needed to be a reduction in budget deficits, macroeconomic prudence, and a reprioritization of public expenditure to achieve the necessary growth levels (Department of National Treasury, 1996 and Gumede, 2007).

Over time, fiscal constraints have strengthened the government's call to encourage the private sector to invest in developmental programs, namely infrastructure projects (Ramaphosa, 2020). However, the same concerns raised about fiscal constraints in the RDP, coupled with unsustainable debt levels, and infrastructure backlogs pointed out by GEAR, are still haunting the government 25 years later (DPME, 2019). This was made clear in the Sustainable Infrastructure Development Symposium South Africa (SIDSSA) in June 2020. Nketiah-Amponsah and Sarpong (2019) argued that significant investment in infrastructure could substantially impact the development of the economy. However, development impediments are yet to be resolved despite debt reduction efforts and increased investment expenditure, infrastructure bottlenecks, and sluggish economic growth. Therefore, the research will focus on the role of austerity measures in infrastructure and economic development in South Africa over the past 25 years.

1.1.2 Trend Analysis for Selected Variables

The South African government has struggled to rein in its high debt levels, promote significant infrastructure spending, and develop the economy. During the period under review, the South African government had steady debt levels that were being managed efficiently due to its macroprudential fiscal policy (Burger, Siebrits, and Calitz, 2016). However, after the 2008 financial crisis, the debt levels grew exponentially, as seen in Figure 1.1. As a result, the Organisation for Economic Cooperation and Development (OECD, 2010) and the International Monetary Fund (IMF, 2013) advised many countries with high tax levels to reduce the level of spending to prevent the runaway debt from spiraling out of control. Additionally, the rise in debt levels caused many economists to raise concerns and caution about the future of South Africa, particularly in a global economic environment whereby avenues for increasing government revenues were depleting (OECD, 2010 and IMF, 2013).

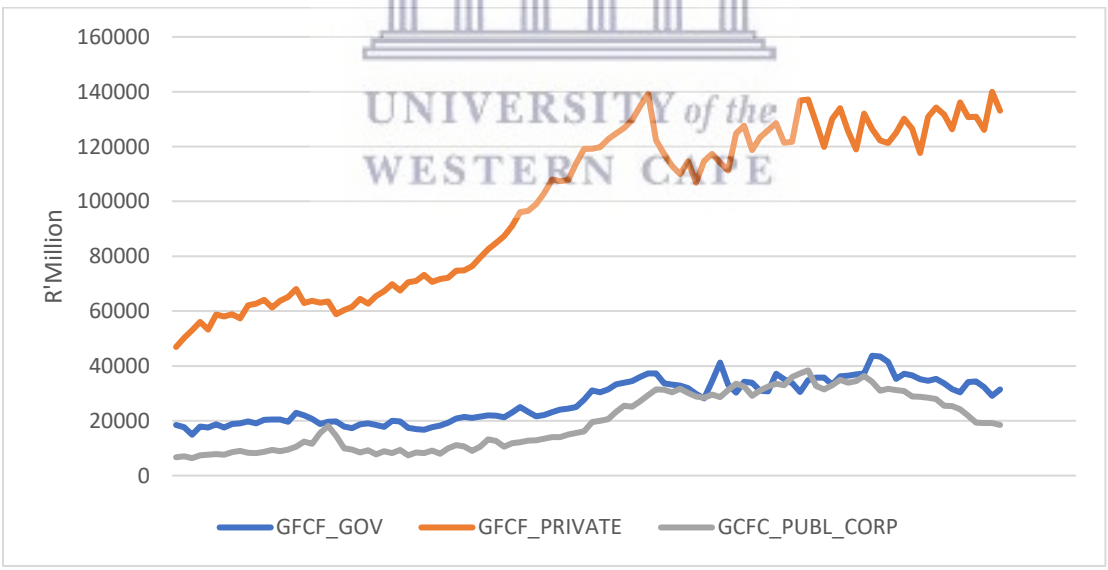
Figure 1. 1: Debt



Source: Author, data from the SARB

Perkins, Fedderke, and Luiz (2005) argued that there is always a need for investments in infrastructure. In South Africa, the public infrastructure spending has always dwarfed that of the private sector, as shown in Figure 1.2. Additionally, Figure 1.2 presents the stark difference between the public and private spending on infrastructure. Infrastructure spending decreased after the financial crash, although there were earlier periods whereby spending shrank.

Figure 1. 2: Infrastructure spending

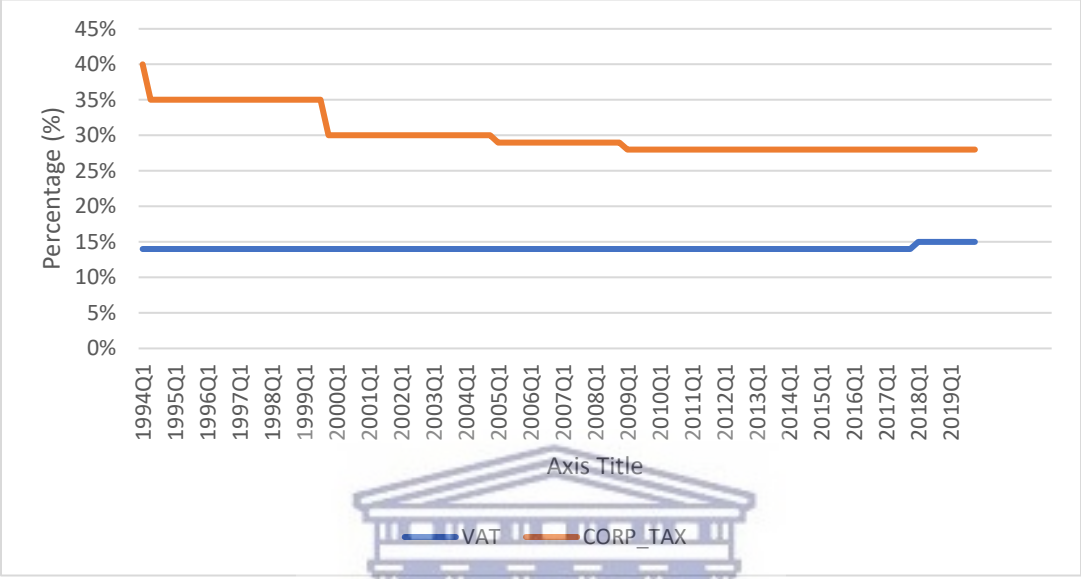


Source: Author, data from the South African Reserve bank

Notably, the South African government committed to fiscal consolidation in the Medium-Term Budget Policy Statement (MTBPS) (Department of National Treasury, 2014 and 2015).

Subsequently, public infrastructure spending recorded a consistent decline after 2016. Private infrastructure spending was immediately impacted by the 2008 financial crash, causing a significant reduction in infrastructure spending between 2008 and 2011. Public and private infrastructure spending are yet to return or exceed the pre-financial-crash levels, as shown in Figure 1.2.

Figure 1. 3: Tax rates



Source: Author, data from South African Reserve Bank

The corporate tax rates have been decreasing consistently over the period under review, as seen in Figure 1.3. Conversely, the Value Added Tax (VAT) had a marginal increase in 2018, the first change in VAT throughout the entire democratic dispensation. Interestingly, there was no corresponding change in the corporate tax rate during the same period wherein the VAT increased. Thus, VAT, a regressive tax, had significant adverse effects on consumers.

1.4 Research Problem

As mentioned above, the history of South Africa has been grim, particularly for the black majority. During the Apartheid regime, infrastructure spending as a percentage of Gross Domestic Product (GDP) was relatively high (DPME, 2014). Also, the apartheid regime's investment in infrastructure improved the living standards, material prosperity and the quality of life of the white minority (Feldman, Hadjmichael, Lanahan, and Kemeny, 2015). As a result, the infrastructure which was well maintained was in white urban and sub-urban areas. Feldman et al. (2015) argued that infrastructure development and infrastructure projects had been a concern for economic

development. They further asserted that economic and infrastructure development heavily depends on long-term private-public investments. According to the World Economic Forum (WEF) (World Economic Forum, 2012), Southern African countries should invest a minimum of 10% of their GDP towards social and economic infrastructure. However, South Africa did not meet the minimum infrastructure investment requirements throughout its 26 years of democracy.[5] Therefore, a sustained improvement in the quality of life and economic development relies heavily on consistent and targeted investment spending.

After the democratic breakthrough, there were infrastructure backlogs that delayed development. As a result, the government adopted macroeconomic and industrial policies that largely preferred debt and deficit reduction measures to address these challenges. Although the Reagan-Thatcher agenda that was adopted advocated for less government, Feldman et al. (2015) pointed out that the government and State-Owned Enterprises (SOE) are the only entities that have been charged with the responsibility to promote the well-being and prosperity of its people. Nevertheless, the macroeconomic and industrial policies aimed to reduce unemployment, inequality, and poverty levels in South Africa. However, as neoliberalism became more widespread and fears of a perceived debt crisis loomed, the government returned to austerity and focused on privatization, liberalization, and rationalization (Sibeko, 2019 and Gumede, 2007). According to Klein, Varoufakis, as well as Sibeko (2017, 2018, and 2019), the IMF coerced countries in debt to pursue austerity measures to restore stability despite their devastating effects on some European nations. Also, they pointed out that the challenge with austerity measures is that they do not resolve the unemployment, poverty, and inequality challenges that some countries are experiencing.[6]

Although research has been conducted on austerity, very little analysis has been made on its effect on long-term sustainable development, particularly in South Africa. Within the South African economic system, austerity measures have elements (debt, government expenditure, taxation) that interact with one another and are interlinked and interconnected. However, these interconnections and linkages between these elements are non-linear. As a result, the interaction of debt, government expenditure, and taxation (austerity measures) have led to emergent properties. The

[5] Compared to other emerging economies, China, India, and Saudi Arabia invest more in social and economic infrastructure than South Africa.

[6] Austerity measures are self-defeating in recessionary periods. In attempting to reduce the debt levels and deficits, austerity measures depress tax revenue and private-public spending which are essential for growth. Thus, if measures to tackle debt exacerbate poor economic performance, the debt-to-GDP ratio will increase when austerity measures are employed leaving the economy in a worse position than before

study seeks to investigate the emergent properties that emerged when austerity measures interacted and how they influenced infrastructure and economic development. Therefore, this study investigates the role of austerity measures on economic and infrastructure development.

1.5 Research Objectives

For this study, the main objective is to investigate the role of austerity measures in economic and infrastructure development in South Africa. Additionally, it seeks to provide policy recommendations based on the findings. The more specific objectives of the study are as follows:

- To investigate whether austerity measures promote economic development.
- To evaluate whether austerity measures improve infrastructure development.
- To determine whether austerity measures exacerbate infrastructure backlogs.

1.6 Hypothesis

1.6.1 **Null Hypothesis**: Austerity measures negatively affect economic development.

Alternative Hypothesis: Austerity measures positively affect economic development.

1.6.2 **Null Hypothesis**: Austerity measures negatively affect infrastructure development.

Alternative Hypothesis: Austerity measures positively affect infrastructure development.

1.6.3 **Null Hypothesis:** Austerity measures negatively affect infrastructure backlogs.

Alternative Hypothesis: Austerity measures positively infrastructure backlogs.

1.7 Significance of the study

As indicated above, the South African government has pursued macroeconomic policies that have sought to stimulate growth and were macroprudential (Feldman et al., 2015). However, the challenge being experienced is an inability to sustain that growth. Feldman et al. (2015) and Dhamija (2020) opined that economic development is the most appropriate tool for sustained economic growth and improving living standards for all citizens. At one point, the rise of neoliberal orthodoxy and the re-emergence of austerity measures was arguably the best policy prescription for deficit reduction and long-term economic recovery. However, after the South African government adopted the "New Growth Path (NGP) and the National Development Plan (NDP)", they sought to build a government and SOEs that could play a more developmental and

transformative role (NDP, 2012 and Burger, 2014). Hence Burger and Wade (2014 and 2018) maintained that developmental states are often associated with significant growth rates and often promote industrial policy. South Africa employed austerity measures within the first five years of democracy and approximately five years after the 2008 financial crisis (Bond, 2000 and Sibeko, 2019). Despite the experience of European nations with austerity measures, South Africa has optimistically employed austerity measures to salvage the ailing economy. As a result, the South African government's spending has been rising particularly on current expenditures like public wages instead of capital expenditure, hence the lack of infrastructure development (Mothibi and Mncayi 2019). Noting that economic and infrastructure development is crucial for the improvement and sustained development of the livelihood of all citizens, the study seeks to determine the role of austerity measures in developing the South African economy and its infrastructure. Therefore, the study will contribute to the existing debate on austerity measures and their developmental impact or lack thereof. The study brings some insight and contributes to macroeconomic and fiscal policy discussions. The South African government stands to gain some insight on the effects of austerity measures on their developmental imperatives particularly in their current fight against poverty, unemployment, and inequality.

1.8 Outline of Study

The study consists of six different chapters. Chapter 1 will be an introductory chapter of the study. It will introduce the topic, provide the background to a research problem, the objective of the study, and the significance of the study. Chapter 2 is the macroeconomic strategies. This chapter will assess the macroeconomic strategies in the democratic dispensation related to the study. Chapter 3 is the literature review. It will present the key concepts, theoretical and conceptual framework, and review past empirical studies. Thereafter, Chapter 4 is the research methodology. This section will discuss the research design, data and sources, model specification, and a detailed data analysis undertaken to meet the study's objectives. Chapter 5 will be the empirical analysis. This section will present coherently and discuss the empirical data of the study. Finally, Chapter 6 is the conclusion. This chapter will conclude the study and provide recommendations and areas for further study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter, the study defines the key concepts: Austerity, Economic Development, Neoliberalism, Infrastructure, and Fiscal policy. Thereafter, the theoretical framework outlines the theories utilised in this study, mainly, Complexity Theory and the New Neoclassical Synthesis. The study reviews empirical literature that focuses on Austerity, Debt, Infrastructure, and Economic Development. The macroeconomic strategies that the South African government introduced to address the economic and infrastructure challenges inherited from the apartheid era are reviewed. These strategies had specific objectives to deal with both the infrastructure and developmental imperatives. The section extracts and assesses the impact of each of these policy options. Thereafter, a summary of all the key findings of the empirical literature are presented. Finally, the empirical literature shows the research gap filled by the study.

2.2 Definition of key concepts and variables

2.2.1 Austerity

According to Dellas and Niepelt (2020), austerity is a reduction of total public spending and national consumption to strengthen the debt repayment capacity of the government. Sibeko (2019) viewed it as a fiscal policy to resolve debt and growth challenges during an economic downtown or stagnation. Blyth (2013) maintains that austerity is a "form of voluntary deflation in which the economy adjusts through the reduction of wages, prices, and public spending to restore competitiveness, which is (supposedly) best achieved by cutting the state's budget, debts, and deficits". He also adds that all these steps will eventually stimulate the economy. Moreover, austerity measures are the tools and instruments used to enforce the policy position. The measures can increase regressive taxation (VAT, fuel levy, etc.), spending cuts on public sector investments, tighter monetary policy, etc. (Sibeko, 2019). Sibeko (2019) argued that fiscal consolidation could be used interchangeably with Austerity. For the study, austerity measures will be regarded as an independent variable.

2.2.2 Economic development

Economic development has been defined by Todaro and Smith (2015) as a state of being whereby the society has the means to obtain a better life. He further adds that this can be done through a combination of social, economic, and institutional processes. Feldman et al. (2015) define

economic development as “the development of capacities that expand economic actors’ capabilities”. According to Todaro and Smith (2015), three key indicators characterize economic development: health, education, and adjusted (Real) income. These key indicators are crucial in assessing the economic progress of a developing society. Furthermore, the key indicators (Health, Education, and adjusted real income) form part of the Human Development Index (HDI), which measures the national socio-economic development of society.

2.2.3 Neoliberalism

Harvey, Standing, and Ornellas et al. (2005, 2011, and 2017) defined neoliberalism as a political and economic theory advanced by liberating individual freedoms, strengthening property rights, free markets, and free trade. He adds that the state's role is to facilitate and nurture such freedoms, rights, and practices within neoliberalism. Harvey and Standing (2005 and 2011) maintain that in an environment whereby markets do not exist, the state must create them. Additionally, government interventions need to be kept at the bare minimum in order not to distort the markets (Harvey, 2005 and Standing, 2011). According to Harvey (2005), typical features of neoliberalism are “deregulation, privatization, and withdrawal of the state from many areas of social provisions”. Moreover, Fine and Saad-Filho (2017) and Bond (2000) asserted that neoliberalism is a new stage of capitalism's development underpinned by financialisation. Fine (2016) further noted that financialisation meant “the subordination of social reproduction to financial market imperatives”.

2.2.4 Infrastructure

Infrastructure is a building or any facility used by both the household and the firm. There are two types of infrastructure: social and economic (DPME, 2019). Social infrastructure is the infrastructure that supports and develops social services (DPME, 2019). There are several different types of social infrastructure: hospitals, clinics, schools, and roads. Similarly, according to the DPME (2019), economic infrastructure supports and develops economic sectors of the economy. Examples of economic infrastructure are telecommunication, transport, and energy.

2.2.5 Fiscal Policy

Blanchard and Johnson (2014) and MERG (1993) defined fiscal policy as the government’s choice of tax, spending, and government deficits. Additionally, it focuses on political skirmishes and economic quarrels due to perceptions of different interest groups about the benefits or costs of economic transformation (MERG, 1993). Fiscal policy can be categorised into two policy

positions: fiscal contraction (also known as fiscal consolidation) and fiscal expansion. Fiscal consolidation is when governments reduce budget deficits by increasing taxes (increasing revenue) while government spending remains constant or reduced (Blanchard and Johnson, 2014). Austerity measures are also a means of achieving fiscal consolidation (Dellas and Niepelt, 2020). Fiscal expansion is represented by increased government spending and decreased taxes (Blanchard and Johnson, 2014). Fiscal policy is a critical tool to use to develop the economy.

2.3 Theoretical Literature

2.3.1 Complexity Theory

To fully comprehend the complexity of the South African economy, the study will use Complexity Theory. According to Cilliers (1998), Complexity Theory helps one understand complex systems. Manson (2001) defined complexity as a theory that analyses how systems change and evolve because of their interaction with their constituency parts. Additionally, within these complex systems, components, parts, or elements interact with each other. Complex systems are open systems, and these systems must be able to adapt to changes in the environment; therefore, their internal structure must be influenced by external conditions. Also, Manson (2001) adds that a system is defined more by the relationship of the constituency parts than the constituency parts alone. The economically active people in a country are comprised of many elements. An economic agent interacts with many other elements and acts on the "available information" because "it does not know what all the other agents are doing" (Cilliers, 1998). The system interacts with its environment so that the system, in its entirety, cannot be understood wholly through analysing the system's individual elements (or component parts) (Cilliers, 1998). Therefore, Complex systems are open systems that must be able to adapt to disturbances in their environment, whereby external conditions influence their internal structure.

There are linkages and interconnections between the elements. However, the linkages and interconnections are non-linear. For example, "money can receive compounded interest; small investments can produce significant returns" (Cilliers, 1998). Non-linearity is a precondition for complexity because it ensures that small causes have extensive results. The interaction of these elements may not necessarily be physical but rather seen as a transferal of information. Cilliers (1998) further explains that these linkages and interconnections are not static but dynamic, causing shifts and changes, often resulting from self-Organisation. A system is self-organizing because it changes its internal structure in response to many factors (e.g., in an economic system; money

supply, growth rate, political stability, natural disasters, etc.). Therefore, this self-Organisation can result in emergent properties. Manson (2001) states, “Emergence is a function of synergism, whereby system-wide characteristics do not result from superposition (i.e., additive effects of system components) but instead from interaction among different components”.

The economic system is open, and complicated to draw borders. It is continuously influenced by the “political system, agriculture (and therefore the climatic conditions), science and technology, international relationships, the stability of the society, etc.” (Cilliers, 1998). Once again, the South African economic system is the sub-system of the global economic system. Thus, there are linkages between the South African economic system and the global economic system, which are non-linear. The South African economic system's primary system of interest has micro agents: consumers, producers, and firms, whereas the macro agents are the state, the private sector, and fiscal and monetary tools. The interaction between privatization, deregulation, and globalization has led to the emergence of financialisation. Financialisation is an emergent property of the neoliberal economic paradigm that dominates the global economic system.

As mentioned above, economic systems are complex hence the analysis of the South African economic system requires an appropriate theoretical tool to analyse and interpret the non-linear interactions of the variables within that system. Austerity measures are a combination of fiscal tools (elements) that interact with one another within a complex economic system. The interaction and interlinkages between these elements are non-linear. Therefore, complexity theory is a useful theory when analysing the complex relations that exist within a complex economic system.

2.3.2 Neoclassical Theory

The Neoclassical economic theory was developed from the Classical economic theory. According to Colander (2000), the term ‘Neoclassical’ was coined in the late 19th century to represent the qualitative differences that were becoming apparent in some of the approaches being taken by various economists. These differences were relatively technical considering previous approaches and emphasised the distrust of anything bigger than the individual (Blyth, 2013). While differentiating between classical and neoclassical economic theory, Greenwald and Stiglitz (1987) argued that Classical economists treated unemployment as a temporary aberration that would be corrected by the market forces, while new classical (Neoclassical) economists interpreted changes in unemployment levels as “rational agents’ response to perceived changes in relative prices”. They added that proponents of the neoclassical theory sought to derive the “dynamic, aggregate

behaviour of the economy" from the fundamental principles of "rational, maximizing firms and individuals". Thus, the Neoclassical economic theory can be referred to as the Rational Expectation School, primarily focusing on the consequences of rational expectation formation (Greenwald and Stiglitz, 1987).

Furthermore, Nattrass and Varma (2014) stated that the Neoclassical economic theory has assumptions that constitute the micro-foundations of the Neoclassical macroeconomic models. One of these assumptions is that the Neoclassical theory assumes that if the markets are left to their own devices, they will work efficiently while simultaneously ensuring market equilibrium (when supply equals demand). Additionally, the neoclassical economic models assume that all resources are allocated optimally under perfect competition. The core assumptions made by the neoclassical model are similar to those mentioned by Greenwald and Stiglitz above, namely, "economic agents are rational beings seeking to maximise utility and profits, markets are perfectly competitive, agents have perfect information and stable expectations", and trade only occurs when market-clearing prices have been determined (Nattrass and Varma, 2014). Similarly, Colander (2000) outlined the primary attributes of Neoclassical theory, mainly its focus on the allocation of resources, marginal trade-offs, acceptance of methodological individualism, assumptions on farsighted rationality, acceptance of some variation of utilitarianism being integral to comprehending the economy, and it being structured around a general equilibrium conception of the economy. Notably, the neoclassical economic theory has found expression within the South African macroeconomic framework since the democratic transition, particularly after the introduction of GEAR. Thus, the neoclassical theory is an important theory to use when assessing how neoclassical economics has affected development in South Africa.

2.4 Macroeconomic Strategies

2.4.1 The Reconstruction and Development Programme

The RDP White Paper (RDPWP), mooted in 1994, was the Government of National Unity's (GNU's) policy framework for the reconstruction of the South African economy to eradicate the remnants of its colonial and apartheid past. The policy recognised the challenge it would encounter, particularly in its efforts to break down the racial division that was enforced systematically within every sphere of the economy, namely:

- Rural and remote areas were divided into underdeveloped Bantustans for the black majority and well-developed commercial farming areas for the white minority.
- Towns and cities were also divided into townships that lacked investments and basic infrastructure for the black majority and well-resourced suburban areas for the white minority.
- Segregation in education, health, welfare, transport, and employment resulted in gross inefficiencies and inequality (RSA, 1994).

The result of the disastrous impact of the past necessitated a sustainable plan for reconstruction and development for those who were disenfranchised.

The GNU made poverty alleviation and ending deprivation a priority through the RDP. It adopted six basic principles that were to function as the pillars of the RDP and presented five key programs aimed at operationalising the RDP to achieve the six basic principles. The five key programs it outlined were, "Meeting Basic Needs, Developing our Human resources, Building the Economy, Democratizing the State and society, and implementing the RDP" (RSA, 1994). These five programs became part of the long-term objectives and a guide to action of the RDP.

Economic Strategy

The government's economic policy was embedded in the RDPWP document. According to the RSA (1994), the state would facilitate reconstruction and development by creating an enabling environment for a thriving private sector and participation by all civil society sectors. Also, it recognised that growth and development have more than an interdependent relationship but a mutually reinforcing one (RSA, 1994). This suggested that growth cannot be sustained without development, similarly as development cannot occur without growth. Therefore, the GNU made employment creation a crucial point in their economic policy. Also, priorities were made to reverse the low levels of investment and saving and outward flow of capital to enhance productive investments. Again, the state had a crucial role to play.

In meeting its central goal of reconstruction and development, the RDPWP aimed to resolve the socio-economic needs of South African citizens. The government also aimed to create an environment for sustainable jobs, alleviate poverty, address economic imbalances and structural problems, integrate into the world economy, address uneven development in sub-Saharan Africa, eliminate discrimination in work, democratize the economy, and empower the historically disadvantaged and oppressed (RSA, 1994). In addition, growth can be attained by expanding social

and economic infrastructure to stimulate industry. Thus, growth is a crucial component of sustainable improvements in incomes and services.

The GNU adopted a set of strategies that it would implement to achieve its long-term objectives. The following set of tools was used:

- financial and monetary discipline as mechanisms to finance the RDP,
- reprioritisation of public sector activity,
- facilitating the restructuring of industry,
- creating an economic environment that fostered economic activity and was conducive to growth, dynamic trade, and industrial policies for sustained levels of economic participation,
- modernisation of human resources for an ever-changing production process, and
- reform in labour market institutions (RSA, 1994).

Additionally, the government sought to reduce consumption spending by reprioritising expenditure instead of obtaining new financial resources, redirecting consumption expenditure to much needed capital expenditure, implementing a performance-based management system, requiring all projects and programs to have planning, and introducing systematic business plans for government projects and programs (RSA, 1994).

Moreover, coherent, sustainable, and consistent economic initiatives were provided to overcome structural barriers to growth. The RDP investment policy committed to investing in areas that had previously not been explored whilst attracting private investment to augment its productive investments. The state had a significant role to play in this instance. Additionally, public investment would be primarily directed towards sectors of the economy that assist in poverty alleviation and consequently attract more private investment in more developed and active markets.[17] The industrial policy objectives are "employment creation, increased investments, and enhanced productivity" (RSA, 1994). The bedrock of the industrial policy is creating manufacturing capabilities that match domestic and global demands, followed by significant investments in electricity, health, education, transport, telecommunications, housing, roads, water, and sanitation infrastructure. Also, the policy lays more emphasis on the importance of science

[17] The RSA (1994): sectors that are efficient in poverty alleviation are "namely construction and building, communication, health and human resource development".

and technology in economic growth, beneficiation, increased productivity, development of exports, improved health and safety, and identification and utilization of technological and design competency.

2.4.2 The Growth Employment and Redistribution

Two years after establishing the RDP, the national treasury developed the Growth, Employment, and Redistributive (GEAR) Program as the new macroeconomic strategy to augment the RDP. In the long run, GEAR envisioned a fast-growing economy and competitive economy that created jobs, redistributed income, and created opportunities that targeted the poor, ensured basic health, education, availability of services for all, and created an environment where there was safety and security for private domiciles and productive places of work (Department of National Treasury, 1996). However, although GEAR acknowledged the progress made by the RDP, it feared that the three percent projected annual growth rate would not reverse the unemployment crisis, provide adequate resources that were crucial for expanding service delivery, and inadequate progress being made in equitable distribution of income and wealth.

As a result, GEAR proposed a sustainable growth path through a transformation geared towards an outward-orientated competitive economy. These are the basic tenets of neoliberalism, ensuring that the SA economy is connected to the global economic system even further.[18] Also, by the year 2000, GEAR sought to attain a six percent growth rate per annum and create annually 400 000 jobs through capacity building that would meet the demands of global competitiveness (Department of National Treasury, 1996). Thus, GEAR called for growth in exports, expansion in private sector capital formation, accelerated public sector investment, improved employment intensity of investment and output growth, and increased infrastructure development and service delivery based on labour-intensive techniques. This requires a substantial behavioural change from both the private and public sectors to ensure this type of transformation. Some critical elements of the integrated strategy to deliver the expected growth and employment figures were:

- budget reform to strengthen redistribution,
- a debt reduction program to free resources,

[18] Neoliberalism focuses on market-orientated reforms that eliminate any form of regulation including "price controls, deregulating capital markets, and lowering trade barriers". Neoliberal economics promotes privatization and the minimization of the role and influence of the state.

- relaxation of exchange controls,
- tax incentives to stimulate investments,
- restructuring of state-owned entities,
- expansionary infrastructure program to reduce backlogs, and
- expanding sustainable trade and investment flows in Sub-Saharan Africa (Department of National Treasury, 1996).

Economic Strategy

GEAR's medium-term strategy was presented to illustrate the roadmap towards "an improved growth and employment performance" in the period leading to the year 2000 while "strengthening the competitive capacity of the economy" (Department of National Treasury, 1996). Also, some of the core elements of this medium-term package were fiscal reform processes that prioritized a tighter short-term fiscal stance, a deficit target to eliminate government dissaving, additional reforms in the tax structure, and budgeting restructuring to sharpen redistribution and containment of costs. Additionally, the package sought a consolidation of trade and industrial policy reforms, tax incentives to stimulate investment, development of small-and-medium enterprises, implementation of the public sector asset restructuring program prioritizing the sale of assets, and developing Private-Public Partnerships (PPP) in transport and telecommunications (Department of National Treasury, 1996). Furthermore, an expansionary infrastructure program for more efficient economic infrastructure to support both industrial and regional development and address infrastructure bottlenecks in municipalities constitutes an integral part of enhancing economic growth and employment creation.

To accelerate growth, the government will cut consumption expenditure and manage public and private wage increases, amongst other things, to reach deficit targets, maintain investor confidence and stimulate investments from the private sector and development expenditure. The reduction of expenditure based on consumption, relative to GDP, and the reversal of dissaving will increase domestic savings, followed by a rise in gross domestic investment by 2000.[19] In addition, due to the reliance on foreign investment to sustain this growth trajectory, the government must ensure a favourable investment climate and destination. The following steps will suffice for GDP growth to reach the targeted levels of six percent by 2000 (Department of National Treasury, 1996):

[19] According to the Department of National Treasury (1996), domestic saving rose from 18 to 22 percentage of GDP whereas Gross Domestic Investment rose from 20 to nearly 26 percent of GDP.

- non-gold export growth rising to 10 percent,
- private sector investment averaging 12 percent over five years (from 1995 to 2000), and
- accelerating public sector growth to reach 10 percent per annum by 1998 whilst simultaneously stimulating stronger exports and investment (particularly non-gold exports and private investment performance).

The trade and industrial policies are crucial to the employment and growth prospects of GEAR. The industrial policy will prioritise investments in the manufacturing sector followed by tax holidays (tax exemptions) to stimulate competitive and labour absorbing industrial development. Regarding social policies, the government planned to reduce spending on Education, redirect health and welfare funds to more rural areas, and housing, land reform, and infrastructure will continue to receive support from the government due to its dependency on the labour-intensive construction sector. Finally, the public investment and asset restructuring policy put its weight behind the significance of economic and social infrastructure. However, according to the Department of National Treasury (1996), the most significant challenge was the infrastructure backlog which amounted to more than R170 billion. Thus, the Department of National Treasury (1996) argued that public infrastructure needs to include "the electricity grid and other energy projects, industrial and agricultural water supplies, sanitation, wastewater, and stormwater, accompanied by roads, railways, airports, harbours, pipelines, telecommunications, postal services, urban and rural infrastructure development of hospitals, clinics, and educational facilities". A more productive economic capacity and a better quality of livelihood would accompany progress in all these public investments.

2.4.3 Accelerated and Shared Growth Initiative for South Africa

In the 2004 election manifesto of the ANC, the government was mandated to half unemployment and poverty by 2014. As a result, ASGISA was developed as a supplementary document for GEAR due to its inability to meet its initial targets.[20] Among other challenges, the South African economy battled to increase and sustain a high economic growth rate necessary to deal with the country's economic woes. This was well illustrated by the staggering 26 percent unemployment rate reported

[20] RSA (2006): "The Deputy President formally launched ASGISA in February 2006, and the Joint Initiative on Priority Skills Acquisition (JIPSA) was established a month later to address scarce and critical skills needed to meet ASGISA'S objectives. The Deputy President reports to Cabinet and the public on ASGISA and JIPSA'S progress."

in 2005, despite exceptionally high inflows from foreign capital and recording an average three percent economic growth rate in the first decade of democracy.

Moreover, according to RSA (2006), six constraints would remain obstacles to achieving the desired growth rates, namely, "the volatility of the domestic currency, the cost efficiency and capacity of the national logistics system, shortages of skilled labour, and spatial distortions caused by apartheid, barriers to entry coupled with limited competition and new investments, the regulatory environment, and the deficiency within the state apparatus". These were the binding constraints identified by the ASGISA that hampered economic growth and poverty alleviation efforts.

Economic Strategy

As aforementioned, ASGISA's overall strategy was to develop policies, programs, and interventions that would assist the South African economy to grow at a rate that would reduce half of the unemployment and poverty by 2014 (RSA, 2006). A product of this process was the development of the Joint Initiative on Priority Skills Acquisition (JIPSA) and the Industrial Policy Action Plan (IPAP) and their iterations.[21] In addition, in response to the identified binding constraints, actions were required in infrastructure programs, sector investment (or industrial) strategies, skills and education initiatives, second economy interventions, macroeconomic concerns, and public administration issues.

Concerning infrastructure investment, the government planned to raise public sector investment to eight percent of GDP to roll back the infrastructure backlog and reprioritize infrastructure projects.[22] This would be followed by further development of South Africa's research and development infrastructure including a review of the modalities of PPP in maintaining public infrastructure. At the core of these government infrastructure investments were expenditures in both social and economic infrastructure projects. These projects included national and local road networks, water and sanitation infrastructure, energy distribution, housing, schools, business centers, etc. Furthermore, sector strategies were developed to promote private sector investments

[21] Joint Initiative on Priority Skills Acquisition (2006) was created to augment ASGISA and identify solutions to the major skills shortage that hindered the economic growth that was required to half poverty and unemployment by 2014. While IPAP (2007) was government's comprehensive approach to industrialization and industrial policy.

[22] RSA (2006): Roughly 40% of the investment expenditure will be "spent by public enterprises, mostly Eskom (R84 billion) and Transnet (R47 billion, of which R40 billion is 'core'), and mainly on power generation, power distribution, rail transport, harbours and an oil pipeline".

and refocus the energy of government. However, none of these strategies could efficiently materialize without the necessary skills hence the need for education and skills development to bridge the existing gap. To close the gap, the government introduced JIPSA. The government also planned to eliminate the second economy, which left many at the periphery of the economy, by leveraging the first economy. Macroeconomic issues could also be resolved by efficiently managing the domestic currency, improving budgeting, and eliminating inefficiency in implementing policies.

2.4.4 The New Growth Path

After the 2008 financial crash, the objectives of ASGISA to half the undesirable unemployment and poverty levels by 2014 became impractical. Thus, the NGP was conceptualized by the newly formed Department of Economic Development after the devastating 2008 financial crisis. In its foreword, Zuma (2011) emphasised that job creation and decent work would be the cornerstone of the economic policy. Additionally, he added that the NGP would be predicated on sustained and inclusive economic growth that reprioritizes the rebuilding of productive sectors of the economy.

There was a new consensus in society that promoting decent work, reducing (or even eliminating) inequality, and making poverty a relic of the past could only become a reality through a new inclusive growth path based on the fundamentally restructured economy to improve labour absorption, composition, and rate of growth (Department of Economic Development, 2011). The NGP envisioned a society whereby collectively, South Africans achieved a more developed and more equitable economy and society in the context of sustained growth. The three core challenges that the NGP identified were mass joblessness, poverty, and inequality. Although the South African economy was growing at a stable rate of roughly four percent in the first two decades of democracy, the country remained one of the most unequal societies globally (Department of Economic Development, 2011). Furthermore, the South African economy has not created sufficient jobs or employment opportunities for the past three decades. Thus, the Department of Economic Development (2011) argued that creating decent work, although it is not a panacea to the prevailing economic challenges, is an effective strategy to fight poverty, inequality, and rural under-development.

Moreover, the NGP emphasised the vital role that the government would play in socio-economic development through effective regulation of the markets. However, the over-reliance on the private sector and the improvement of job creation since 1994 had not resulted in significant employment

creation. In fact, in 2010, South Africa was ranked as one of the ten countries that had the worst employment figures (Department of Economic Development, 2011). Unfortunately, the consumption-led growth was not underpinned by a solid production base, thus, resulting in a slow expansion in manufacturing, mining, and agriculture.

Economic Strategy

At the core of the NGP was the creation of decent work opportunities through supporting labour-absorbing activities. Also, the leading indicators of success would be the number of quality jobs, the growth of labour intensity, composition, and the economy, more equity, and environmental outcomes (Department of Economic Development, 2011). In addition, the government would act as a developmental state coordinating its efforts around key priority areas and achievingng profound changes in the structure of savings, investments, and production. Thus, the NGP proposed that there should be a deepening of regional and domestic markets by enhancing employment, raising incomes, and improving equity and income distribution. Further, more emphasis was placed on widening the market for South African products by focusing on exports to emerging economies.

As previously stated, the NGP had an acute focus on employment creation as the backbone of economic recovery and development. As a result, job drivers were identified to reach employment and growth targets. The job drivers had their sights on five million jobs by 2020, effectively decreasing the rate of narrow unemployment to around 15% (Department of Economic Development, 2011). Two necessary variables were identified to attain the employment target: "economic growth and employment intensity of that growth".[23] In addition, five key drivers were identified by the Department of Economic Development (2011), namely:

I. significant public investment in infrastructure for direct employment creation and indirectly improving efficiency;
II. targeting labour-absorbing activities in "agriculture, mining value chains, manufacturing, and services";
III. exploiting emerging opportunities in "knowledge and green economies";
IV. leveraging "social capital in the social economy" and the public services; and

[23] Department of Economic Development (2011): "employment intensity is the rate of growth in employment relative to the rate of growth in GDP" and it provides an indication of the number of jobs created with a particular level of economic growth.

V. promoting “rural development” and enhancing “regional integration”.

Employment creation will be supported in six key sectors: infrastructure, mining value chain, agricultural value chain, the green economy, manufacturing, and tourism, and high-level services. Job Driver 1 focused on infrastructure, where public investment is estimated to create 250 000 jobs annually in crucial sectors through to 2015 (Department of Economic Development, 2011). The crucial sectors are energy, transport, water, communications infrastructure, and housing. Additionally, Job Driver 2 focused on the main economic sectors (Agriculture, mining, high-level services, and manufacturing) and would provide 300 000 opportunities for agricultural smallholder schemes and 145 000 employment opportunities in agro-processing, followed by 140 000 mining jobs by 2020. Subsequently, IPAP 2 targeted 350 000 jobs, of which 250 000 would be located in high-level services by 2020. Furthermore, Job Driver 3 focused on new economies and would target “300 000 new jobs in the green economy by 2020”, followed by “100 000 new jobs in knowledge-intensive sectors” (Department of Economic Development, 2011). Also, Job Driver 4 focused on investment in social capital and public services and would anticipate 260 000 employment opportunities. Finally, Job Driver 5 focused on spatial development whereby rural development programs could improve the livelihoods of more than 500 000 households and stimulate employment opportunities. A rise in exports to the Southern African Development Community (SADC) could generate 150 000 jobs by 2020 (Department of Economic Development, 2011).

The NGP noted that a single policy instrument would be insufficient to achieve its broad objectives. Thus, a developmental package consisting of macroeconomic strategies and microeconomic measures was outlined. The macroeconomic strategies planned active monetary policy interventions to attain growth and employment followed by a more competitive exchange rate, lower costs to capital, restrained fiscal stance, and sustainable public spending. At the same time, the microeconomic measures entailed managing inflationary pressures and supporting competitiveness and increased equity. The microeconomic measures included reforms in skills policy, competition policy, industrial policy, small business policy, labour market policy, rural development policy, African integration policy, and trade policy. The developmental state would be the vehicle used to achieve broad-based employment growth and achieve the overall goal of poverty reduction and economic growth.

2.4.5 The National Development Plan

Almost a year after the 2009 national elections, the president appointed a National Planning Commission (NPC) to draft a vision and a plan for the development of South Africa. Although the NGP had already been presented and publicly distributed, the NDP sought to augment and update the long-term vision for South Africa. The emphasis of the NDP was the development of a capable and developmental state, which could significantly alter the lives of South Africans. More than a year after the appointment of the NPC, a diagnostic report was released outlining the achievements and shortcomings since the first democratic election in 1994. The report detailed nine primary challenges, the failure to implement policies and the absence of broad partnerships as the main reason for slow progress. The nine primary challenges were lack of work, poor quality of education for blacks, inadequate and undermaintained infrastructure, spatial divides hampering development, unsustainable resource-intensive economy, strained public health system, poor quality of public service, shocking corruption levels, and South Africa remains a divided country (National Planning Commission, 2012).

While on the verge of completing two decades of democracy, South Africa remained an unequal society whereby the unemployment and poverty patterns of apartheid remained. Similar to the apartheid era, the quality of education for most black learners was poor, the apartheid spatial divide continued, and young people felt abandoned. The National Planning Commission (2012) recognised that the current trajectory of South Africa would not be able to achieve the objectives of defeating poverty and decreasing inequality. The elimination of the former and the latter's reduction necessitated the economy to grow faster and benefit all South Africans. Thus, more action, faster progress, and better implementation were required to achieve the goals presented.

Economic strategy

The NDP aspired broadly to defeat poverty and decrease inequality in South Africa by 2030 (National Planning Commission, 2012). Additionally, its specific objectives were (i) reducing unemployment to six percent, (ii) increasing the share of adults working to 40%, (iii) increasing the labour force participation rate to 65%, and (iv) increasing GDP in real terms by 2.7 times whilst raising annual GDP growth to 5,4%, (v) broadening the ownership of assets to historically disadvantaged groups, (vi) public employment programs reaching 2 million, (vi) increase national savings to 25% of GDP, the gross capital formation should increase to 30%. In addition, public sector fixed investment should rise to 10%. Furthermore, the NDP aimed to create an inclusive

rural economy by adding "643 000 direct jobs and 326 000 indirect jobs in agriculture, agro-processing", and related sectors by improving infrastructure and service delivery, review of land tenure, and mining commitments to social investment (National Planning Commission, 2012). The NDP seeks to achieve all the objectives by 2030.

The plan explicated that these objectives could only become a reality through comprehensive actions to develop our economy and create employment. Actions required included microeconomic reforms necessary to reduce the cost of living for households and the cost of doing business, removal of the constraints on growth, investment and job creation, energy generation, and urban planning. Additionally, broadening the expanded public works program to cover 2 million full-time employees by 2020, attract offshore business services, increase the benefit to the country through mineral resources, secure property rights, increase economic infrastructure, and create a structured tax regime that recognises the non-renewable nature of resources. This will be followed by employer's tax incentives to reduce hiring costs and subsidies to the employment placement sector. Business and labour will be more involved in developing proposals to reduce unemployment and reform labour laws (National Planning Commission, 2012)

The NDP proposed that the foundation of socio-economic development in South Africa is to invest in a strong network of economic infrastructure. Thus, the NDP aimed to increase the share of people with access to the electricity grid to 90% by (i) adding 29 000 MW into the electrical grid by 2030, (ii) ensuring access to clean and portable water for industry and agriculture, (iii) reduce water demand in urban areas, (iv) expand the use of public transport for commuters, (v) increase the capacity of the Durban port to 20 million containers per annum by 2040, and (vi) have a competitively priced broadband (National Planning Commission, 2012).

The proposals for economic infrastructure for coal, gas, electricity, and liquid fuels could be actioned by having domestic security for coal supply through industry compacts, a more comprehensive coal field planning and opening Waterberg for coal mining, investing in a new heavy-haul rail corridor, upgrading coal networks, expand export capacity in line to Richards Bay. This would be followed by (i) enabling exploratory drilling for coal seam and shale gas reserves to accelerate gas-to-power projects, (ii) incorporating gas into the energy mix and developing infrastructure to import liquified gas, (iii) moving to a less carbon-intensive electricity production through renewable energy, (iv) shifting Eskom's system to an independent system and accelerate procurement of independent power producers, (v) resolving backlogs and financing plans. In

addition, upgrade fuel refineries and insist on larger fuel stocks for the security of supply, and continue the imports of refined fuels to manage the growing petroleum deficits (National Planning Commission, 2012).

Furthermore, water resources needed a more comprehensive water strategy and an investment program for water resource development, timely development of new water schemes to supply industrial and urban centres, new irrigation systems, a national water conservation program, and creating of regional and wastewaters utilities and expanding the mandate of existing water boards. This would be followed by the upgrading and expanding transport and logistics infrastructure in key areas like the Gauteng-Durban corridor, including a new port in Durban airport, coal, iron ore, and manganese lines, and building the N2 road across the Eastern Cape. Information and communication infrastructure would be established across South Africa through a fiber-optic network that would be the backbone of broadband access, followed by a regulatory framework that would improve the internet capacity of broadband, prices fall, and an overall improvement in access (National Planning Commission, 2012).

An improvement in education, training and innovation is integral to economic development. According to the National Planning Commission (2012), the NDP aimed at (i) making early childhood development a priority to improve the quality of education for future generations, (ii) ensuring a minimum of two years of pre-school education, (iii) eradicating infrastructure backlogs to make schools meet minimum standards by 2016, (iv) improve throughput rate to 80%, produce 30 000 artisans per year, (v) increase university enrolment by 70%, (vi) increase the number of students eligible to study mathematics and science-based degrees to 450 000 by 2030, (vii) produce more than 100 Ph.D. graduates per million per year by 2030, and (viii) expand science, technology, and innovation outputs by increase research and development spending.

Healthcare for all was aimed at increasing the life expectancy at birth to 70 years, improving Tuberculosis (TB) prevention, reducing maternal, infant, and child mortality, deploying primary healthcare teams to provide healthcare to families and communities and filling posts with skilled, committed, and competent individuals (National Planning Commission, 2012). This could be achieved by addressing the social determinants that affect health and disease, augmenting the health system, decreasing the disease burden, and promote health, implementing the National Health Insurance (NHI), and facilitating the building of human resources in the health sector (National Planning Commission, 2012).

2.4.6 Evaluation of Macroeconomic Strategies

The Reconstruction and Development Plan

The ANC government took power from the apartheid regime during a period whereby the global economy saw the proliferation of trade liberalization and globalization in the 1990s (Turok, 2008). This exposed the South African economy to the complex global economic system.[24] In addition to the complexities of the global system, the democratic government would inherit a dysfunctional state with significant debt levels. The GNU adopted the RDP White paper (RDPWP) after the overwhelming electoral victory of the ANC. The RDPWP recognised that without fundamental structural changes to the South African economic system, the systematic tendency of inequality, unemployment, and poverty would persist. By the penultimate years of apartheid, the government's Debt-to-GDP ratio had reached 50% and was a cause for concern (RSA, 1994). Although the ANC presented the RDP base document and raised concerns by the media and business on how it would finance its developmental objectives, the RDPWP received considerable support (Turok, 2008). Nonetheless, as Turok (2008) pointed out, the government struggled to implement the RDPWP objectives due to institutional incapacity, lack of human resources, and stagnant inherited institutions. Additionally, the lack of a comprehensive development strategy, an incoherent understanding of the relationship between growth and development, and the snail's pace of implementation remained a challenge for the RDPWP.

However, despite these challenges, the RDPWP attained significant achievements. In meeting basic needs, the government substantially improved access to infrastructure, built one million houses within five years, provided electricity for nearly 2 million households and clean water for 4.8 million households by the year 2000, provided free healthcare for pregnant women and children, and provided free access to meals to 5 million school children (Knight, 2001; Lodge, 2002; Visser, 2005). This was followed by free healthcare for women, new mothers and children, more funding for the treatment of infectious diseases, 500 new clinics were built, and 240 000 jobs created through the community-based work programs by 1995. Unfortunately, the RDPWP was downgraded, and its offices closed after two years and were replaced by a new macroeconomic strategy in 1996. The abandonment of the RDPWP was concerning as it fundamentally sought to

[24] This period was marred by the collapse of both the Soviet Union and the East Asian miracle and renewed attempts by transnational capital to obtain global hegemony. This sequence of events, coupled with trade and financial liberalisation, would connect South Africa to the global economy, and expose it to global risks. The interconnectedness of the global economic system could have non-linear results from crisis from other nations.

restructure the SA economic system. What necessitated the change was the economic failure of the RDP to map out how job creation would be accelerated along with economic growth. The new macroeconomic policy was argued to contain measures that accelerated the objectives of the RDP although taking a more fiscally prudent approach.

The Growth Employment and Redistribution Program

After the overwhelming democratic victory, the ANC government was committed to transforming and developing South Africa. However, the government realised that within South Africa, a highly organized white economic power base was coupled with an international environment that hailed free-market liberalization and frowned upon any contrary major economic reform (Turok, 2008). As a result, by the mid-1990s, four corporations controlled 81% of share capital, 80% of the country's wealth was in the hands of 5% of the population, and whites still earned disproportionately higher salaries than their black colleagues (MERG, 1993; Gumede, 2007; Turok, 2008). Due to these domestic and international imbalances, the government shifted from the RDPWP to GEAR, emphasising monetary policy and fiscal prudence. Thus, the debate around a developmental framework was brought to an abrupt halt after the introduction of GEAR which had an acute focus on deficit reduction, macroeconomic stabilisation, inflation targeting, and a balance of payments (Gumede, 2007; Turok, 2008).

There was a considerable success that GEAR had, particularly in achieving its deficit-reduction targets, inflation and government expenditure targets and macroeconomic stability and fiscal prudence (Mosala, Venter, & Bain, 2017). Also, there was a substantial improvement in the collection of revenue through taxation that subsequently led to the rise of "real government spending, budget deficit reduction, and a reduction in government debt levels" (Hirsch, 2005). Furthermore, to augment the social spending expenditure outlined in the RDP, there was a significant increase in expenditure on infrastructure and social services, particularly in education, healthcare, social welfare, housing, access to water, and electricity. But unfortunately, GEAR did not meet all the expectations: growth, employment, and redistribution targets. The failure of GEAR to meet its growth targets severed all the spillover effects that would have accompanied that growth, mainly employment and redistribution. This was illustrated by the disappointing unemployment figures that reached 30%, followed by more than 1 million jobs being lost despite an average growth rate of around 4% in the first decade of democracy (Mosala, Venter, & Bain, 2017).

GEAR's fiscal prudence and macroeconomic stabilising efforts were underpinned by austerity measures that constrained much of the country's expenditure for developmental purposes (Turok, 2008

and Hirsch, 2005). Additionally, the success of stabilising macroeconomic fundamentals was offset by the failure to meet the social objectives that proved to be constraints on growth and investments. Subsequently, financing for key job drivers like human resource development was constrained, leading to an increasing mismatch of skills in the labour market and a lack of employment opportunities. Furthermore, economic growth was severely impacted by the geopolitical and global economic landscape, experiencing a series of crises, including the Asian macroeconomic crisis, the political developments in the United States and Zimbabwe, and a slowdown in the global economy (Masters, 2019). Furthermore, Turok (2008) emphasised that the lack of solid domestic investment contributed to the lack of foreign investment. Furthermore, it became more evident that stabilisation achieved its principal objectives of managing financial variables (domestic debt, inflation, interest rates) while paying a heavy price for persistent inequality, unemployment, poverty, and its subsequent problems (crime, HIV/Aids, and disease) (Turok, 2008). Thus, stabilisation has a turning point whereby it starts having severe negative consequences for an economy, as seen in South Africa.

Accelerated and Shared Growth Initiative for South Africa

There were several social and economic challenges that GEAR was unable to address efficiently, namely high unemployment rates, low economic growth rates, and high poverty levels (Masters, 2019). As a result, after the 2004 general elections, the government was mandated to half unemployment and poverty by 2014 (RSA, 2006). Although it was operational for a short period, ASGISA recorded notable achievements, namely:

- economic growth greater than 5%, investment rate increasing to over 20% of GDP,
- government investment increased to over 10% annually,
- the government reduced unnecessary red tape,
- universities committed to increasing their output of technical professionals,
- the number of artisan graduates more than doubled, and
- reduced currency volatility and severity of interest rate cycles (RSA, 2007).

Additionally, both government and state enterprises reached high levels of investment rates to support economic growth. According to RSA (2007), this improved policy intervention and government leadership.

Under skills and education development, considerable progress has been made. JIPSA brought about several skills interventions towards skills development, mainly mathematics and science programs, Quality Improvement and Development Strategy (QIDS), refurbishing dilapidated

training colleges, and the Employment Services System. A deployment of professionals followed this into the local government to assist in project development, maintenance capabilities, implementation, and progress in placing unemployed graduates (RSA, 2007). Furthermore, ASGISA ensured that macroeconomic stability had increased through fiscal and monetary policy working together to produce shared growth, improved budgeting, and the management of expenditure in government. As a result, before the 2008 financial crash, foreign reserves increased by 25%, interest rate rose by 2%, and investment sharply increased, resulting in "unemployment falling to 23% and poverty falling to 43.2%" (RSA, 2006).

However, ASGISA still struggled to alter the unacceptable levels of unemployment and poverty. The cause of these unacceptable levels ranged from backlogs caused by projects not being allocated new funds from respective departments to coordination and implementation failure of ASGISA programs. In addition, the lack of synergy between programs and interventions to insufficient reporting and monitoring systems proved to be a significant hurdle to success (Masters, 2019). As a result, similar to the RDP, ASGISA was abandoned after President Thabo Mbeki was recalled, and a new macroeconomic strategy was introduced, the NGP.

The New Growth Path

The development of the NGP was after a tumultuous political and economic period whereby on the domestic front, the political landscape shifted leading to an unprecedented recall of a sitting President and on the international stage, the global economy was recovering from the 2008 global recession. Nevertheless, the previous macro-prudential policy positions proved to buffer much of the damage inflicted by the global economy. The call for a shift from private sector-led growth to a more developmental role of the state was well encompassed in the establishment of the Department of Economic Development and the National Planning Commission (NPC), which subsequently facilitated the development of both the NDP and NGP (Fine, 2012). However, the NGP projected that most jobs would come from the private sector through targeted assistance for job drivers despite this call. According to Nattrass (2011), the NGP was more of a vision than a clear-cut macroeconomic plan and conceded that its growth imperatives (growth of 6% per annum) were a precursor to achieving its macroeconomic objectives of 5 million jobs by 2020. Thus, the success of the NGP is heavily dependent on sustainable economic growth and the national treasury's priorities.

After emerging from a global recession, it was a massive boost that the NGP did not rely on the current economic trajectory to create jobs (Nattrass, 2011). As aforementioned, the NGP was underpinned by job drivers that would drive growth. However, these jobs needed to be decent and not precarious work. The trade-off to this approach is that precarious work, saturated with unskilled labour, will not be expanded but would shrink, resulting in a contraction of employment growth of less-skilled work.[25] Thus, it would be unrealistic for the economy to generate large-scale employment opportunities without making it more cost-effective. To ensure that the private sector acts as a prime source of job creation, profitability should be restored, growth boosted, and a better match for wage and productivity growth should be prioritised (Nattrass, 2011). Whilst the NGP fails to confront the tradeoff between wages, profitability, productivity, and employment, its prospects of success will remain in question. To make a thorough analysis of the NGP is difficult, noting that it was only in effect for a year before the adoption of the NDP vision 2030.

The National Development Plan

The NDP was developed by the NPC and published months after the adoption of the NGP. The NDP was viewed as the government's long-term plan to achieve sustainable and inclusive growth, eliminating poverty and unemployment (DPME, 2019). Also, the NPC used the capabilities approach as a lens to view South African development, whereby the capabilities need to be developed to achieve human development and inclusive prosperity. In their seven-year review, the NPC conceded to the slow and ineffective implementation of the NDP, that poverty, unemployment, and inequality remained intact, acts of violence against women and children persisted, and the private sector was largely withdrawn, thus stifling growth, investment, and unemployment (DPME, 2019). Additionally, infrastructure is poorly managed, SOEs weigh down the economy, and corruption has become prevalent in the private and public sectors. Unfortunately, the NDP did not outline the implementation plan sufficiently.

The hallmark of the South African economic policies is their consistency in supporting the social protection system. Social grants relieve many households from absolute poverty and are a lifeline for roughly 40% of households (DPME, 2019). Additionally, the multidimensional poverty headcount fell to 7% in 2016, and between 2008 and 2014, more than 380 000 citizens were raised. In reducing inequality, the NDP sought to improve the share of income to the bottom 40%, raising it to 10% by 2030, but by 2015, it was at 8.3% (National Planning Commission, 2012). For

[25] The NGP regards low paying jobs as precarious work and deems them a problem.

unemployment, the NDP planned to create 2.2 million jobs by 2015, which was marginally achieved by creating 436 000 jobs per annum coupled with attaining the 43.8% employment ratio. The DPME (2019) acknowledges that without sustainable economic growth, the objectives of the NDP would not be achieved.

However, the challenges of the NDP are vast, particularly in addressing poverty, unemployment, and inequality. For example, Statistics South Africa (2019) released a report that revealed South Africa as the most unequal society globally, followed by the fact that the top decile owns between 71% and 95% of the country's wealth. Woefully, the NDP failed to meet both its employment targets and employment ratio after 2015, thus resulting in employment stagnating in 2018. Furthermore, the economy remained under a low growth trap between 2012 and 2019. Therefore, the economic trajectory of South Africa will struggle to generate jobs at the required rate to defeat unemployment and poverty (DPME, 2019).

2.5 Empirical Literature

2.5.1 International Studies

Petrovic', Arsic', and Nojkovic' (2021) assessed the effectiveness of public expenditure in "emerging market economies" within the EU, particularly "post-socialist economies of Central and Eastern Europe". They also pointed out that the similarities between these nations are their history of centrally planned economies. The methodology used in the study was Local Projections (LP) and Structural VAR (SVAR). In Addition, the data series used were quarterly data and covered the period between 1999 and 2015. The study found that increasing public investment positively affected output, employment, wages, and consumption during economic contractions. Also, public investment can be a powerful policy instrument for confronting recessions and stimulating growth.

Klein (2017) provided empirical evidence from 12 countries that formed part of the Organisation for Economic Cooperation and Development (OECD) that indicated that the cost of austerity measures was contingent on the level of private debt. Also, the study found that implementing austerity measures in periods of private-debt overhang could lead to severe contractions in the economy, whereas implementing them in low debt periods has no significant impact on economic activity. The baseline data set covered 12 countries from the OECD at an annual frequency between 1978 and 2008 and used panel data. The study used the terms austerity and fiscal

consolidation interchangeably—the study estimated impulse responses to exogenous changes using local projections due to their robustness to model misspecifications. Similar studies were conducted that indicated that private indebtedness mattered for fiscal policy (Eggertsson and Krugman (2012); Kaplan and Violante (2014); Andres, Bosca, and Ferri (2015)).

Moreover, Jorda and Taylor (2016) investigated the effect of fiscal consolidation and economic outcomes. Also, fiscal consolidation and austerity measures were used interchangeably. The study used the inversed propensity score weighted adjustment-based method for the time series data, which monitored the austerity program imposed by the United Kingdom (UK) coalition government after the 2010 election. Additionally, the data collected was for the five years of the United Kingdom (U.K) Coalition government between 2010 and 2015. The study concluded that austerity constantly strains the economy, especially in depressed economies.

Alesina, Barbiero, Favero, Giavazzi, and Paradisi (2015) sought to empirically measure the effects of "deficit reduction policies, like fiscal austerity, on output growth". The study constructed a new narrative data set for the period between 2009 and 2013 that documented the fiscal plans implemented by several countries. This was an extension of the database estimating the effects of fiscal austerity on growth over the years preceding 2009 created by AFG for OECD countries. The study concluded that fiscal adjustments based on reduced expenditures were less damaging in output losses than those based on tax increases.

Mura (2014) investigated the effects of productive public expenditures, particularly education, health, Research and Design (R&D), and infrastructure, on economic growth. The study used a panel-model approach with six cross-sections of six East-European countries between 1990 and 2013. Special mention was made to the commonalities of the East European economies that selected their economic and cultural features. The study showed that education, infrastructure, and R&D expenditure positively affected economic growth, while expenditures on health seemed to harm growth.

Furthermore, Cherif and Hasanov (2012) examined debt dynamics and reviewed the effects of "austerity, inflation, and growth shocks on reducing public debt" using data from the United States (US). Thereafter, the study used a modified VAR framework that included a separate debt equation. The study extended the VAR model and included the Debt-to-GDP ratio (and its lags) and macroaggregates part of the debt equation whereby the former was an exogenous variable and the latter an endogenous variable. Times-series data was used in the study covering the period

between 1980 and 2007. Relating to austerity, the study concluded that in a weak economic environment, a self-defeating austerity shock is more likely than in regular times.

Batini, Callegari, and Melina (2012) found that smooth and gradual fiscal consolidations (austerity) worked best with countries with high debt levels and that sheltering growth is essential for successful austerity measures to translate into lower debt-to-GDP ratios. This was revealed in their study that estimated the impact of fiscal adjustments in the US, Japan, and Europe (mainly the Euro Area, including France and Italy). Further, the study utilised regime-switching VARs to make these estimations, allowing fiscal multipliers to vary across recessions and booms. The data was collected for different periods, namely, the United States (1975 Q1– 2010 Q2), Japan (1981Q1– 2009 Q4), Italy (1981 Q1– 2007 Q4), France (1970 Q1 – 2010 Q4), and Euro Area (1985 Q1– 2009 Q4) using time series data.

Guajardo, Leigh, and Pescatori (2011) investigated the short-term effects of fiscal consolidation on OECD countries. The paper also reviewed the literature that suggested that fiscal consolidations could lead to expansionary austerity. Furthermore, the data collected included Budget Speeches, Budgets, central bank reports, IMF Staff Reports, IMF Recent Economic Developments reports, OECD Economic Surveys from OECD countries, and a multi-country dataset on tax and spending. The strategic approach to the research was similar to Romer and Romer's (2010). The findings revealed that fiscal consolidation had contractionary effects on private domestic demand and GDP even in the high sovereign default risk economies. In contrast, literature based on measuring discretionary changes in fiscal policy using cyclically adjusted fiscal data found that fiscal contractions can be expansionary, although data is highly biased towards overstating expansionary effects.

Furthermore, Caner, Grennes, and Koehler-Grip (2010) pointed out that developed and developing nations have a debt threshold. Noting that austerity attempts to prevent a debt crisis, their study established that the threshold for developed nations was 77 percent public debt-to-GDP ratio, whereas that of developing nations was 64 percent. Using time-series data, this paper had yearly datasets of 101 developing and developed economies from 1980 to 2008. Additionally, the threshold LS model is used. The effects of this threshold were more pronounced in developing countries. However, Herndon, Ash, and Pollin (2014) debunked the study by Caner et al. (2010) and cited “coding errors, selective exclusion of available data, and unconventional weighting of summary statistics”, which led to errors that failed to provide an accurate representation of the

relationship between debt and growth. By disproving Reinhart and Rogoff's claim, the study found that public debt-to-GDP ratios above 90% do not consistently reduce a country's GDP growth.

2.5.2 Local Studies

Moreover, Nketiah-Amponsah and Sarpong (2019) investigated how infrastructure and FDI affected economic growth in Sub-Saharan Africa (SSA). The study used panel data from 46 countries between 2003 and 2017. Additionally, the data was "analysed using fixed and random effects, and generalised system method of moments (GMM) estimation techniques". The study revealed that infrastructure development is important for economic growth, while Foreign Direct Investments (FDI) only enhance growth when it interacts effectively with the requisite level of economic infrastructure. Additionally, the findings suggested that the impact of FDI on economic growth can only be maximised "when some level of economic infrastructure is available". Thus, there is ample "justification for a significant investment in infrastructure" from the government to create a cost-effective business environment to improve economic growth.

Perkins et al. (2005) analysed the long-term trends in the development of the South African economy and its relationship with sustained economic growth. The data was collected for different periods for different infrastructures, namely, rail (1875-2001), roads (1900-2001), air travel (1960-2001), electricity (1920-2001), and telephones (1920-2001). The estimations were based on PSS F-tests to identify directions of association between economic infrastructure and economic growth. The study made three interesting findings: the relationship between economic infrastructure and economic growth seems unidirectional, unsatisfactory investment in infrastructure could create bottlenecks, and South Africa's stock of economic infrastructure has developed in phases.

On the other hand, Gnade, Blaauw, and Greyling (2017) analysed the effect basic and social infrastructure investment have on economic growth and social development in South African rural communities. The paper also compared the returns of the investments in urban and rural communities in South Africa. Using a balanced panel dataset with indicators for urban and rural municipalities, the study found that the elasticities of basic and social infrastructure investment generally are more pronounced for rural municipalities' economic growth and social development indicators. Therefore, the findings could be used as a precursor to increase infrastructure investments in rural municipalities to stimulate rural municipalities' economic growth and development. Thus, the inequality between rural and urban municipalities cannot be addressed adequately without addressing infrastructure.

Baaziz, Guesmi, Heller, and Lahiani (2015) investigated the relationship between the public debt ratio and real GDP growth in South Africa. There were continued concerns by policymakers, debt collectors, and lenders regarding optimal public debt levels that could threaten economic growth. The study used the STR model, which allowed regression coefficients to vary depending on the level of public debt. Also, the period under review utilised time-series data of the South African economy between 1980 and 2014. The results revealed that the estimated threshold level between public debt and growth turns negative when public debt levels surpass 31.7%. Thus, debt levels above the threshold have a statistically significant negative impact on the performance of the South African economy.

2.5.3 Empirical Summary

Austerity has become synonymous with fiscal consolidation like economic growth and economic development. Also, it has been characterized as an act of political expediency rather than an economic necessity. Scholars have written extensively, producing a diverse and vast body of work regarding the austerity-debt-growth nexus. However, available research has neglected the austerity-development nexus necessary for developmental discourse. Examining debt, infrastructure, and economic development literature proves vital as austerity programs affect each of these variables. Literature investigating the austerity-growth nexus, and the austerity-debt nexus, has been conducted using a mix of panel and time-series data. However, most of the literature is conducted using time series and panel data. Klein (2017), Cherif and Hasanov (2012), Alesina et al. (2015), Guajardo et al. (2011), Jorda and Taylor (2016), and Batini et al. (2012) provided key insights on the austerity-debt-growth nexus. Furthermore, Petrovic et al. (2021), Nketiah-Amponsah and Sarpong (2019), Perkins et al. (2005), Mura (2014), and Gnabe et al. (2017) presented the relationship between economic and infrastructure development and sustained economic activity. In contrast, Baaziz et al. (2015) and Caner et al. (2010) exposited the debt-growth nexus. Therefore, the study on the role of austerity in infrastructure and economic development is the first of its kind in South Africa.

2.6 Conclusion

The chapter presented the key concepts utilised in this study, namely, Austerity, Economic Development, Neoliberalism, Infrastructure, and Fiscal Policy. This was followed by outlining the theories used mainly, Complexity Theory and the Neoclassical Theory. The empirical literature reviewed international and local studies. The section covered the macroeconomic strategies that

were adopted in South Africa, namely the RDP (1994), GEAR (1996), ASGISA (2006), the NGP (2011), and the NDP (2012). An analysis of the economic policies revealed that the period between 1996 and 2011 promoted fiscal stability and macroprudential policies. Additionally, the introduction of the NGP was underpinned by the developmental state discourse that sought to create what was soon referred to as "a capable and developmental state". Subsequently, the NDP ushered in the capability approach that sought to enhance the capabilities of the state and other role players in the economy through the developmental state. Ironically, fiscal stability and macroprudential policies came at a tremendous social cost. The analysis concluded that South Africa's macroeconomic policies have not been able to adequately address the triple threat of unemployment, inequality, and poverty.An empirical summary of the literature was presented, summarising the key discussions and conclusions of the empirical studies. It was established that the study was the first of its kind, thus filling a research gap in the austerity-development nexus necessary for developmental discourse. The next chapter introduces the methodology that is employed in this study.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology that is used in the study. The research design utilizes a mixed-method approach whereby both qualitative and quantitative analysis methods are employed. First, the research design outlines the research approach. Next, the data and sources section show where the data is sourced and collected. Furthermore, the model specification will show that a Vector Autocorrelation (VAR) model is used. Finally, a detailed data analysis is conducted to review the VAR estimation tests used in the study.

3.2 Research Design

For this research, the study utilised a mixed-method approach. This approach encapsulated both the qualitative and quantitative methods of analysis. The qualitative approach reviewed literature that expanded on the role of austerity measures on economic and infrastructure development. Additionally, it reviewed the history of austerity in South Africa by analysing macroeconomic strategies. The quantitative method was that of a regression analysis.

3.3 Data and Sources

For this study, data from 1994 to 2019, which equates to 25 years, was used. The data of the abovementioned period was converted into quarterly frequencies. The periods whereby the macroeconomic policy was employed ran concurrently with the frequency of the data that would be used, namely, Reconstruction and Development Plan (1994-1996), GEAR (1996-2009), Accelerated and Shared Growth Initiative for South Africa (2004- 2008), New Growth Path (2010-2012), National Development Plan (2012-2030). The secondary data was gathered mainly from the South African Reserve Bank (SARB).

3.4 Model Specification

Austerity measures have served as significant macroeconomic tools for debt management, but their role in economic and infrastructure development is yet to be defined. Thus, the study utilised a quantitative method to effectively analyse the relationship and connection between austerity measures and economic and infrastructure development. The study employed the VAR model. Similar to Mushelenga and Sheefeni (2017), the study employed time series techniques on quarterly data from 1994 to 2019 within a VAR framework. The vector autoregression process is

described by a dynamic system whose structural form equation is given by: $Ay_t = \Psi + \Omega_1 y_{t-1} + \Omega_1 y_{t-2} \dots \Omega_p y_{t-p} + B\,\mu_t$ (3.1)

Wherein A is an invertible $(n\,x\,n)$ matrix describing contemporaneous relations among the variables. Thereafter, y_t is an $(n\,x\,1)$ vector of endogenous variables such that $y_t = (y_{1t}, y_{2t}, \dots, y_{nt})$. Ψ is a vector of constants. Ω_i is an $(n\,x\,n)$ matrix of coefficients of lagged endogenous variables $(\forall i = 1,2,3, \dots, p)$. B is an $(n\,x\,n)$ matrix whose non-zero off-diagonal elements allow for direct effects of some shocks on more than one endogenous variable in the system. And μt are uncorrelated or orthogonal white-noise structural disturbances, i.e., the covariance matrix of μ_t is an identity matrix $E(\mu_t, \mu'_t) = 1$. Equation (3.1) can be rewritten in compact form as:

$$Ay_t = \Psi + \Omega(L)y_{t-1} + B\mu_t \quad (3.2)$$

Where $\Omega(L)$ is a $(n\,x\,n)$ finite order matrix polynomial in the lag operator L.

Enders (2004) states that "the VAR presented in the primitive system of equations (3.1) and (3.2) cannot be estimated directly" and that "the information in the system can be recovered by estimating a reduced form of VAR implicit in (3.1) and (3.2)". By pre-multiplying equation (3.1) a reduced form VAR of order p is written as:

$$y_t = \phi_0 + \sum_{i=1}^{p} \phi_i y_{t-1} + \varepsilon_t \quad (3.3)$$

Where: $y_t = f$ (*lntgfcf, lnRGDP, lnnet_Debt, lncorp_tax, lnGDE*)

Φ = matrix of coefficients of autonomous variables.

Ai = Matrix of coefficients of all variables in the model.

y_{t-1} = is the vector of the lagged values of total gross fixed capital formation (*lntgfcf*), real GDP (*lnRGDP*), net debt (*lnnet_Debt*), corporate tax (*lncorp_tax*), and Gross Domestic Expenditure (*lnGDE*).

εt = the vector of the error term

The selected variables total gross fixed capital formation (*lntgfcf*), real GDP (*lnRGDP*), net debt (*lnnet_Debt*), corporate tax (*lncorp_tax*), and Gross Domestic Expenditure (*lnGDE*) are directly affected by austerity measures. As mentioned previously, austerity measures are a fiscal policy instrument used to manage debt through the taxes and government expenditures. Additionally, the

total gross fixed capital formation and real GDP are a representative of infrastructure and economic development. These variables are essential in determining whether austerity measures positively impact infrastructure and economic development.

While equation (3.3) presents the estimates of the reduced form VAR, restrictions on parameters of matrices and equation (3.4) are imposed by separating the structural shocks from the estimated reduced residuals:

$$A\varepsilon_t = B\mu_t \quad (3.4)$$

The model consists of four endogenous variables for infrastructure development and three variables for economic development; thus, the VAR model matrix is expressed in the following manner:

$$LNTGFCF_t = \alpha_1 + b_{11}LNTGFCF_{t-1} + b_{12}LNGDE_{t-1} + b_{13}\,LNNET\_DEBT_{t-1} + b_{14}LNCORP\_TAX_{t-1} + \varepsilon_t^{LNTGFCF}$$

$$LnGDE_t = \alpha_1 + b_{21}LNTGFCF_{t-1} + b_{22}LNGDE_{t-1} + b_{23}\,LNNET\_DEBT_{t-1} + b_{24}LNCORP\_TAX_{t-1} + \varepsilon_t^{LNGDE}$$

$$LNNET\_DEBT_t = \alpha_1 + b_{31}LNTGFCF_{t-1} + b_{32}LNGDE_{t-1} + b_{33}LNNET\_DEBT_{t-1} + b_{34}LNCORP\_TAX_{t-1} + \varepsilon_t^{LNNET\_DEBT}$$

$$LNCORP\_TAX_t = \alpha_1 + b_{41}LNTGFCF_{t-1} + b_{42}LNGDE_{t-1} + b_{43}\,LNNET\_DEBT_{t-1} + b_{44}LNCORP\_TAX_{t-1} + \varepsilon_t^{D}$$

Where: $\varepsilon_t^{LNTGFCF}$, ε_t^{LNGDE}, $\varepsilon_t^{LNNET\_DEBT}$ *and* $\varepsilon_t^{LNCORP\_TAX}$ are the white noise error terms for the regressors and regressand.

$$LNRGDP_t = \alpha_1 + b_{11}LNRGDP_{t-1} + b_{12}LNTGFCF_{t-1} + b_{13}\,LNGDE_{t-1} + b_{14}LNCORP\_TAX_{t-1} + \varepsilon_t^{LNRGDP}$$

$$LNTGFCF_t = \alpha_1 + b_{11}LNRGDP_{t-1} + b_{12}LNTGFCF_{t-1} + b_{13}\,LNGDE_{t-1} + b_{14}LNCORP\_TAX_{t-1} + \varepsilon_t^{LNTGFCF}$$

$$LNGDE_t = \alpha_1 + b_{11}LNRGDP_{t-1} + b_{12}LNTGFCF_{t-1} + b_{13}\,LNGDE_{t-1} + b_{14}LNCORP\_TAX_{t-1} + \varepsilon_t^{LNGDE}$$

$$LNCORP\_TAX_t = \alpha_1 + b_{11}LNRGDP_{t-1} + b_{12}LNTGFCF_{t-1} + b_{13}\,LNGDE_{t-1} + b_{14}LNCORP\_TAX_{t-1} + \varepsilon_t^{LNCORP\_TAX}$$

3.5 Data Analysis

The VAR is a system that treats the variables of dynamic linear equations in the system as endogenous. The system's reduced form provides an "equation for each variable" and "specifies each variable as a function of the lagged values of their own and all other variables in the system" (Sheefeni and Kaulihowa, 2016). Additionally, VAR is useful in analysing the interrelation of the time series and the dynamic impacts of random disturbances on the system of variables. Mushelenga and Sheefeni (2017) mentioned that the standard practice in empirical applications was using the VAR model's "Impulse Response (IR) analysis and its forecast error variance decomposition (FEVD)". They added that the analysis traces the "response of endogenous variables to one standard deviation shock or change to one of the disturbance terms in the system". Before the final VAR estimation, the listed below tests are conducted and discussed in detail:

- Non-stationary (unit root) of time series.
- The optimal lag length.
- The stability conditions.
- Co-integration.

3.5.1 Unit root test

The unit root test is often the first test that requires a test for the univariate characteristic of the data. Therefore, tests for non-stationary time series were done using formal testing techniques; namely, the "Augmented Dickey-Fuller" (ADF) and the "Phillips-Perrons" (PP) and the "Kwiatkowski-Phillips-Schmidt-Shin" (KPSS) tests are applied to determine the presence of the unit root (Gujarati, 2003). This was done to avoid spurious results that make statistical sense for variables but lack any economic relationship and determine the order of integration. Moreover, Mushelenga and Sheefeni (2017) stated that stationary variables indicate that "they are integrated of order zero", whereas stationary variables "in the first difference are integrated of order one". Thus, stationary implies that variables have "zero mean, constant variance, and uncorrelated residuals" over time (Mushelenga and Sheefeni, 2017).

3.5.2 Lag length

The optimal lag length is tested as it affects the VAR model. Similar to Mushelenga and Sheefeni (2017), the criterion used to determine the optimal lags were mainly the "Hannan-Quinn (HQ), Schwarz information criterion (SC), Akaike Information Criterion (AIC), Final prediction error (FPE), and Likelihood Ratio (LR)".

3.5.3 VAR stability

It is important to check whether the VAR model satisfies the stability condition. VAR stability is established when the inverse roots of the AR polynomial have a modulus below one and lie within the unit root circle.

3.5.5 Cointegration test

The Johansen co-integration test was conducted to test for two or more series with a long-run equilibrium or relationship. The test is based on Trace and Maximum Eigenvalues test statistics. In the presence of co-integration among variables, the Vector Error Correction Model (VECM) is used to adjust the short-run to the long-run equilibrium, whereas its absence indicates that only the VAR model can be estimated to make a short-run analysis.

3.5.6 Generalised impulse response functions

The impulse response function traces the response of the endogenous variables in the VAR to shocks to each of the other variables. Lutkepohl (1993) explained that the generalised impulse response function considered "historical patterns of correlations amongst different shocks" and showed the interaction between endogenous variables sequence. The estimated VAR would determine the impulse response function. Biasedness towards a particular school of thought can be avoided using a General Impulse Response Function (GIRF). The GIRF is not sensitive to the ordering of variables.

3.5.7 Forecast error variance decomposition

The Variance decomposition analysis provides an "alternative method to the impulse response function" for examining the effects of shocks on dependent variables (Sheefeni and Kaulihowa, 2016). It determines how much of the forecast error variance for any variable in the system is explained by "innovations to each explanatory variable over a series of time horizons" (Stock and Watson, 2001).

3.6 Conclusion

This chapter outlined the research methodology that is used in the study. The research design utilised a mixed-method approach whereby both qualitative and quantitative analysis methods were employed. The data and sources section showed that the data would be collected from secondary sources like the SARB over 25 years. Thereafter, the model specification showed that a VAR model would be employed. Finally, a detailed data analysis section reviewed the VAR estimation tests used in the study, mainly; the Unit Root test, Lag Length test, Stability tests, Cointegration test, Generalised Impulse Response Functions, and Forecast Error Variance Decomposition.

CHAPTER FOUR: EMPIRICAL ANALYSIS

4.1 Introduction

The empirical analysis chapter addresses the research questions presented in the first chapter. The empirical results elucidated the role austerity measures have had on economic and infrastructure development in South Africa using quarterly data for the period between 1994 and 2019. The analysis followed the analytical framework that was presented in the previous chapter. It is essential to mention that there are two primary empirical estimations. The first empirical estimation focuses on infrastructure development, while the second estimation focuses on economic development. Under the main sections, the following subsections are presented: the unit root test, lag length criterion, and stability tests, followed by the cointegration tests. In the presence of cointegration, the Vector Error Correction Model (VECM) is conducted. Next, the generalised impulse response function (GIRF) and the forecast error of variance decomposition (FEVD) are presented. Finally, a brief and explicative summary of the chapter is provided.

4.2 Empirical Findings: Estimation for Infrastructure development

4.2.1 Unit Root test

The unit root test was the first step before estimating the empirical model. It tested for the presence of unit root before the model was estimated. The ADF and the PP tests were utilised to examine and ascertain the order of integration and avoid nonsensical results. To ensure robustness, more than one test statistic was used. Table 4.1 reported that Corp_Tax was stationary in levels, whereas RGDP and GDE were only stationary when considering intercept and trend. The other variables were stationary after differencing them once. Variables stationary at levels indicate that the order of integration was zero. When variables are stationary in the first difference, it signifies that the order of integration was one. Variables that were stationary or contained no unit root show that the variables have zero mean and constant variance and that the residuals are uncorrelated over time.

Table 4. 1: Unit Root tests (ADF and PP) in levels and first difference

Variable	Model Specification	ADF	PP	ADF	PP	Order of integration
		Levels	Levels	First difference	First difference	
lnrgdp	Intercept	-2.217	-1.3224	-3.8395**	-31.5529**	I(1)
	Intercept and trend	-0.228	-6.3675**	-4.4660**	-36.0875**	I(0)

Lntotal_gfcf	Intercept	-1.6117	-2.0209	-2.8972**	-10.4528**	I(1)
	Intercept and trend	-1.3256	-1.0151	-3.1505*	-10.7354**	I(1)
Lnnet_Debt	Intercept	1.3664	0.3352	-2.1371	-9.1964**	I(1)
	Intercept and trend	-1.7418	-0.9262	-2.7616	9.2740**	I(1)
Lngde	Intercept	-1.3047	-1.4758	-3.0969**	-20.9764**	I(1)
	Intercept and Trend	-0.7775	-3.8054**	-3.3147*	-21.9882**	I(0)
lnCorp_tax	Intercept	-3.7528**	-3.7367**	-14.0399**	-14.0955**	I(0)
	Intercept and trend	-4.0175**	-4.1069**	-13.9902**	-14.2607**	I(0)

Source: author's calculation from e-views
Notes:(a) * and ** means the rejection of the null hypothesis at 10% and 5% respectively

4.2.2 Stability condition

The VAR needs to be stable; hence a stability test is conducted to determine whether the "VAR satisfies the stability condition based on the roots of the characteristic polynomial" (Sheefeni and Kaulihowa, 2016). In addition, If the VAR is unstable, "the impulse response function" and "the variance of decomposition" will not be valid. Fortunately, the VAR in the study satisfies the stability condition as the AR roots were all less than one, and none lay outside the unit circle, as reported in Table 4.2.

Table 4. 2: Roots of Characteristic Polynomial

Root	Modulus
0.993968	0.993968
0.963169 - 0.018993i	0.963356
0.963169 + 0.018993i	0.963356
-0.599991	0.599991
0.477286 - 0.071431i	0.482602
0.477286 + 0.071431i	0.482602
-0.146635	0.146635
0.063462	0.063462
No root lies outside the unit circle. *VAR satisfies the stability condition.*	

Source*:* author's calculations from e-views

4.2.3 Lag length criterion

Table 4.3 displays the optimal lag length criterion. The various information criteria are the LR test statistic, FPE, AIC, SC, and HQ. The maximum lag length on the VAR stability was four, as suggested by the SC in the criterion.

Table 4. 3: Optimal Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	304.5702	NA	2.24e-08	-6.261880	-6.155032	-6.218690
1	920.7865	1168.243	8.32e-14	-18.76639	-18.23215	-18.55044
2	966.5551	82.95550	4.48e-14	-19.38656	-18.42493	-18.99786
3	991.3578	42.88804	3.75e-14	-19.56995	-18.18093	-19.00849
4	1048.630	94.26131	1.60e-14	-20.42980	**-18.61339***	**-19.69558***
5	1071.159	35.20001	1.42e-14	-20.56580	-18.32200	-19.65882
6	1090.707	**28.91521***	**1.34e-14***	**-20.63973***	-17.96853	-19.55998
7	1099.336	12.04558	1.61e-14	-20.48618	-17.38759	-19.23368
8	1113.840	19.03597	1.73e-14	-20.45500	-16.92902	-19.02974

Source: author's compilation and values obtained from e-views.

4.2.4 Cointegration and VECM results

After establishing the lag length criteria, the cointegration test was conducted. The test used is the Johansen cointegration test which was based on both the Trace and Maximum Eigenvalues test statistic. The cointegration test was done to determine whether there was any presence of a long-run relationship among the variables. In Table 4.4, the null hypothesis was represented by $r = 0$, whereas the alternative hypothesis was represented by $r \geq 1, or\ r \geq 2, 3, 4$. The null hypothesis states that there was no cointegration among the variables.

The Trace and Maximum Eigen statistic results indicated at least one cointegrating vector. This was because the t-statistics were greater than the critical value at a 5% significance level. As a result, there was the presence of cointegration among the variables, as shown in Table 4.4. The presence of cointegration implied at least one significant long-run relationship in the results. There was one significant long-run relationship between the given variables, hence the need to adjust the short-run to the long-run equilibrium through the VECM model.

Table 4. 4: The Johansen co-integration test

Maximum Eigen Test				**Trace Test**			
H_0: rank=r	H_a: rank=r	Statistic	95% Critical Value	H_0: rank=r	H_a: rank=r	Statistic	95% Critical Value
r = 0	r = 1	28.04701*	27.58434	r = 0	r >= 1	53.20539*	47.85613
r <= 1	r = 2	11.96234	21.13162	r <= 1	r >= 2	25.15837	29.79707

r <= 2	r = 3	8.476521	14.26460	r <= 2	r >= 3	13.19603	15.49471
r <= 3	r = 4	4.719512*	3.841465	r <= 3	r >= 4	4.719512*	3.841465

Source: author's compilation and values obtained from e-views.
** Denotes rejection of the hypothesis at the 0.05 level*
Both Max-eigenvalue and Trace tests indicate one cointegrating equation at the 0.05 level.

The representation of cointegration and the long run model is presented in Table 4.5, derived from the VECM.

Table 4. 5: Vector Error Correction Estimates

Cointegration Equation:	**Cointegration Equation1**
LNTGFCF(-1)	1.000000
LNNET_DEBT(-1)	0.199733
	(0.01596)
	[12.5127]
LNGDE(-1)	-1.909915
	(0.06235)
	[-30.6344]
LNCORP_TAX(-1)	-0.430986
	(0.13029)
	[-3.30786]
C	10.80994

Source: Author's own calculations from e-views

The estimated long-run equation for TGFCF is presented in equation 4. The model was specified in logarithms. Thus, the interpretation will be in elasticity form and the signs need to be inverted.

$$\text{Ln}TGFCF_t = -10.8099 - 0.1997\text{Ln}Net\_Debt_{t-1} + 1.9099LnGDE_{t-1} + 0.4309LnCorp\_Tax_{t-1} \quad (4.1)$$

(12.5127) (-30.6235) (-3.3078)

In equation (4.1), the coefficients of GDE and CORP_TAX were positive. Therefore, an increase in GDE and CORPT_TAX positively impacted TGFCF. Islam (2018) had similar findings whereby the lack of investment in infrastructure during times of austerity created bottlenecks that inhibited sustainable infrastructure development. Additionally, Perkins et al. (2005) found significant increases in government spending (investments) positively impacted infrastructure development. On the other hand, the coefficient of NET_DEBT was negative. This suggests that

an increase in NET_DEBT would have a negative impact on TGFCF. Similarly, Klein (2017) found that the level of indebtedness significantly hampers the prospects of development in a nation.

Table 4. 6: Short run relationship (VECM)

Error Correction:	**D(LNTGFCF)**	**D(LNNET_DEBT)**	**D(LNGDE)**	**D(LNCORP_TAX)**
CointEq1	-0.519320	-0.065422	-0.140153	0.148071
	(0.12439)	(0.06428)	(0.08541)	(0.07430)
	[-4.17497]	[-1.01776]	[-1.64101]	[1.99280]

Source: Author's compilation from e-views

In Table 4.6, the short run relationship was presented. The coefficients presented in the table above were adjustment coefficients that played an integral role in restoring the normalized variables to equilibrium. For this reason, Enders (2015) argued that "if the system is to return to equilibrium, the movement of some variables would respond to the magnitude of the disequilibrium". Thus, the adjustment coefficients brought the system back to equilibrium when there was a movement away from the long-run relationship. On the other hand, if the variables in Table 4.6 had adjustment coefficients of 0, it signified that they neither played a role nor impacted "the short-run determination" of the normalized variables (Enders, 2015). Additionally, variables that did not respond to movements away from the long-run equilibrium are weakly exogenous.

In an Error Correction Model (ECM), where the Error Correction Term (ECT) is represented, the short-term dynamics of the variables in the system were "influenced by the deviation from equilibrium" (Ender, 2015). For example, in Table 4.6, the ECT had a value of -0.51932. This implied that the system would return to equilibrium at a high rate of 0.51932, which translates to roughly 51.93% speed adjustment back to equilibrium.

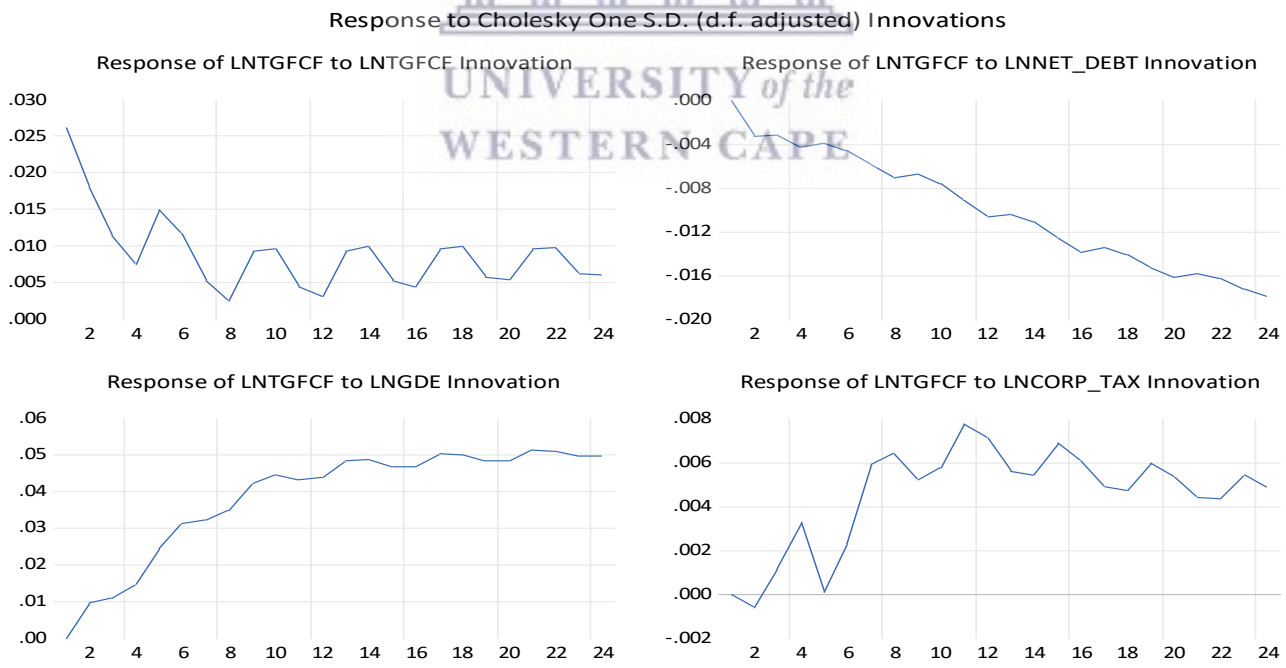
4.2.5 Impulse Response Function

The IRF represented in Figure 4.1 showed the response from four variables among themselves namely, TGFCF, GDE, Net Debt, and corporate tax. The results showed that the response of TGFCF on itself indicated an immediate positive response in the first four quarters followed by a slight increase in quarter four and a continuous decrease between quarter five and quarter eight. Thereafter, there was a consistent fluctuation (increase and decrease) between quarters 10 and 24. Evidently, the effects of the shocks appeared to be permanent in the long run as the variable found a new equilibrium level.

Secondly, the response of TGFCF to shocks to debt showed an initial positive response in quarter one, followed by a negative response after that. The response indicated that one positive standard deviation innovation would lead to revision downward of infrastructure development in the long run. Kapindula and Kaliba (2022) made similar findings when they reported that debt servicing negatively correlated with infrastructure spending, indicating that high debt costs hamper infrastructure development. Additionally, Abeysinghe (2021) found that infrastructure development increases the debt burden in the short run, augmenting the findings in Figure 4.1 that debt positively impacts infrastructure development in the short run.

Moreover, the response of TGFCF to shocks in government expenditure showed a positive increase in TGFCF between quarters 1 and 2. Shocks to GDE indicated an aggregated positive response to TGFCF both in the short and the long run. However, there were periodic decreases in quarters 2 to 3, 6 to 7, 10 to 11, 17 to 18, and 21 to 22. This was consistent with economic theory that suggested that increased government spending would positively impact infrastructure development (Perkins et al., 2005). Notably, Jones and Llewellyn (2019) made similar assertions arguing that government expenditure on quality infrastructure had more significant multiplier effects than tax cuts. The effects also became permanent as the variable found a new equilibrium level.

Figure 4. 1: Generalised Impulse Response Functions



Source: author's compilation and values obtained from e-views

Finally, the response of TGFCF to corporate tax was overwhelmingly positive despite initially decreasing in the periods between quarters 1 and 2. In the long run, the shock to corporate tax produced a steep increase between quarters 2 and 11, except for a decrease in quarters 4, 7, and 11, followed by a steady decrease from quarter 11 to quarter 24. The shock effects seemed permanent as the variables found a new equilibrium level. The results correspond with Mourmouras and Rangazas's (2008) findings indicating that rising tax revenues allowed the government to increase its public investments. Thus, a shock to TGFCF, GDE, and Corporate Tax positively impacted infrastructure development. This is in line with economic theory as mentioned above.

4.2.6 Forecast Error Variance Decomposition

The FEVD analysis determined the relative importance of shocks to the various variables that explained the variations in infrastructure development. The study focused on the movement of infrastructure stock following the shocks to Net_debt, GDE, and Corp_Tax. The study also reported the variance decomposition in infrastructure stock and analysed how the four, relatively important, variables mentioned above influence its movements. The results of the FEVD were presented in Table 4.7, wherein 24 quarters were presented to ascertain the impact of the variables on infrastructure stock over a protracted period.

In Table 4.7, all the variance in infrastructure stock was explained by its own shocks in the first quarter. In the 4th quarter, the infrastructure stock explained approximately 71% of its variation, whereas the other variables explained roughly 29%. Of this 29%, GDE explains 24.30%, CORP_TAX 2.06%, and NET_DEBT 2.34%. After five quarters, GDE explained more than 50% of the variation in infrastructure stock. The other variables namely TGFCF, NET_DEBT, and CORP_TAX explained 42.51%, 2.07%, and 2.42% respectively. In quarter 14, GDE explained roughly 80% of the variation in infrastructure stock while the others explained the remaining 20%. After 24 quarters, TGFCF itself explained approximately 5% of the variation while the other variables explained roughly 95%. Of these variables, GDE explained 82.51%, CORP_TAX 5.60%, and NET_DEBT 6.46%.

In the first five quarters, infrastructure development explained most of its variations, followed by GDE, Net_Debt, and Corp_Tax. However, in the 6th quarter, government expenditure explained most of the variations in infrastructure development. The results obtained in Table 4.7 were similar to those from the IRF, wherein all variables significantly impacted infrastructure development in

the long run. Therefore, infrastructure development explained most of its variations in the short term, although this trend changed in the long term, whereby most of the variations in infrastructure development were explained by government expenditure

Table 4. 7: Variance Decomposition

Variance Decomposition of LNTGFCF:					
PERIOD	**S.E.**	**LNTGFCF**	**LNET_DEBT**	**LNCORP_TAX**	**LNGDE**
1	0.026190	100.0000	0.000000	0.000000	0.000000
2	0.033440	90.56173	0.996060	0.045175	8.397031
3	0.037149	82.75353	1.538081	0.534210	15.17418
4	0.040992	71.29379	2.342539	2.058685	24.30499
5	0.050192	56.45834	2.184089	1.836101	39.52147
6	0.060572	42.50661	2.070415	2.415651	53.00732
7	0.069333	33.02013	2.312520	4.028788	60.63856
8	0.078257	26.01725	2.621931	5.163199	66.19762
9	0.089880	20.81121	2.556558	5.382237	71.25000
10	0.101315	17.29675	2.573987	5.586398	74.54287
11	0.110944	14.58696	2.830309	6.149765	76.43296
12	0.120032	12.53297	3.201874	6.429394	77.83576
13	0.130347	11.13775	3.353376	6.320120	79.18876
14	0.140097	10.15590	3.534101	6.207409	80.10259
15	0.148539	9.160073	3.867517	6.309124	80.66329
16	0.156545	8.331242	4.264744	6.305381	81.09863
17	0.165350	7.804069	4.490439	6.148893	81.55660
18	0.173735	7.403681	4.724395	6.008469	81.86346
19	0.181235	6.907162	5.054429	5.998980	82.03943
20	0.188458	6.471221	5.413611	5.942628	82.17254
21	0.196272	6.206716	5.639838	5.811138	82.34231
22	0.203774	5.991783	5.867421	5.695405	82.44539
23	0.210639	5.695313	6.158712	5.661781	82.48419
24	0.217321	5.428680	6.461982	5.601179	82.50816

Source: author's compilation and values obtained from e-views

4.3 Empirical Findings: Estimation for Economic development

4.3.1 Unit Root test

The unit root test results have already been presented in Table 4.1 in the previous section.

4.3.2 Stability condition

In Table 4.8, the VAR in the study satisfied the stability condition as the AR roots were all less than one and none lay outside the unit circle.

Table 4. 8: Roots of Characteristic Polynomial

Root	Modulus
0.991661	0.991661
0.936256	0.936256
0.924521	0.924521
0.563243	0.563243
-0.555417	0.555417
-0.366577	0.366577
-0.085801 - 0.181699i	0.200939
-0.085801 + 0.181699i	0.200939
No root lies outside the unit circle. VAR satisfies the stability condition.	

Source: author's own calculations and values obtained from e-views

4.3.3 Lag length criterion

In Table 4.9, the maximum lag length on the VAR stability was found to be five, as suggested by the SC in the criterion.

Table 4. 9: Optimal Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	586.5865	NA	6.29e-11	-12.13722	-12.03037	-12.09403
1	936.2795	662.9597	6.02e-14	-19.08916	-18.55492	-18.87321
2	983.8184	86.16419	3.13e-14	-19.74622	-18.78459	-19.35751
3	1014.613	53.24988	2.31e-14	-20.05445	-18.66543	-19.49298
4	1095.956	133.8760	5.97e-15	-21.41575	-19.59933	-20.68152
5	1134.424	60.10612	3.79e-15	-21.88383	**-19.64002***	**-20.97685***
6	1157.343	**33.90099***	**3.35e-15***	**-22.02797***	-19.35678	-20.94823
7	1167.305	13.90566	3.91e-15	-21.90219	-18.80360	-20.64969

8	1180.494	17.31009	4.31e-15	-21.84362	-18.31764	-20.41836

Source: author's compilation and values obtained from e-views

4.3.4 Cointegration

In Table 4.10, the Trace and Maximum Eigen statistic results indicated no presence of cointegration. This comes from the calculated t-statistics not being greater than the critical value at a 5% significance level. Therefore, the absence of cointegration indicated that only the VAR model would be estimated to make a short run analysis.

Table 4. 10: The Johansen co-integration test

Maximum Eigen Test				**Trace Test**			
H_0: rank=r	H_a: rank=r	Statistic	95% Critical Value	H_0: rank=r	H_a: rank=r	Statistic	95% Critical Value
r = 0	r = 1	25.38779	27.58434	r = 0	r >= 1	44.27001	47.85613
r <= 1	r = 2	12.07339	21.13162	r <= 1	r >= 2	18.88222	29.79707
r <= 2	r = 3	6.501551	14.26460	r <= 2	r >= 3	6.808833	15.49471
r <= 3	r = 4	0.307282	3.841465	r <= 3	r >= 4	0.307282	3.841465

Source: author's compilation and values obtained from e-views.
** Denotes rejection of the hypothesis at the 0.05 level*
Both Max-eigenvalue and Trace tests indicate no cointegrating equations at the 0.05 level.

4.3.5 Impulse Response Function

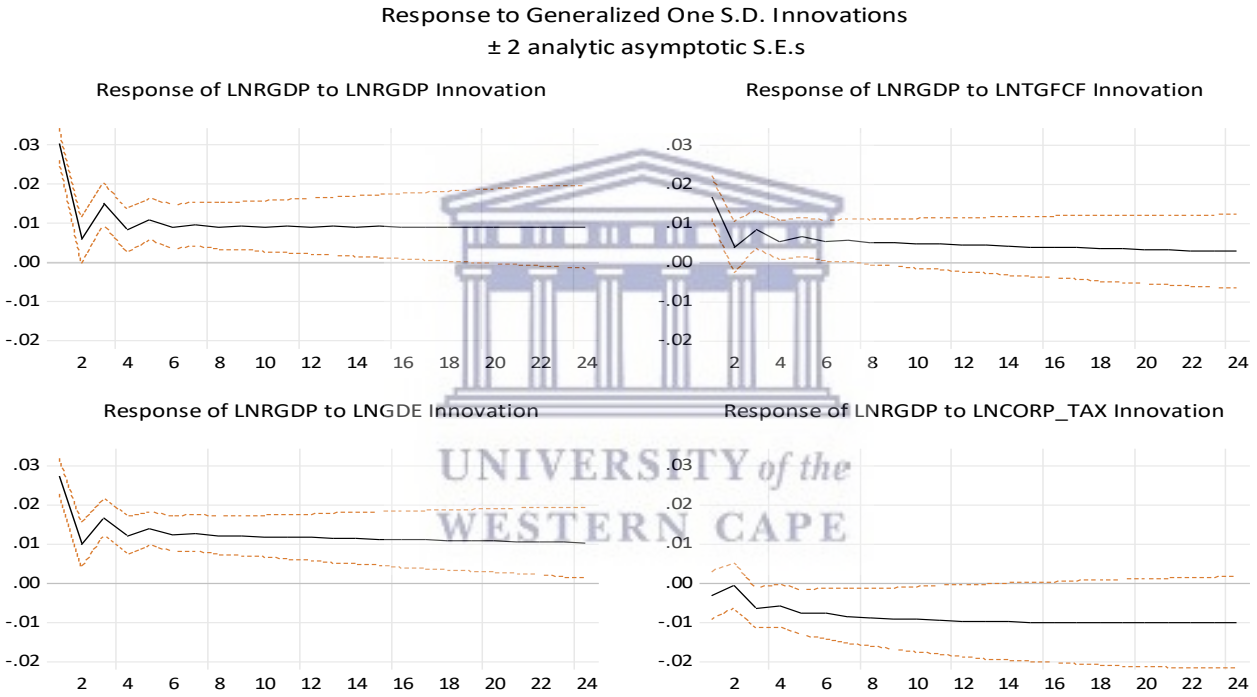
The IRF represented in Figure 4.2 showed the response from four variables among themselves namely, Real Gross Domestic Product (RGDP), Gross Domestic Expenditure (GDE), Total Gross Fixed Capital Formation (TGFCF), and corporate tax (CORP_TAX). The results showed that the response of RGDP on itself indicated an immediate positive response in the first two quarters followed by a slight increase in quarter two onwards and a continuous decrease between quarter five and quarter eight. Thereafter, there was a consistent fluctuation (increase and decrease) between quarters 10 and 24. Evidently, the effects of the shocks appeared to be permanent and positive in the long run as the variable found a new equilibrium level.

Secondly, the response of RGDP to shocks on TGFCF showed a positive response on the RGDP between quarters 1 and 2. After quarter 3, there appeared to be a continuous decrease. The shock effects seemed permanent as a new equilibrium level was established. The results align with economic theory that suggests that infrastructure investments have significantly impacted GDP growth (Perkins et al., 2005). Similarly, Hashimzade and Myles and Burger et al. (2010 and 2016) found that Infrastructure expansion (investment) had remained crucial for laying the foundation

for economic growth and development, particularly public infrastructure investments that augmented private capital investments. However, uncoordinated infrastructure expenditure could have an insignificant impact on growth (Hashimzade and Myles, 2010).

Additionally, the response of RGDP to shocks to GDE showed a positive response to RGDP. Between quarters 1 and 2 there appeared to be a decrease followed by an increase after quarter 2. Quarter 3 appeared to be the start of a continuous decrease which remained consistent from quarter 5. The shock effects also seemed permanent as a new equilibrium level was established. Mura (2014) had similar results when finding that productive expenditure was positively correlated to growth. Ahuja and Pandit (2020) and Ansari, Khan, and Singh (2021) also correspond with the findings asserting that public expenditure positively impacted economic growth and development.

Figure 4. 2: Generalised Impulse Response Functions



Source: author's compilation and values obtained from e-views

Finally, the response of RGDP to corporate tax was negative. There seemed to be an increase for the first quarter followed by a consistent decrease from quarter 2. A new equilibrium level was attained after quarter 13. Mourmouras and Rangazas (2008) made similar findings in line with economic theory that indicated that "high tax rates have a negative impact on economic growth and development". Additionally, Myles (2009) argued that an increase in corporate tax would have an adverse effect on growth. Millot (2020) found that increased corporate taxes curtail private

investments vital for growth. Corporates spending more on taxes would reduce spending on research and development, which is an essential component of stimulating economic growth.[26]

4.3.6 Forecast Error Variance of Decomposition

Table 4.11 presented the results of the FEVD over a period of 24 quarters. The study was interested in the movements of economic development following shocks to itself and other variables (GDE, Corp_Tax, and TGFCF). Hence the study reported on the variance decomposition of economic development. It also analysed the relative importance of other variables in influencing the movements of economic development.

In quarter 1, all the variance in economic development was explained by its own innovation with other variables being insignificant. Government expenditure contributed more than 10% in quarter 2 while corporate tax and infrastructure development remained insignificant. In quarter 6, GDE contributed more than 20% towards the variance in economic development. Corporate tax and infrastructure developments were roughly 6% and 3% in the same period. Corporate tax explained more than 10% in quarter 9 with infrastructure development remaining relatively insignificant at approximately 4%.

In quarter 17, the variance in economic development was explained by less than 50% of its own innovation while government expenditure, corporate tax and economic development explained approximately 24%, 19% and 6% respectively. After quarter 24, the fluctuations in economic development were largely explained by its own innovation, with government expenditure and corporate tax having a significant contribution. Infrastructure development had a relatively insignificant contribution to economic development after quarter 24.

Table 4. 11: Variance of Decomposition

Variance Decomposition of LNRGDP:					
Period	**S.E.**	**LNRGDP**	**LNGDE**	**LNCORP_TAX**	**LNTGFCF**
1	0.030273	100.0000	0.000000	0.000000	0.000000
2	0.032913	87.95202	10.79550	1.80E-05	1.252465
3	0.037472	84.22278	12.38678	1.645094	1.745348
4	0.040401	76.86152	17.78228	2.930628	2.425574
5	0.043633	72.39188	19.92867	4.776407	2.903038

[26] Expenditure on research and development (R&D) is required for product diversity and innovation.

6	0.046411	67.79709	22.40690	6.420894	3.375118
7	0.049153	64.48548	23.66187	8.095959	3.756690
8	0.051673	61.55337	24.70815	9.624032	4.114451
9	0.054096	59.24979	25.24694	11.07238	4.430893
10	0.056380	57.27723	25.58523	12.40843	4.729119
11	0.058568	55.65060	25.68809	13.65452	5.006788
12	0.060656	54.25685	25.66133	14.80920	5.272625
13	0.062663	53.07316	25.51705	15.88248	5.527305
14	0.064591	52.04896	25.29807	16.87854	5.774435
15	0.066450	51.16216	25.01930	17.80360	6.014939
16	0.068244	50.38643	24.70089	18.66225	6.250428
17	0.069980	49.70563	24.35357	19.45924	6.481554
18	0.071660	49.10432	23.98789	20.19873	6.709064
19	0.073289	48.57130	23.61071	20.88467	6.933331
20	0.074869	48.09672	23.22789	21.52070	7.154691
21	0.076404	47.67282	22.84361	22.11025	7.373319
22	0.077896	47.29292	22.46121	22.65652	7.589345
23	0.079348	46.95154	22.08313	23.16250	7.802820
24	0.080760	46.64397	21.71126	23.63101	8.013764

4.4 Conclusion

In this chapter, the empirical analysis addressed some of the questions presented in the first chapter. The empirical results elucidated the role austerity measures have on economic and infrastructure development in South Africa using quarterly data for the period between 1994 and 2019. The analysis followed the analytical framework that was presented in the previous chapter. Further, the chapter comprised of two main sections: presenting empirical estimations of both infrastructure and economic development. The unit root test, lag length criterion, and stability tests were conducted within both sections, followed by the cointegration tests. The formulation of the VECM model was done in the presence of cointegration. Thereafter, the IRF and the FEVD were presented. Finally, a brief and explicative summary of the chapter was provided wherein the impact of austerity measures on economic and infrastructure development was displayed.

The results highlighted that austerity measures, decreasing government expenditure and increasing taxes for citizens would adversely affect economic and infrastructure development. Instead, the countermeasures proved to have more of a significant impact. For instance, when government expenditure increased, there was a positive effect on infrastructure development. Also, when corporate tax increased government was able to generate larger revenues from corporates, resulting in increased government revenue that could be used for public investments. On the other hand, when government debt increased, infrastructure development had a negative effect on infrastructure development.

Similarly, austerity measures had a negative impact on economic development. However, when government spending increased, economic development responded positively. An increase in infrastructure spending resulted in a positive impact on economic development. On the other hand, when corporate tax increased, there was a negative effect on economic development. Having outlined, presented, and analysed the results, the stage has been set for the conclusion and policy recommendations. These are presented in the next chapter.

CHAPTER FIVE: CONCLUSION

5.1 Introduction

This is the final chapter of the study. The chapter comprises of three sections: Summary and Conclusions, Policy recommendations and Limitations of the Study. In section 5.2, the paper summarised the empirical findings and the key conclusions were presented and interpreted. Section 5.3 focused on the policy recommendations drawn from the results of the previous chapter. The final section presents the limitations of the study.

5.2 Summary and Conclusion

The South African economic system had not been able to adequately attend to the economic needs of the majority of South Africans. This resulted in worsening levels of unemployment, poverty, and inequality. Infrastructure investments had been viewed as crucial for altering the dire socio-economic landscape of South Africa. However, austerity measures were pursued instead of sustainable economic and social infrastructure investments. Therefore, the study investigated the role of austerity measures on economic and infrastructure development in South Africa from 1994 to 2019.

The study made use of secondary quarterly data. In addition, time-series techniques were used to analyse the unit root tests, stability condition, lag length criterion, cointegration tests, error correction model estimations, IRF, and FEVD. The results that were presented by the unit root test showed that the order of integration of the variables was a mixture of I(0) and I(1). The study conducted two estimations: economic development and infrastructure development. The stability condition was satisfied for both estimations. However, for the optimal lag length selection, infrastructure development had four lags, whereas economic development had five lags both from SC. The cointegration test showed a long-run relationship between the variables for infrastructure development, whereas, for economic development, there was no long-run relationship among the variables. The presence of a long-run relationship among the variables in infrastructure development resulted in the VECM estimations.

The findings of the long-run relation showed that investments in infrastructure stock have a favourable impact on infrastructure development. This indicates an apparent positive long-run relationship between investments into infrastructure and infrastructure development. Thus, an increase in infrastructure investment increased infrastructure development. Similarly, an increase

in government expenditure positively impacted infrastructure development. As a result, government expenditure and infrastructure development are unidirectional. On the other hand, Debt and infrastructure development had a negative relationship. When the debt burden increased, infrastructure development was impacted negatively in the long run. Corporate tax had a long-run positive relationship with infrastructure development. However, the relationship started to wane, indicating corporate tax's decreasing significance.

Moreover, the relationship between economic development and infrastructure investments was complementary. This implied that when infrastructure investment increased, there was a positive impact on economic development. Equally, the relationship between government expenditure and economic development was also positive. As a result, increases in government expenditure had a favourable impact on economic development. Conversely, the corporate tax harmed economic development. Subsequently, when corporate tax increased, economic development had a negative response.

As previously mentioned, the linkages and interconnections between austerity measures and both economic and infrastructure development are non-linear. This non-linearity caused by their interaction had caused an emergence of various properties. Given the findings presented, the study concluded that austerity measures promote neither economic nor infrastructure development. Additionally, infrastructure backlogs are an emergent property of a lack of infrastructure development. This resulted from decreasing government expenditure, a component part of austerity measures, or increasing the tax levels.

5.3 Policy recommendation

The study managed to address the research questions and objectives as intended successfully. The study results have significant policy implications that could change the socioeconomic reality of South Africa. For instance, policies that do not hinder sustained investments in infrastructure could have significant multiplier effects. These could range from increased employment levels to substantial reductions in poverty levels. Therefore, a stimulus, not austerity measures, would significantly impact the South Africa economy. South Africa has adopted neoliberal policy instruments wherein austerity is one of the tools available within its arsenal. However, austerity measures hinder both economic and infrastructure development. Thus, reevaluating ‘belt tightening’ policies already been adopted by the government is imperative. Alternatives to neoliberal economic policies must be pursued, discarding the Washington Consensus dictum

"*there is no alternative*" to neoliberalism. The government should pursue policies promoting economic and infrastructure development as a precursor for radical socioeconomic development.

Further, debt reduction concerns should be addressed logically within a medium-term framework. These concerns can be attended to by significantly reducing corruption, enforcing budget cuts that do not negatively affect economic growth and compromise social services, and making use of other pools of domestic private savings through prescribed assets and the utilisation of pension funds. Unfortunately, no debt management strategy will be enough to successfully deal with debt, without sustainable economic growth. There is a case for fiscal stimulus rather than 'belt tightening' policies that constrain growth.

5.4 Limitations of the study

The scope of the study was limited. The study did not assess the type of government expenditure necessary for development, nor did it establish the infrastructure that would positively impact development. There was also a limited number of studies that investigated specific infrastructure that would be positively impact economic and infrastructure development. Therefore, there is a research gap that could be addressed by future studies. Due to the limitation in the study, the study could not make policy prescriptions that would have a medium to long term impact on development. A broad policy recommendation was thus developed that was not specific. The specific policy responses could be addressed in future studies.

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