



**DOMESTIC PUBLIC DEBT AND FINACIAL SECTOR
DEVELOPMENT IN SOUTH AFRICA: AN AUTOREGRESSIVE
DISTRIBUTED LAG MODELING FROM SOUTH AFRICA**

By

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MINI-DISSERTATION

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ABSTRACT

This study empirically examines the effect of domestic public debt on financial sector development in South Africa over the period 1985 to 2023, using the Autoregressive Distributed Lag (ARDL) model. The results indicate that domestic public debt exerts a negative influence on the development of the financial sector. This relationship suggests that an increase in public debt may hinder financial sector progress through channels such as reduced savings and heightened vulnerabilities, particularly those arising from short-term borrowing and debt denominated in foreign currency. The findings underscore the importance of fiscal discipline and efficient public spending. Accordingly, the study recommends that the South African government reduce wasteful expenditure and enhance fiscal efficiency by implementing targeted policy reforms. These could include rationalizing subsidies, eliminating non-essential programmes, and streamlining public sector institutions.

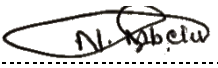
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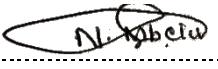
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LIST OF ACRONYMS AND ABBREVIATIONS

DD	Domestic Debt
GFCF	Gross Fixed Capital Formation
GDP	Gross Domestic Product
DRI	Deposit Interest Rate
PP	Phillips-Perron Test
SARB	South African Reserve Bank
VAR	Vector Autoregressive
ARDL	Autoregressive distributed lag
DCP	Domestic Credit to Private Sector
INF	Inflation
RGDP	Real gross domestic product
ADF	Augmented Dickey-Fuller Test
NT	National Treasury
ARDL	Autoregressive Distributed Lag
JSE	Johannesburg Stock Exchange
VECM	Vector Error Correction Model
OLS	Ordinary Least Squares
FD	Financial Development
IMF	International Monetary Fund
WB	World Bank

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CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.INTRODUCTION

Government spending is believed to play a very important role in influencing the level of economic growth (Ramey 2019; Oily 2022). However, when the level of government spending exceeds the tax revenue that can present challenges to the domestic economy. In such instances, the government can finance the deficits through several ways. These include imposing a higher tax rate, printing more money or borrowing in the domestic financial sector as well as the foreign sector (Li, 2019). All the different approaches have different implications on the domestic economy and the financial sector. Of interest in this study is the option of borrowing within the domestic financial sector.

According to Guru and Yadav (2019), financial sector development refers to “development of the size, efficiency and stability of the banking sector and financial markets along with increased access to the markets that can have multiple advantages for the economy”. On the other hand, government borrowing in the domestic economy entails lending from the central bank and commercial banks. This takes place in the form of overdraft, issuance of treasury bills and bonds. The government may also borrow from the non-banking sources through issuing instruments to the non-banking sector such as insurance companies as well as individual investors (Bangladesh bank, 2023).

In order to carry out its developmental duties, particularly investment operations, effectively, the government borrows money and accumulates public debt. As the government gradually gathers funds from domestic banks to finance the budget, the growing demand for public sector credit has limited the amount of money available to finance private investments. Due to this, the private sector may face an increase in interest rates when obtaining loans from banks, or tax increases may be anticipated to pay for loan repayments. Both circumstances have the potential to have a detrimental impact on financial development due to the crowding out of private sector investments caused by increased investment costs (Chung-Yee, Ismail, & Ai-Lian, 2020).

Kuma (2020) indicates that there are two views which explain the link between financial sector development and domestic debt. These include the safe asset hypothesis and the lazy bank hypotheses. In the safe asset view, when the government borrows from the domestic financial markets, usually through treasury bills, such instruments are regarded as safe assets. The banks can develop through realised profits coming from holding the government assets. On the other hand, with regards to the lazy bank view, domestic banks may become satisfied with lending to the public sector rather than advancing credit to the private sector for development. This will have implications for the domestic economy as well as other socioeconomic factors such as poverty, unemployment and inequality.

Tinkelman and Neely (2018) in line with the lazy bank hypothesis, indicate that when banks hold a greater proportion of their assets in government debt, that will decrease the resources on hand to the private sector. The government and the private sector may compete for limited resources which may result in the public debt crowding out private investment. In this case, the huge demand for financial resources will result in interest rates rising which the private sector will not be able to sustain if they are to borrow from the domestic banking sector. At the end private firms may face difficulties due to limited resources.

Ozili (2020) also indicates that, while the government can continue to borrow from the local economy in order to minimize the deficit, particularly when the financial sector is highly liquid, as in the case of the South African economy, this can potentially affect a country's financial stability when domestic banks become involved in government debt. This becomes important in the case of South Africa, where banks hold a greater percentage of government debt, averaging around 25% of total debt, which is second to the domestic bonds held by the foreign sector (Treasury, 2021).

During the 2019/20 to 2020/21 period, gross borrowing demand rose to R618.3 billion in 2020/21. The COVID-19 pandemic necessitated higher spending on essential health and economic measures, contributing to an elevated sovereign risk premium—the additional return investors require to compensate for the perceived risk associated with the country (Budget Speech, 2022). The government is also expected to service R184.4 billion of

Eskom's debt over the following three years (capital repayments and interest payments), and in 2025/26 it will take up to R70 billions of Eskom's debt. In addition, National Treasury highlighted that gross borrowing demand will rise from R515.6 billion in 2023–2024 to R555 billion in 2025–2026. All these are likely to have implications for the domestic financial sector. The study therefore seeks to examine the impact of domestic debt on financial sector development in South Africa.

1.1 PROBLEM STATEMENT

As a developing country, South Africa faces several challenges, such as high rates of unemployment, poverty, inequality, load shedding, high crime rates, and sluggish economic growth. To address these issues, the government requires huge amounts of resources. As indicated before, the amount of funds which the government can be able to use are raised through taxes. The (OECD report ,2022) report on South Africa highlights that tax-GDP stood at 26% in 2019, however in 2020 it had decreased to 25,2%, the tax-GDP ratio is used as a measure of how well the government controls a country's economic resources, with the tax-GDP decreasing this means that the government will have less resources to control the economy which is the government expenditures and the government deficit.

The government has to look for other alternative to finance the government deficit by borrowing more. South Africa is currently facing load shedding and to address this issue the government is planning to rescue Eskom, a state-owned power utility, from financial troubles. The government will also directly take over R70 billion of Eskom's loan portfolio. This debt transfer will increase the South African debt to GDP. With the government taking over the Eskom's debt this will mean the countries public debt will increase, more taxes will be collected from individuals to try repaying the debt, which may cause individuals to have less money to spend and that will lead to borrowing which may benefit the financial sector. But with an increased demand in borrowing, it may cause interest rates to increase making borrowing to be more expensive (Fitch Rating, 2023). However, investors are wary of nations with high levels of chronic public debt because they are more likely to

suffer from credit downgrades and currency weakening, particularly when a larger portion of the debt is concentrated in the domestic financial system.

A quick examination of the South African economy from 1994 reveals that it has been on a positive path in terms of outlook by external borrowers where it was rated BBB+ rating in 2005. The nation was able to borrow money from the international financiers at favourable terms for development. However, starting in 2012, all of the gains made in the first ten years after independence were lost, and as a result, all three rating agencies currently have the country rated at BB-. The sovereign downgrades mean that the nation should raise a greater portion of the funds for development from the domestic economy which may result in competition between the private and public sector (Desiree & Takawira, 2021).

Also, the crowding out effects, which begin to take effect when borrowing by the government and its agencies would results in exorbitant interest rates, lend weight to this viewpoint. As a result, small businesses and independent entrepreneurs are forced out of the market (Abdullah, Bakar, & Hassen, 2016). Government borrowing, on the other hand, even though may boost bank profits, it may reduce productivity. As a result, financial depth and development may lose some of their long-term value. Kipyego, Njoka & Muniu (2022) indicate that as low efficiency may introduce a higher deadweight loss in intermediation, inefficient banks that invest primarily in relatively profitable public sector credit may have little incentive to develop the banking market and that may reduce the credit available for the private sector and hence the level of economic growth.

1.2 RESEARCH OBJECTIVES

The main objective of this study is to examine the effect of fiscal borrowing on financial sector development in South Africa. The specific objectives are:

- a. Provide trends of domestic debt and financial sector development in South Africa.
- b. To econometrically test the effect of domestic debt on financial sector development in South Africa.
- c. To propose policies based on the econometric findings.

1.3. HYPOTHESIS

The hypotheses to be tested in this study is:

H₀: Domestic debt does not have a significant effect on financial sector development in South Africa

H₁: Domestic debt does have a significant effect on financial sector development in South Africa

1.4 SIGNIFICANCE OF THE STUDY

The study examines the potential effect of domestic debt on the growth of South Africa's financial sector development. The research that are currently accessible in this area have primarily examined the crowding-out impact from a broad perspective, including (Biza, Kapingura & Tsegaye ,2015); (Pamba ,2022); budget deficits and long-term interest rates and (Mavodyo,2022) on budget deficit and economic growth. The current study is distinct from these other studies in that it examines how fiscal borrowing affects the growth of the financial sector development. This is important to South Africa, whose credit rating has been downgraded by all rating agencies, making it difficult to get outside investment. It's also crucial to remember that there have been conversations regarding how small firms may not have access to bank financing, which may instead be held by banks as government bonds due to their safe haven status. The study will also include how Covid-19 has impacted the public sector. The paper contributes to this issue by examining the potential impacts of fiscal borrowing on the growth of the South African financial sector. This study enables the government through regulatory agencies to effectively design policies that will foster financial development, considering the growth of public debt. Central Bank of South Africa will gain an insight into whether lending by the government is beneficial to financial sector over the long run or not. In addition, the study will also be beneficial to the National Treasury as it will enable them to gauge the effectiveness of government debt policies in enhancing the efficiency of the local financial market.

1.6 CHAPTER OUTLINE

This research is structured into six chapters. Chapter 1 outlines the introduction and background of the study. Chapter 2 presents the problem statement, research objectives, key questions, and hypothesis testing framework. Chapter 3 provides a comprehensive literature review, encompassing both theoretical and empirical perspectives. Chapter 4 details the research methodology, while Chapter 5 focuses on the interpretation of results. Finally, Chapter 6 delivers a summary of findings, conclusions, and the implications derived from the study's outcomes.

CHAPTER 2

OVERVIEW OF FINANCIAL SECTOR DEVELOPMENT AND DEBT IN SOUTH AFRICA

2.1 Introduction

The South African financial sector comprises both domestic and international institutions offering a diverse range of services, including commercial and retail banking, merchant banking, mortgage financing, insurance, and investment services. Characterized by its sophistication and scale, the sector boasts an asset-to-GDP ratio significantly higher than most emerging markets. The majority of these assets are concentrated within the banking sector, with substantial holdings also managed by pension funds and insurers. Domestic credit to the private sector in South Africa reached 129% of GDP, surpassing other African economies such as Egypt (27%), Nigeria (12%), Kenya (33%), and Morocco (89%). In the IMF's 2019 Article IV Staff Consultations, South Africa's financial sector was recognized for its advanced development and resilience (FSCA, 2022).

It is important, however, to note that irrespective of the sophistication of the financial sector, its success depends on its ability to pool and channel resources to productive sectors of the economy. This chapter provides a review of the developments of the South African financial sector development and public debt. In Section 2.2 provides a review of the development of the South African financial sector, analyzing its different constituents and comparing it with other emerging countries. Section 2 provides the different types of debt in South Africa and comparing with other emerging countries.

2.2 Overview of the South African Financial Sector

South Africa's financial sector saw continued progress and development in 2023, despite facing some ongoing challenges. The sector remained resilient despite global economic headwinds, demonstrating its ability to withstand shocks. The Financial Sector Conduct Authority (FSCA) assumed full responsibility for market conduct regulation, while the South African Reserve Bank (SARB) focused on prudential regulation. This separation aimed to enhance efficiency and effectiveness. The fintech sector continued to flourish, with new start-ups offering innovative financial solutions, particularly in areas like

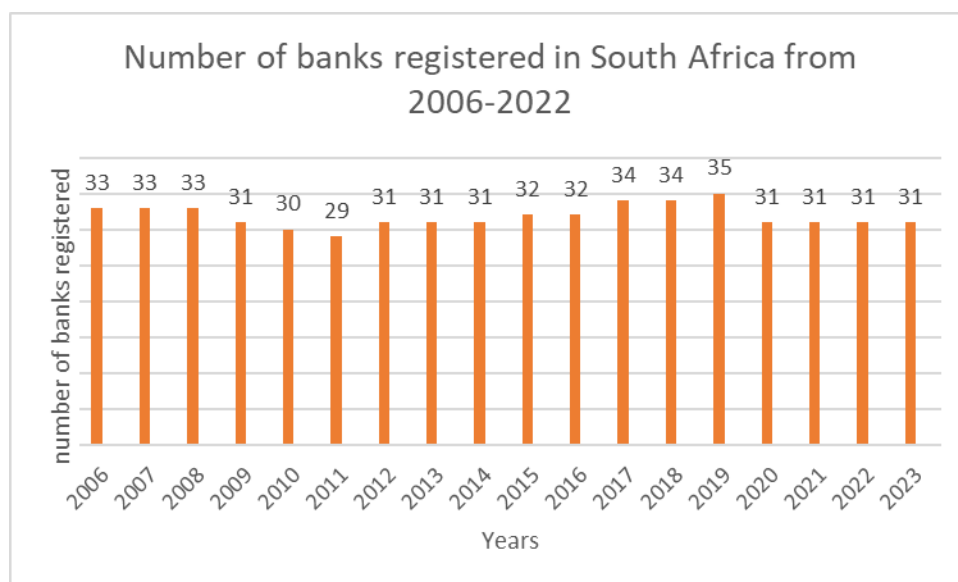
mobile payments and digital banking. While access to financial services improved, millions of South Africans remain unbanked or underbanked, highlighting the need for further efforts to promote financial inclusion (FSCA. 2023).

2.2.1 The South African Banking Sector

The South African banking sector ranks among the most advanced and sophisticated in Africa, comprising a mix of prominent domestic banks and foreign banks operating within the country. It is effectively regulated and overseen by the South African Reserve Bank (SARB), ensuring stability and robust governance.

The South African banking sector has been through a period of significant change in recent years. The global financial crisis had a major impact on the sector, and the banks have had to adapt to a more challenging operating environment. However, the sector remains resilient and is well positioned for future growth.

Figure 2.1 : Number of banks registered in South Africa from 2006-2022



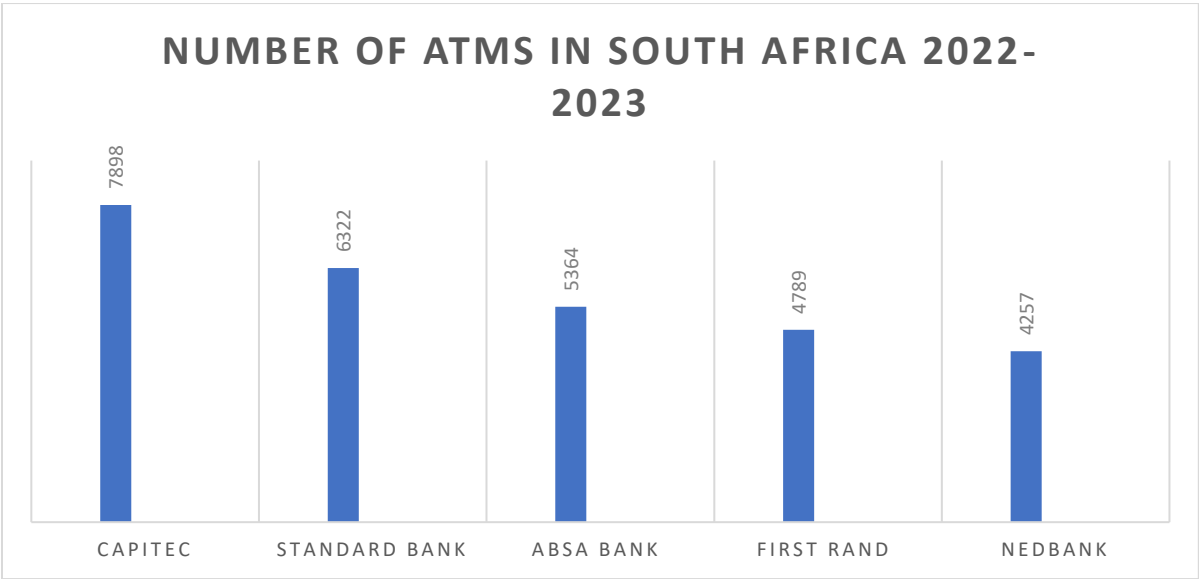
Source: Statista (2023)

As of September 2022, South Africa's banking sector comprised 31 institutions, including 18 domestic banks and 13 foreign banks with local branches. The total number of banks has remained stable since 2020, following a decline from 35 in 2019. Between 2011 and

2019, the sector experienced growth in the number of banks before stabilizing in subsequent years.

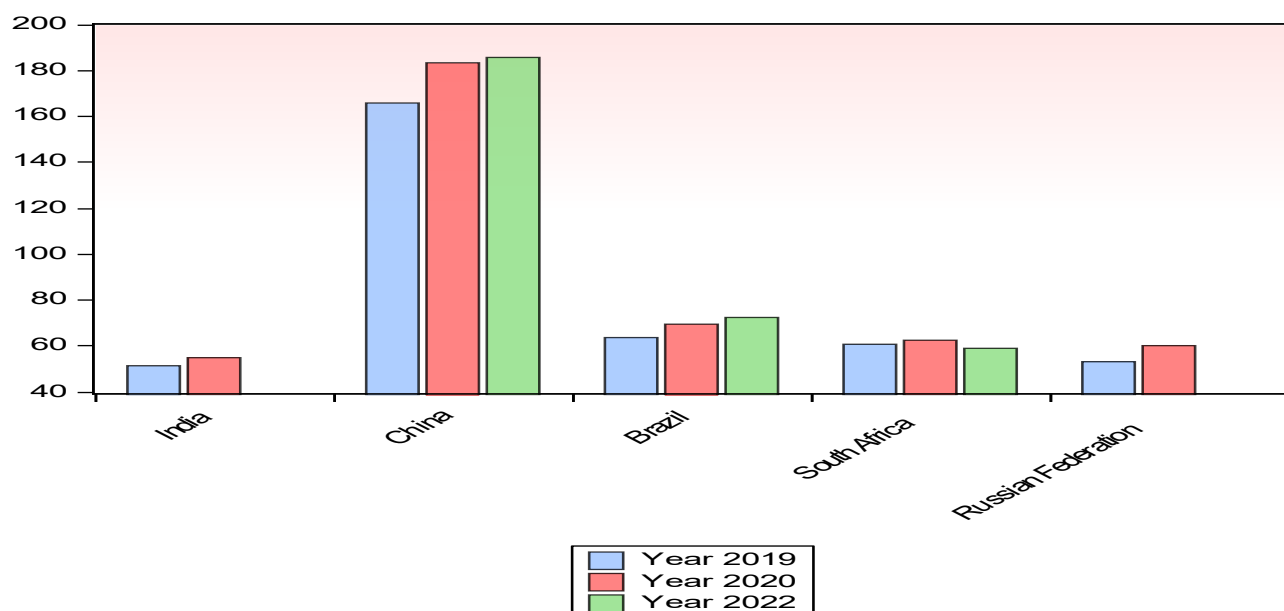
As of February 2023, Capitec Bank reported the largest network of ATMs in South Africa, with 7,898 units in operation. Standard Bank Group, across all operating regions, maintained 6,232 ATMs, while Absa Bank operated approximately 5,300 ATMs within South Africa. ATMs function as financial data terminals, enabling users to access services such as account balance inquiries, cash withdrawals, deposits, and transaction statement reviews.

Figure 2.2: Number of ATMS in South Africa 2022-2023



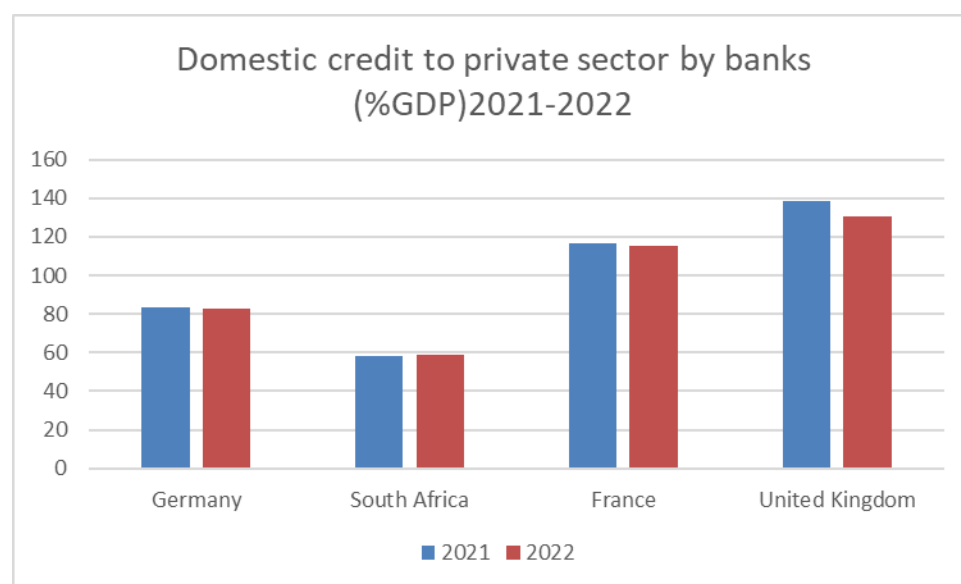
Source: Statista (2023)

Figure 2.3 Domestic Credit to Private sector by banks (% of GDP) BRICS countries 2019-2022



Source: World Bank Development Indicators (2023)

Figure 2.4: Domestic credit to private sector by banks Vs Developed Countries 2021-2022



Source: World Bank Data Indicators (2023)

In Figure 2.4 both in 2021 and 2022 it shows that South Africa performs far lower than other noble countries in terms of its ability to mobilize its credit and channel it to private sector. However, in figure ,2.3 when South Africa is compared to brings countries it is still performing lower compared to other countries. Overall South Africa financial development is performing low compared to noble and BRICS countries.

2.2.2 South African Stock and Bond Market

South Africa's financial system is further enhanced by a dynamic stock market, which ranks competitively against both emerging and developed economies. Established in 1886 following the discovery of gold in the Witwatersrand, the stock market has evolved through significant advancements to achieve world-class status. As of 2024, government bonds provide yields between 6.5% and 12.5%, varying with maturity and inflation-linkage. Corporate bonds generally yield higher but have lower liquidity.

Table 2.1: Stocks traded, turnover ratio of domestic shares (%)

Country	2018	2019	2020
Mexico	24.3595	20.4784	20.69504
China	206.6544	214.288	258.5513
Russia	25.54522	22.8322	39.81263
Egypt	34.46596	25.2595	38.88905
South Africa	34.09257	33.01328	27.94333
India	56.7719	56.21499	74.9506
Nigeria	8.204812	6.1851	4.387436

Source: World Bank Development Indicators (2023)

The South African stock market demonstrates exceptional performance in terms of listings, outperforming many emerging and African markets and, in some cases, surpassing developed markets. However, the turnover ratio declined between 2018 and 2020, potentially attributable to the economic disruptions caused by the COVID-19 pandemic.

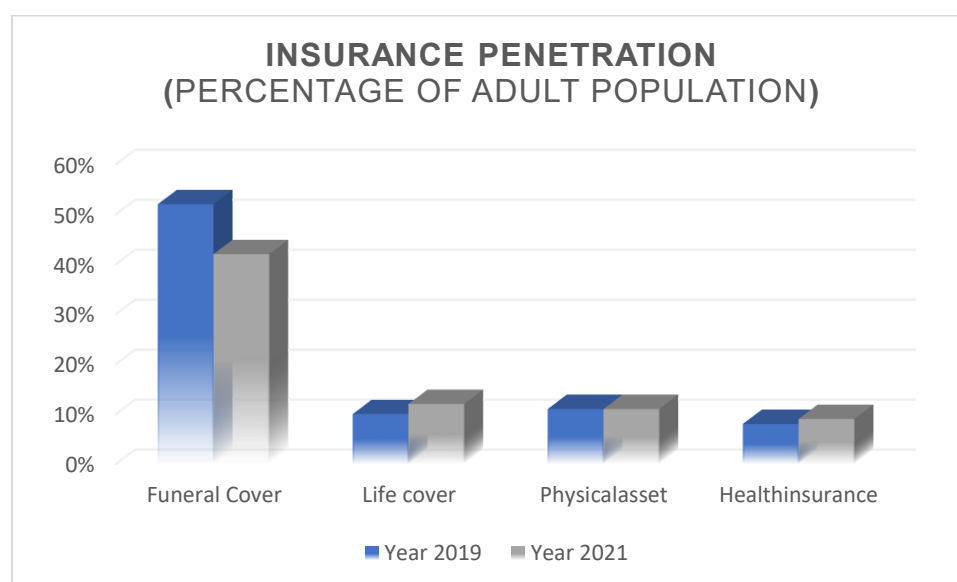
2.2.3 The South African Insurance Industry

The origins of insurance in South Africa stretch back almost two centuries, marked by key milestones and reflecting the nation's socio-economic evolution: Early beginnings of 1800s The first insurance agents appear in the Cape Colony, representing overseas

companies offering fire insurance. Late 19th century: More insurance companies are established, catering to diverse needs like marine, accident, and liability insurance.

South Africa boasts the largest and most established insurance market in Africa, accounting for a significant portion of the continent's insurance premiums. Over R300 billion (USD 20 billion) in 2021, split roughly equally between life and non-life insurance.

Figure 2.5: Insurance Penetration (% of adult population)



Source: Financial Sector Conduct Authority (2022)

The most popular insurance product, funeral cover, artificially inflates the number of insured South Africans. Adults in South Africa report having a funeral product at a rate of 42%; however, if funeral cover is taken out of the equation, the percentage falls to 19%. The majority of South Africans with insurance products are in the form of life, physical asset, and health insurance, with rates of 10%, 11%, and 9%, respectively. Affordability is the main deterrent for South Africans without non-funeral insurance to purchase an insurance policy. Like the banking sector, the market is underserved even though the headline numbers are encouraging. The difference between insurance needed and actual insurance is known as the "life insurance gap," and in 2019 it was projected to be worth ZAR15.4 billion.96%. Because earnings and income have a significant association, just 3% of the population in the poorest 20% have the required level of life insurance

coverage. Funeral and credit life coverage are more popular among lower-class individuals than life insurance.

2.3 Overview of Domestic public debt in South Africa

The apartheid regime left the democratic government of South Africa with an economy that was completely in disarray in 1994. The apartheid government's financial mismanagement was at an all-time high. Therefore, before launching any broad and drastically transformative programs, the government decided to take the practical step of trying to stabilize the situation (Hamilton & Viegi, 2009). The development of South Africa's debt capital market has evolved significantly since its inception in the 1970s. Prior to 1990, government debt issuance was limited to three or four occasions annually (National Treasury, 2011). However, the economic policies implemented by the apartheid government during the 1980s contributed to a sharp escalation in public debt by the early 1990s (Hamilton & Viegi, 2008).

In figure 2.7 1(a) illustrates this, showing that attempts to stabilize expenditure as a percentage of GDP began in the early 1980s. South Africa was on the verge of a debt crisis at the end of apartheid, had a very low credit rating, and as a result, borrowing was expensive. Since the nation was having difficulty striking a balance between debt management and growth, the government recognized public debt as a significant threat to the recovery of the domestic economy after 1994 (Hamilton & Viegi, 2008). To fulfill the objectives of the National Development Plan, the government has recently begun to employ macroeconomic frameworks to direct debt management strategies (Financial and Fiscal Commission, 2015).

2.3.1 Relationship between Economic Growth and Domestic Public Debt in South Africa

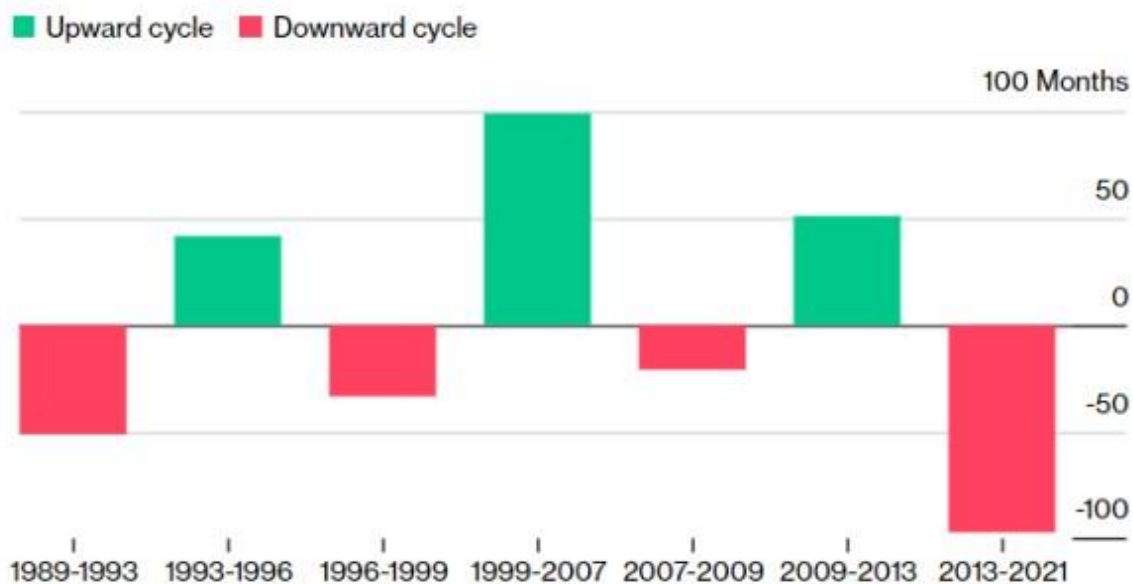
Economic growth refers to an increase in the market value of all goods and services produced within an economy. It reflects an expansion in the economy's capacity to produce goods and services over time. Gross domestic output is the economic indicator of overall output (Abbas, 2005; Sachs, 1989). There are two types of economic growth: positive and negative. One way to describe negative growth is as a contracting economy (Matiti, 2013). Effective management of public debt fosters stability and economic growth by utilizing resources at a low cost of borrowing while minimizing financial risk exposure.

Domestic debt can have both positive and negative impacts on economic growth. In developing nations, governments often rely on public debt to finance expenditures. When managed efficiently, the strategic use of debt to achieve macroeconomic goals can stimulate economic growth.

Poor management of domestic public debt can hinder economic growth and become a significant economic burden. When domestic debt is not properly handled, it can negatively affect the economy by diverting a large share of government revenue towards debt servicing, resulting in chronic deficits and reducing funds available for developmental projects (Ayres and Warr, 2010). Consequently, servicing internal debt becomes increasingly detrimental to economic growth. Additionally, since much of the debt is held in short-term securities within underdeveloped financial markets, interest costs escalate as domestic debt increases.

Excessive domestic borrowing can have severe negative effects on the economy. A significant portion of government revenue is allocated to servicing domestic interest payments, especially when these rates exceed those of foreign debt. When governments borrow domestically, it reduces the availability of private funds that would otherwise be used for lending to the private sector (Ayres and Warr, 2010). This depletion of loanable funds raises the cost of capital for private borrowers, leading to reduced private investment, slower capital accumulation, and diminished economic growth and welfare (Diamond, 1965). In shallow financial markets, the issuance of domestic debt can lead to rapid and significant crowding out of private credit, particularly when businesses have limited access to international financing.

Figure 2.6. South Africa's economy is stuck in the longest downward phase since 1945.



South African Reserve Bank (2021)

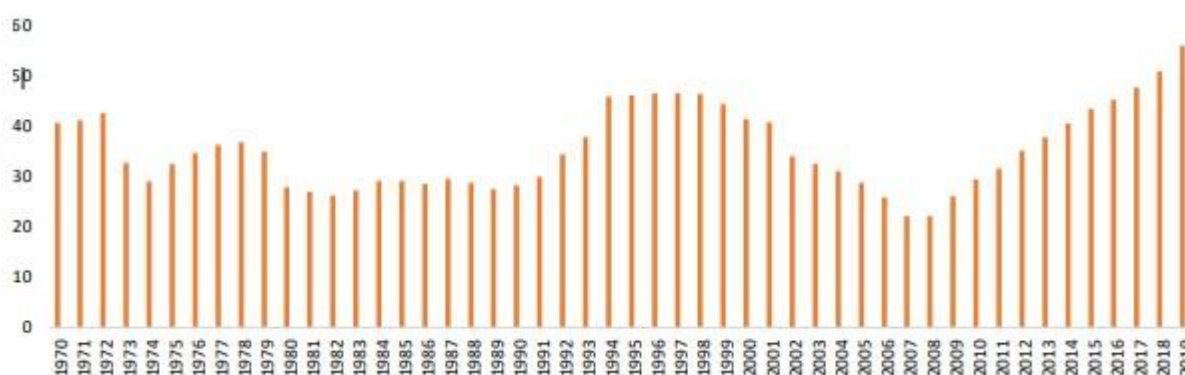
As shown in Figure 2.6, the South African economy experienced its longest period of decline since 1945, spanning from 2013 to 2021. This prolonged downturn forced the South African government to seek financial assistance from global institutions such as the World Bank and the IMF in order to balance its spending. Naidoo (2021) argues that South Africa was already facing economic vulnerabilities prior to the onset of the COVID-19 pandemic. According to data from the South African Reserve Bank (SARB), December marked the beginning of the 97th month in this economic contraction. Although the fourth wave of COVID-19 infections and a slowdown in economic activity in the third quarter of 2021 suggest a halt in the country's recovery, these may not necessarily indicate a shift in the overall economic cycle. In the three months ending September 2021, foreign direct investment inflows surged to R557.9 billion, a substantial increase from R17.4 billion in the previous quarter.

According to Godongwana (2022), government debt in South Africa has reached R4.3 trillion this year and is projected to rise to R5.4 trillion in the long term. Over the Medium-Term Expenditure Framework (MTEF), annual debt service costs are expected to total

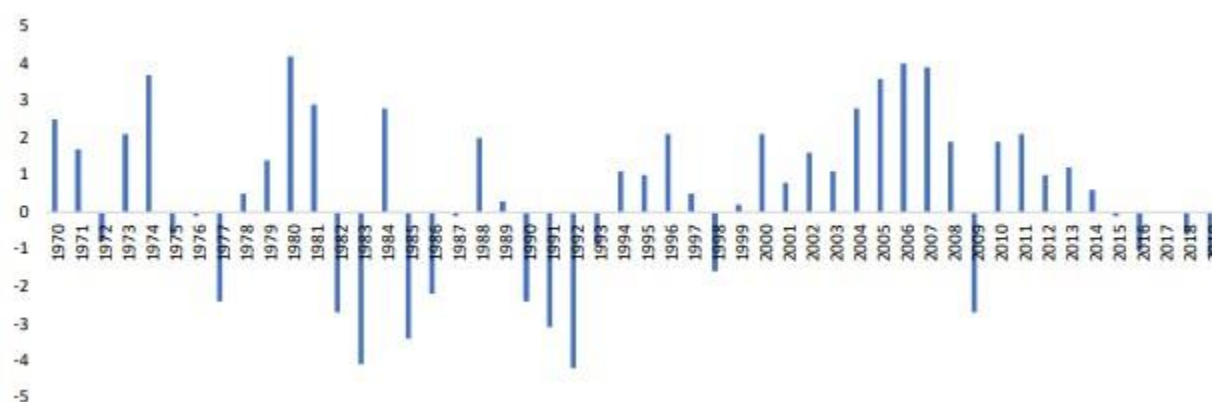
approximately R330 billion. By 2024/25, the consolidated budget deficit is forecasted to decrease from 5.7% of GDP in 2021/22 to 4.2% of GDP, leading to a stable debt-to-GDP ratio of 75.1%. These figures highlight the challenge of managing high public debt in South Africa, driven by macroeconomic factors such as sluggish economic growth, high unemployment, and rising inequality. As a result, it is crucial to examine the determinants of public debt in South Africa to guide government decision-making and inform borrowing strategies.

Figure 2.7: Trends of domestic debt and GDP

Total domestic debt as % of GDP



GDP per capita % change



Source: South Africa Reserve Bank 2021

The sharp rise in public debt as a share of GDP that followed the financial crisis is depicted in Figure 2,7a (total domestic debt as % of GDP). Following advances before 1994, the national debt increased to more than 45% in 1995. The global financial crisis of 2008–2009 prompted the South African government to implement countercyclical fiscal policies, as it did for other nations.

Large budget deficits and a rise in government borrowing from the capital markets to cover these shortfalls followed the results. Nonetheless, starting in 2009, South Africa's government debt to GDP ratio increased, rising from 22.2% in 2008 to 51.6% in 2019. The real GDP per capita yearly growth rate from 1970 to 2019 is shown in figure 2.7b (GDP per capita % change). This graph shows that, in comparison to the 1990s, GDP per capita was consistently lower in the 1980s. GDP per capita rose to positive levels starting in 1998 and continued to decline by 2.7% during the global crisis and recession of 2008–2009. After the global crisis, the economy stabilized until 2015, when South Africa's GDP per capita fell by 0.1% once more. In 2019, the GDP per capita growth rate was recorded at -1.9%, and it is expected to continue to fall. The two statistics also show that there is no obvious relationship between public debt and economic growth, which makes this study extremely important.

South Africa Domestic Public Debt Vs Brazil and Russia

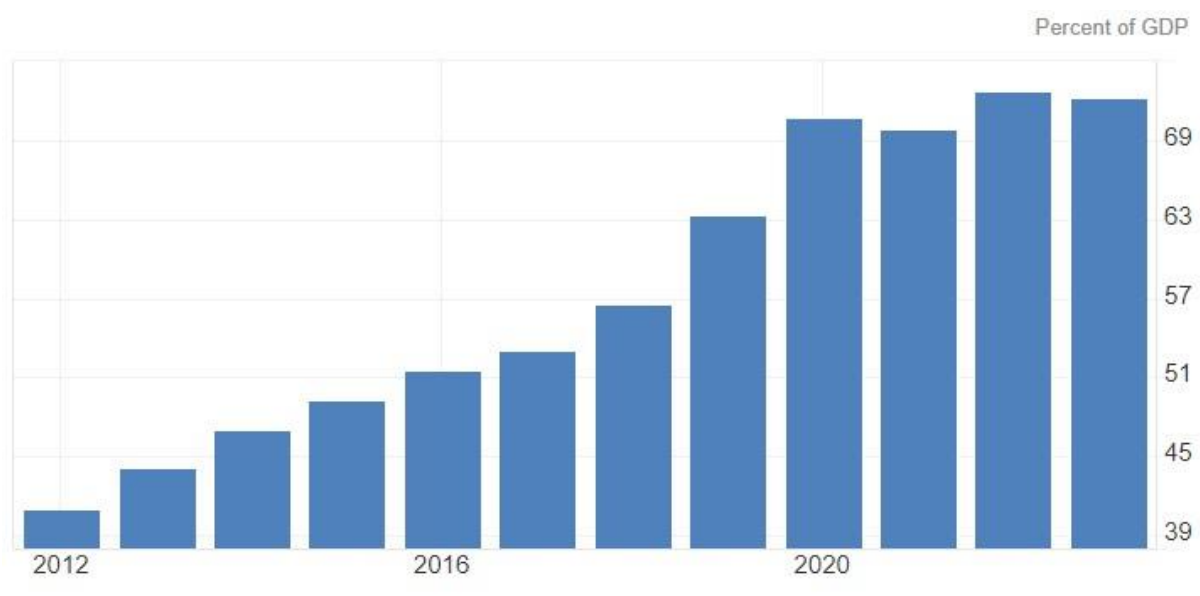
Table 2.2 Central government debt, total (% of GDP)

Country Name	2019 [YR2019]	2020 [YR2020]	2021 [YR2021]
Brazil	92.56525319	98.70988195	86.09497772
South Africa	64.72207102	77.53155265	75.61726626
Russia	17.27604844	22.99202104	20.9405403

Source: World Bank Indicators 2023

In comparison to Brazil, South Africa's central government debt from 2019 to 2021 is very modest. The central government debt of South Africa was 64,72 in 2019 and grew to 77,53 in 2020. The increase was brought on by COVID-19, which forced the government to borrow money in order to pay for health necessities. Additionally, because many South Africans lost their employment during that time, the government was forced to provide relief grants to the unemployed. Russia's extremely low central government debt may contribute to its status as a developed nation, with the means to manage such debt, as compared to both South Africa and Brazil. In South Africa, interest rates are determined by the Monetary Policy Committee (MPC) of the South African Reserve Bank. The official interest rate is known as the repo rate, which represents the rate at which central banks lend to or discount eligible securities for deposit-taking banks, typically at the conclusion of the lending term.

Figure 2.8: South Africa Government Debt to GDP



Source: South African Reserve Bank (2023)

In 2023, South Africa's government debt as a percentage of GDP stood at 72.20%. From 2000 to 2023, the country's average government debt-to-GDP ratio was 46.48%, with a peak of 72.80% in 2022 and a low of 27.80% in 2008.

2.3.2 Public debt and interest rates

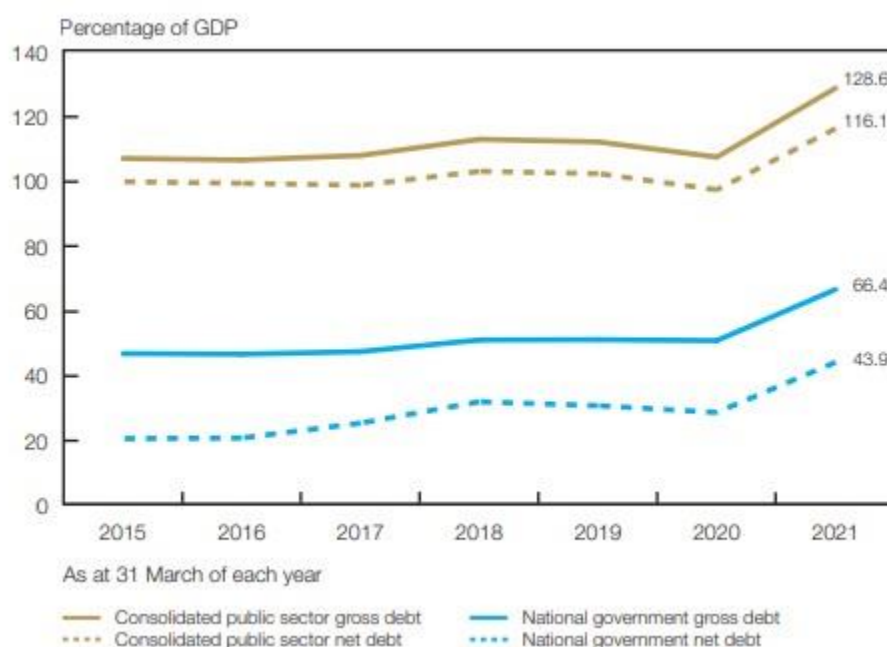
According to Crowley (2007), interest rates are the price of borrowing. The interest rate spread is determined by the regulatory landscape and the microstructure of the financial sector market. According to Crowley (2007), interest spread is a crucial metric for assessing the effectiveness and performance of the financial system. He contends that a widespread would obstruct the growth and advancement of financial intermediation. According to Ngugi (2001), interest rates are a useful information tool because they may be used to predict changes in the purchasing power of money as well as future inflation. The demand for loans or money by borrowers has an impact on interest rates as well. Interest rates regulate the quantity of credit that is available, working as a market clearing mechanism like other prices (Culbertson, 1977). The same process that determines stock prices on the NSE also determines interest rates in the credit or debt markets (Kasemo, 2015).

The belief held by proponents of the free market is that the government ought to borrow as little as possible from the economy. The state would face excessive rivalry from the private sector for the few resources if it borrowed too much from the economy, which would raise prices. In the end, this would result in public sector initiatives displacing private sector investments. According to Hall and Henry (1999), improper or imbalanced fiscal and monetary policy, as well as project finance mismatches, are the primary sources of the country's borrowing issues.

Siew and Yan (2015) raise the topic of whether the recent use of public debt by emerging nations to fund their budgets has boosted economic growth or if it has placed a heavy burden on future generations since they will be required to pay off these loans. They contend that the private sector's investments would be crowded out because of these borrowings. Furthermore, they contend that creditors would demand higher interest rates to protect themselves from increased risk.

Debt-financed nations guarantee their future resources against the set contractual commitments they take on when they borrow. A nation's ability to service debt must exceed its exposure to financial risk in order for it to achieve the servicing criteria. The frequency and amount of non-debt resources that a country receives depends on how foreign investors view the investment climate in the recipient nation

Figure 2.9: South Africa Public debt in 2021



Source: South African Reserve Bank (2021)

A significant portion of South Africa's public sector debt (R1,909 billion) is attributable to the liabilities of the Government Employees Pension Fund (GEPF), a public financial corporation, to its members. While the GEPF pensions are fully funded, with assets equaling liabilities, these liabilities are still included in the public sector debt due to the household sector being the counterparty, making consolidation within the public sector unfeasible. As of 31 March 2021, the consolidated gross public sector debt amounted to R7,208 billion, or 128.6% of nominal GDP. After adjusting for financial assets corresponding to individual debt instruments, the consolidated net public sector debt stood at 116.1% of GDP, more than double the national government's net loan debt of 43.9% of GDP. The national government primarily finances its fiscal deficit by issuing debt

securities (Treasury bills and government bonds), making it the largest issuer of debt securities within the public sector. As of 31 March 2021, the national government's financial liabilities accounted for 88.5% of the total debt securities outstanding in the public sector.

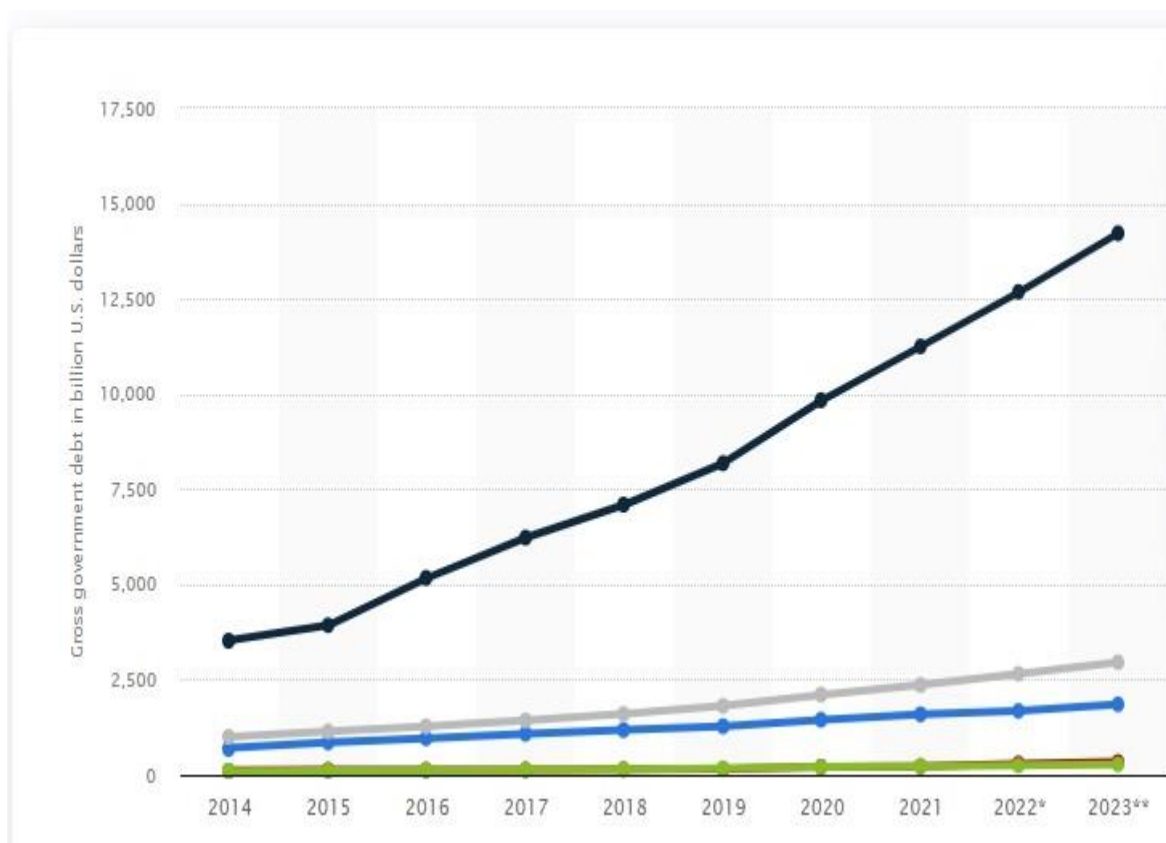
Table 2.3 South Africa Total National Debt

End of period R billion	2022/23	2023/24	2024/25	2025/26	2026/27
	Outcome	Estimate	Medium-term estimates		
Domestic loans²	4 209.8	4 641.1	4 949.2	5 364.8	5 640.0
Short-term	422.6	510.5	543.5	590.5	624.5
Long-term	3 787.2	4 130.6	4 405.7	4 774.3	5 015.6
Fixed-rate	2 743.8	2 982.9	3 220.0	3 394.3	3 461.3
Inflation-linked	992.2	1 029.7	1 031.2	1 184.9	1 314.3
Floating rate note	51.2	118.0	154.4	195.1	239.9
Foreign loans²	555.7	566.2	573.0	594.4	653.1
Gross loan debt	4 765.4	5 207.3	5 522.2	5 959.2	6 293.2
Less: National Revenue Fund	-249.2	-150.7	-89.9	-68.8	-74.5
Net loan debt	4 516.3	5 056.6	5 432.3	5 890.3	6 218.7
<i>As percentage of GDP:</i>					
Gross loan debt	70.9	73.9	74.1	75.3	74.7
Net loan debt	67.2	71.7	72.9	74.4	73.8

Source: South African Reserve Bank (2023)

Foreign-currency debt is projected to average R606.9 billion, or 10.2% of total gross debt, over the medium term, remaining well below the 15% risk threshold. This foreign-currency exposure is partially mitigated by foreign-currency deposits, which are expected to total US\$4.6 billion in 2023/24. In 2023/24, the debt stock is forecasted to increase by R441.9 billion, with 75% of this increase attributed to the main budget deficit, while the remaining growth is driven by changes in interest rates, inflation, and exchange rates. The rise in gross loan debt over the medium term will primarily be due to the budget deficit and the financing of the Eskom debt relief initiative, partially offset by the Government Financial and Economic Compensation and Relief Account (GFECRA) distribution.

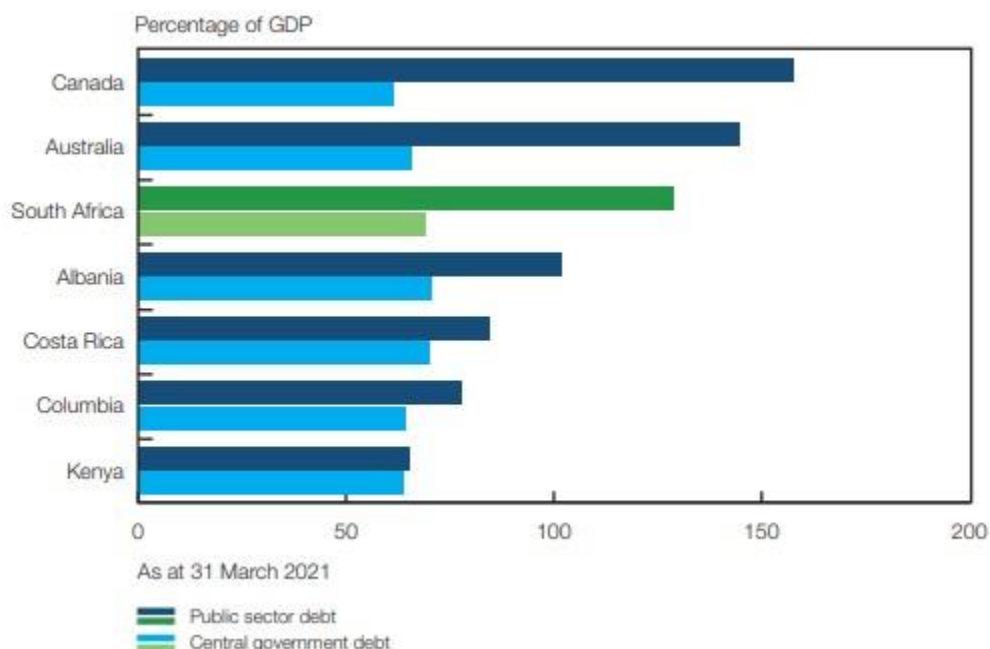
Figure 2.10: Gross Government Debt in BRICS countries from 2014-2023



Source: Statista (2023)

In 2023, China's gross government debt is anticipated to reach approximately 14 trillion U.S. dollars, substantially surpassing the gross government debt of other BRICS nations. Among these major emerging economies, South Africa is projected to have the lowest government debt, estimated at 275 billion U.S. dollars.

Figure 2.11: South Africa Public debt Vs Other countries on 31 March 2023



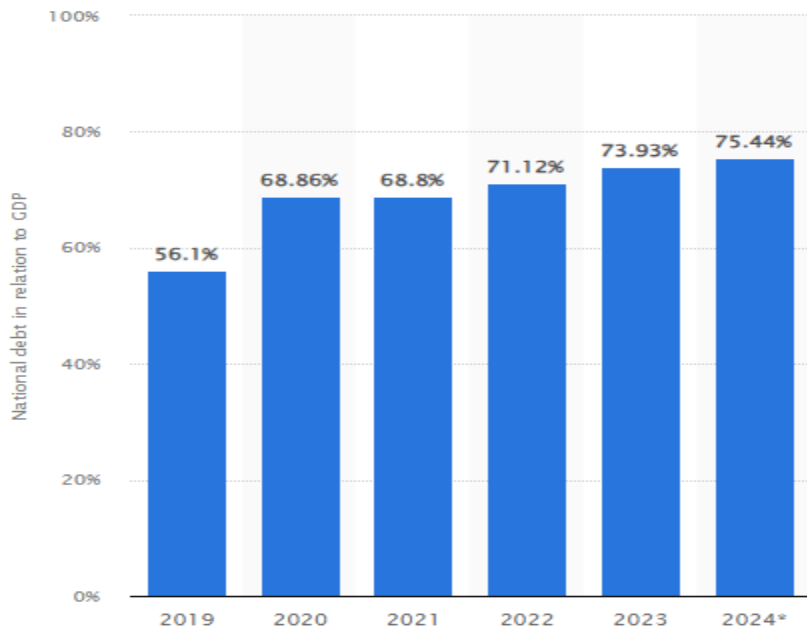
Source: South African Reserve Bank (2021)

The accurate compilation of public sector debt statistics remains a global challenge, largely due to persistent data gaps. Consequently, numerous countries continue to prioritize efforts to enhance the quality and comprehensiveness of their public sector debt data. South Africa's gross public sector debt-to-GDP ratio, recorded at 128.6%, is consistent with the levels reported by other nations that systematically monitor public debt.

South Africa's Domestic Debt and Financial development trends.

The South African National debt increased by 12,76% in 2019-2020. This increase was due to the R500 billion the government borrowed to help with the health care essentials and to give grants to those who lost their jobs during the Covid 19 crisis. This increase in government debt has decreased the available credit to borrow to the private sector. This is shown by a decrease in figure 2.13 (b), where in 2020 the domestic credit to private sector decreases by 8.84% from 2019.

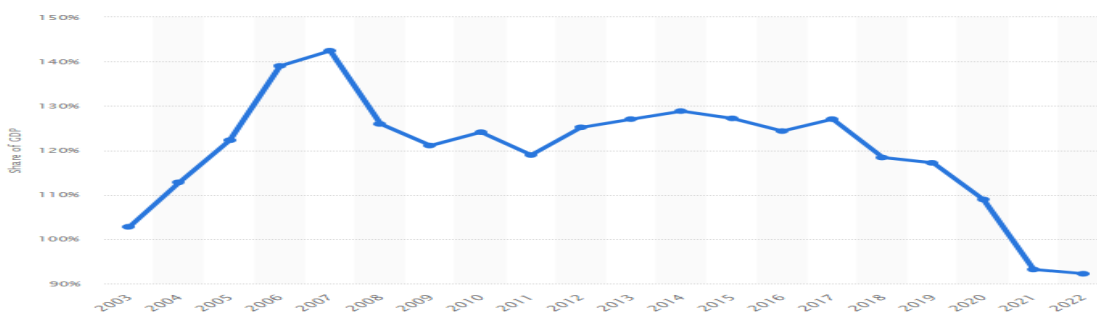
Figure 2.12 (a): National debt to GDP in South Africa from 2019-2023



Source: South African Reserve Bank (2024)

This is evident that government debt crowds out private sector investment. Where we can see in figure 2.13 (a) from 2021 to 2023 the government debt keeps increasing and in figure 2.13(b) the domestic credit to private sector decreases. From these two graphs we can predict that there is a negative relationship between domestic public debt and financial development in South Africa.

Figure 2.12 (b): Domestic credit to private sector as share of GDP in South Africa from 2002-2023



Source: South Africa Reserve Bank (2023)

2. 4 Conclusion

The chapter provides a review of the state of the South Africa domestic public debt and the developments of the financial sector. It was also found that, there have been many developments in the financial sector, Covid-19 also had a huge impact on the switch to digital financial sector. But with the developments in the financial sector, South Africa's financial sector is not performing well compared to other countries like BRICS countries. The South Africa government adopted a high public debt from the apartheid government. To try and stabilize the debt they inherited more debt. Just like many other developing countries the government is still trying to recover from the 2008/2009 financial crisis and the recent Covid 19 crisis. The next chapter provides a review of the literature on domestic public debt and financial sector development.

CHAPTER 3

LITERATURE REVIEW AND THEORITICAL FRAMEWORK

3.1 INTRODUCTION

The chapter provides an overview of the theoretical and empirical research that has looked at the relationship between the growth of the financial sector and domestic governmental debt. There are two main sections in this chapter. The theoretical relationship between savings and the growth of the financial sector is the main topic of the first section, while the relevant empirical research is reviewed in the second.

3.2 Conceptual literature

Financial development, according to FitzGerald (2006), is the expansion of the financial market and the institutions that results from the creation of new financial products and related goods. According to Aghion, Marios, George, Abhijit, and Kalin (2010), a country's financial prosperity encourages long-term investment and lessens the detrimental effects of currency exchange fluctuation on a firm's liquidity. Internal debt, also known as domestic debt, is the portion of a nation's overall public debt that is owing to domestic lenders (Ncanywa, 2018).

By using the record of banks to the private sector, LFD serves as a stand-in for financial development. This paper specifically followed Ismihan and Ozkan (2012), who excluded the credit availability of public debt and instead used bank lending to the private sector as a proxy. The log of domestic public debt from the banking sector in terms of GDP, or LDD, is the primary hypothesized variable used in this model. This model also incorporates other control variables, such as real GDP (LRGDP), deposit interest rate (LDIR), and inflation rate (LINF).

3.3 THEORETICAL REVIEW

3.3.1. Lazy Bank Hypothesis

Hauner came up with the Lazy Bank Theory. The theory contends that by holding a significant amount of public debt, financial institutions become complacent with the easy profits they can earn and avoid client competition, which has a negative impact on financial development (Hauner, 2009). Lack of incentives prevents the financial institution that primarily loans to the government from creating new products that influence financial development. Despite rising profits, the lazy bank outlook reduces the financial sector's cost-effectiveness. Cost-inefficiency channels frequently have an impact on the structural elements of financial systems, which is detrimental to financial development. Hauner (2009) goes on to say that reducing the negative effects of domestic government loans on financial development depends on increasing competition and financial deregulation. Ismihan and Ozkan (2012) support the lazy bank theory, claiming that nations with serious financial institution lending to the government suffer from weak financial development. Increasing domestic public debt limits the amount of money that can be loaned to the high-risk private sector, decreasing the likelihood that local financial institutions will be encouraged to go for more lucrative projects that could stifle financial development.

3.3.2 Safe Asset

The "safe asset" view, which we shall refer to as the most common association, has been used to explain the function of public debt in financial development. By offering a comparatively stable asset, it underscores the beneficial role public debt can play in growing financial sectors. This asset can address the institutional shortcomings that typically hinder the use of real estate or mobile property as security (De Soto, 2000). The growth of derivative markets and payment and settlement systems likewise heavily depend on the availability of liquid collateral. Furthermore, by offering a benchmark yield curve, government bonds make it easier to price corporate bonds and stocks (Reinhart & Sack, 2000), (World Bank & IMF, 2001). They give depositors a type of collateral on the balance sheets of financial organizations, which boosts their willingness to have their money handled riskily (Kumhof & Tanner, 2005). Therefore, if the "safe asset" theory is correct, less savings would be used, and borrowers would have to deal with higher borrowing costs and shorter maturity periods.

Demand and supply factors can be used to categorize the factors that influence public debt safety. In fact, the level of safety may depend on the opinion of investors who buy debt as a means of storing money or on the standing of suppliers who issue debt as a means of funding governmental expenditure. He, Krishnamurthy, and Milbradt (2016) demonstrate for the demand analysis that the absolute debt capacity of one country is essential for debt safety. The demand for assets by investors, in turn, influences the debt capacity. Investors' actions may make an asset safe if they perceive it to be safe. The safety of public obligations is thus ensured by a larger market size, which increases the debt capacity. Farhi and Maggiori (2018) contend that the stock of debt issuance determines the safety of public debt for the supply analysis. In specifics, there are several equilibria under the limited commitment. If the debt's supply is low enough to be in the stable zone, it is safe; if it is too high to be in the collapse zone, it becomes dangerous. The idea that there are many equilibria is based on the fact that the nation that supplies the public debts, which act as reserves, has the exclusive right to issue them. In order to lower the value of debts paid back to foreign investors, it may decide to devalue the home currency. Therefore, its safety may be negatively impacted by the amount of public debt. Furthermore, the presence of several equilibria points to a non-monotonic dependence pattern between debt supply and debt safety.

3.3.3 Crowding Out Hypothesis

When the government's fiscal policy contains a deficit, the crowding effect occurs, which decreases investment expenditure, boosts interest rates, and diminishes the fiscal policy's stimulus. The crowding out effect, according to (McConnell and Brue (1990), happens when fiscal policy deficits are combined with a drop in investment spending, leading interest rates to rise and reducing the fiscal policy's stimulus. The increased demand for money when the money market covers government deficits boosts interest rates, making borrowing more expensive. As a result, as government expenditure fluctuates in response to interest rates, some investment will be replaced. Ahmed and Millerr (2000) studied a variety of industrialized and developing nations using fixed and random effect techniques. Government expenditure on transportation and communication causes' congestion in emerging countries, whereas spending on welfare and social security causes a decrease in private investment. This study is important to the current

investigation because it emphasizes the significance of government borrowing to support deficit budgets, which is a problem because financial institutions have a limited amount of money to lend to private investors. Bulk of previous research has indicated that public debt has crowding out effect on financial development, such as (Ismihan and Ozkan, 2012, Altaylıgil and Akkay, 2013, Emran and Farazi, 2009), but also some authors argue that public debt is positively connected to financial development (Ondo, 2017, Montes, 2013, Kumhof and Tanner, 2005, Kutivadze, 2011). They believe that the public debt enhances the financial sector's stability by providing security, strong liquidity, and a consistent flow of profits. Furthermore, according to Hauner (2009), Whether or not public debt has a negative impact on financial growth is determined by whether or not the financial sector liberalizes or remains restrictive.

In contrast, when banks are forced to hold large public debt, this can result in a negative outcome. Trade-off in banking sector efficiency and crowding-out effect on private investment are some of the major arguments (Ilgun, 2016). Moreover, imperfect competition between government and firms, and information asymmetric between banks and government is possible consistent with the expectation of asymmetry effects of public debt (Lau et al., 2019). Banks are usually powerless to reject government's borrowing under such condition and again. This has no incentive in developing deposit and private credit markets. Safeguarding and reliable profits from government borrowings could reduce the banks' incentives to enhance efficiency and become too complacent to actively develop the banking market. Moreover, government intervenes in the pricing and loanable funds of banks could depress real interest rates and cause insufficient savings. This could have a negative impact on the availability of credit and the productivity of investments (Demetriades & Luintel, 1997), and hamper the financial sector deepening (Hauner, 2009). Low bank efficiency could lead to an increase deadweight loss which could be harmful to financial development (Fry, 1995). Hence, development in banking system may progress slowly when banks are consistently holding large public debt. Moreover, when the public debts are under attacks in the financial markets, banks can be vulnerable for holding these debts as major assets on their balance sheets (Jorda et al., 2014). Theoretical assumption relates the financial sector and government intervention is inadequately implied in the market structure. The role of financial institutions to channel

savings to investments is usually assumed as at zero costs in a perfectly competitive market (Demetriades and Luintel, 1997). Such assumption limits the analysis on the behavior of banks following government interventions. The arrival of government in the market will violate the implication of perfect competition. Government involvement in the credit market can influence the marginal cost and revenue structure of banks and in turn, shift the supply of funds to the markets. Furthermore, rising demand for loans by agencies from the public sector could raise the interest rate and a higher interest rate reduces private investment (Ismihan & Ozkan, 2012). The financial system in developing countries is always described as underdeveloped. Also banks are the major lenders to the government.

3.3.4 Demand -following hypothesis

According to Patrick's (1966) demand-following hypothesis, financial institutions are created in response to the demand for those institutions generated by economic growth. The theory states that the demand for financial assets and related financial services is brought on by savers and investors because of economic expansion. Patrick (1966) says that, to ensure effective resource allocation that promotes economic development, which is crucial for financial development. The role of direct government intervention in the financial system through direct participation and public debt issues may have an impact on financial growth (Levine, 2005). Oke (2018) challenges the demand-following theory by asserting that improvements in the financial sector are not a result of economic expansion. The government should only issue public debt when the private sector deviates from optimal allocation due to substantial risks (Patrick, 1966). Government involvement in the financial sector is only necessary when the private sector is unable to allocate resources effectively. Public debt affects financial development, so the government must foster confidence in its financial sector. To foster financial development, the proper economic policies and environment must be put in place. The Demand Following Hypothesis is crucial to this study because it aims to explain the factors that lead to the kind of considerable economic growth that is necessary for the development of the financial sector

3.3.5 Keynesian Theory

Robert Keynes, a professor, proposed the Keynesian model in 1936. According to Keynes (1936), an economy's interest rate determines how much labor is employed there. Money supply and demand into and out of an economic system are impacted by interest rates. In a system where central banks manage interest rates; an interest rate is a potent instrument that influences resource allocation. Keynes (1936) asserts that the government's expansive fiscal policy actions, including the issue of public debt on the open market, will boost competition in the private sector and raise interest rates. A country's financial development could be harmed by an increase in interest rates. It is thought that speculative motives react favorably to fluctuations in interest rates caused by variations in the value of bonds and debt with varied maturities. By controlling the money supply and influencing speculative and liquidity incentives through an elevated interest rate, the central bank can affect the expansion of the financial industry.

3.3.6 Financial Repression Theory

The Financial Repression Theory McKinnon introduced the theory of financial repression in 1973. The idea states that government actions like stringent reserve requirements, nominal interest rate regulations, and requiring financial institutions to retain public debt at comparatively low interest rates stifle the financial systems of most emerging countries. According to McKinnon, certain developing economies prevent financial institutions from functioning effectively by restricting competition through laws and government actions. McKinnon argues that inadequate savings in a financially depressed economy stem from low returns on investment. He posits that governments often implement financial repression policies to extract revenue from the financial sector, which can adversely affect financial development. By distorting the relationship between societal and private returns on investment, interest rate regulations undermine effective intertemporal economic decision-making. Low interest rates deter investors from participating in the financial system, instead incentivizing them to accumulate physical assets such as real estate. This preference for tangible holdings restricts financial growth by depriving potential investors of the capital needed to support private investment. In financially repressed economies, savings options are typically limited to cash, demand deposits, and time

deposits, all of which offer minimal returns. Consequently, McKinnon asserts that these low returns further discourage saving in economically stagnant conditions (Kipyego, Njoka & Muniu, 2022).

3.3.7 Financial liberalization

In order to enhance the theoretical school of financial repression measures, McKinnon and Shaw (1973) developed the notion of financial liberalization. Market-determined interest rates, no direct loan programs, less reliance on the government by 16 financial institutions, and unfettered capital inflows with foreign currency receipts are all supported by McKinnon and Shaw's (1973) theory. By encouraging domestic saving and enabling borrowers to move from the unofficial to the official financial market, market-determined interest rates promote financial development. Financial development is encouraged by investments in the formal financial sector, which raises the economy's credit (McKinnon & Shaw, 1973). According to McKinnon (1973), the complementary hypothesis asserts that eliminating interest rate control increases domestic saving demands and decreases the cost of accumulating real assets and, therefore, foster financial development. McKinnon-Shaw (1973) further asserts that financial liberalization fosters financial deepening through lowering market friction, increasing domestic saving, and attracts foreign capital. In a liberalised financial system, financial institute enjoys economies of scale in processing information. According to Egbetunde, Ayinde, and Balogun (2017) supports the McKinnon Shaw assertions but finds out that public institutions negatively affect the financial development. The study advocates for proper policy and institutional arrangements by public institutions to foster financial development. On the contrary (Owusu & Odhiambo, 2012) asserts that financial liberalization could lead to ingreducing output hence negatively affecting financial development through financial instability. This theory applies to the current investigation since it helps explain the correlations between external public debts that arise from financial liberalization on financial development. Through external borrowing, the government's liberalization may reduce market competition with the private sector and attract external flow to foster Kenya's financial development. Further, interest rate liberalization increases investors' interest rate, attracting investors to invest in local financial institutions, increasing financial institution deposits that may foster financial development.

3.3.8 Debt Overhang

The Debt Overhang Theory Myers was the first to analyze debt overhang (1977). "Outstanding debt could negatively distort the firm's investment incentives," Meyers noted. This is due to the fact that when decision-makers want to maximize equity value, they are less motivated to make successful investments. Since some of the return on a recent new investment is used to increase the value of the existing loan, this phenomenon is known as a "debt overhang" problem. According to Myers, granting short-term debts could address the issue of debt overhang. The idea behind this was that the company without debt might make the same investment choices as an all-equity company if all of its debt matured before the investment opportunity. Therefore, it makes sense to say that debt that matures shortly after significant investment choices should have less overhang than debt that matures earlier. Borensztein (1989) defines debt overhang as a situation in which a government is unable to fully repay its debt, leading to a negotiation process between the debtor country and its creditors to determine repayment terms. In such scenarios, the level of debt repayment is often influenced by the economic performance of the debtor nation rather than strictly adhering to the original terms of the debt agreement. It suggests that greater debt repayments, which go to creditors as debt services rather than the nation itself, will offset some of the gain on any investment if the debtor nation's economic performance improves. Since the debt from the past acts as a foreign "tax" on present and future production, this would almost never result in an increase in the debtor nation's overall consumption. Even when financing is available, this promotes capital flight and lessens the motivation to invest. The government's attempts to implement adjustment policies will likely be thwarted by the disincentive effect of the debt overhang, which may also have a negative impact on private sector incentives to hold local assets. According to the aforementioned, the debt overhang hypothesis is predicated on the idea that expected debt service will probably increase as a function of the nation's output level if the debt will eventually beyond the country's ability to pay it off. As a result, current foreign debtors essentially tax away a portion of the returns from domestic investments, discouraging both domestic and prospective foreign investors from making such investments.

Additionally, according to the debt overhang theory, governments are seriously threatened by the buildup of debt and the potential for debt overhang, hence it is important to keep debt under control (López & Nahón, 2017). The anticipated costs of debt repayment in the event of a debt overhang will discourage both domestic and foreign investment (Bal & Rath, 2014). In other words, governments need to keep the public debt at a sustainable level, meaning they shouldn't have any problems paying it off in the future (Bartolini & Cottarelli, 1994). The necessity of maintaining public debt at a reasonable level has been underlined once more in recent years by sovereign debt issues in both industrialized and developing nations, primarily following the global financial crisis. Current research indicates that unsustainable public debt has consequences that extend beyond fiscal and economic stability and is closely linked to the instability of the financial sector (Awadzi, 2015). In fact, banking crises often precede or follow sovereign debt crises. Additionally, the amount of public debt is rising rapidly, and this.

3.4 Empirical literature Review

The available studies on the link between domestic public debt and financial development includes studies which established a negative effect (Jorda et al 2014; Mok and Ismail 2015; Ilgun 2016; Lau et al 2019; Deghi, Natalucci and Qureshi 2022; Bui ,2018 ;Akanbi, 2020 : Joy & Panda , 2019). There are other studies which suggest that the effect could be positive (Montes 2013; Dungey et al 2019; Usman and Muhamad ,2020; Amoako, 2023). There are studies which also suggest that the effect could be worse in the event that the government defaults the debt (Montes 2013; Assoumou 2017).

Dungey et al. (2019) highlights a potential positive effect of public sector lending, suggesting that when banks provide credit to the government, it can be perceived as a "predictable" debt management process, thereby safeguarding the banks' assets. Similarly, Kumhof and Tanner (2005) argue that extending credit to the public sector offers banks enhanced opportunities to protect their assets while maintaining relatively higher profitability. Moreover, lending to the public sector provides banks with an alternative to private sector lending, potentially reducing the funds available to private borrowers. However, riskier private loans typically yield higher interest rates, as depositors may demand a greater premium to compensate for the increased risk.

Additionally, private sector lending often incurs higher administrative costs compared to lending to the public sector. Consequently, allocating loanable funds to the public sector can contribute to greater stability within the financial sector.

Khalid and Shafiullah (2021) analyze the bidirectional causal relationship between financial development and governance using panel data from 101 countries spanning the period 1984 to 2013. Employing econometric methods that account for cross-sectional dependence, the study explores this relationship while also examining the influence of varying levels of development and openness. The findings reveal that financial development positively impacts governance, with this effect remaining robust across three different governance indicators, as evidenced by long-run equation estimates. Granger causality tests confirm a bidirectional relationship between financial development and governance metrics. Furthermore, the study highlights that improvements in governance quality positively contribute to financial development. Lastly, the extent of a country's openness and development level significantly shapes the impact of financial development on governance.

Dungey et al. (2019) note that banks can utilize public debt as collateral in repurchase agreements, a practice that Hauner (2009) emphasizes as particularly significant in developing economies where liquid collateral is crucial for the functioning of derivatives markets. Consequently, government bonds provide banks with an opportunity to avoid the risks associated with lending to the private sector, which is often more precarious in the context of emerging markets.

Osei-Amoako (2023) investigates the impact of Ghana's escalating public debt on the country's financial development, with a specific focus on its banking sector practices. This relationship is of significant importance to both domestic and international policymakers, particularly given Ghana's alarming public debt level, which reached 78.3% of GDP in 2022, and the historical association between periods of elevated public debt and global economic downturns.

Research by Hauner (2009) and Montes (2013) suggests that an increase in public debt within the financial sector can have several positive effects. Firstly, it may enhance confidence among market participants, leading to higher savings deposits in financial

institutions. Public debt also plays a critical role in establishing the benchmark yield curve, which is essential for determining interest rates and prices in financial markets. These studies thus argue that domestic public debt is crucial for the development of both the financial system and the broader economy.

Mogaka (2017) examined the impact of government loans on the growth of financial markets in East African Community member countries using a multiple regression approach. Financial development and domestic debt were represented by the logarithm of total debt in USD and the stock market capitalization as a percentage of GDP. The study found a positive relationship between the growth of financial markets and domestic public debt in all three countries. However, the study employed a less robust regression equation that did not account for cointegration among variables or conduct unit root tests. As a result, the findings may be flawed, particularly due to the use of a non-standard measure of domestic debt. In contrast, this study adopts a more reliable ARDL time series approach, conducting diagnostic tests before executing the regression and using metrics based on the ratio of public debt to GDP.

Several studies argue that increasing public debt in the domestic economy negatively affects the growth of the financial sector. For instance, Chung-Yee, Ismail, and Ai-Lian (2020) employed the nonlinear autoregressive distributed lag model to analyze the asymmetric effects of public debt on Malaysia's financial development..

The findings suggest that continuous borrowing by the government from the domestic banking sector could have detrimental effects. There are three key mechanisms through which the private sector might be crowded out when domestic lenders hold a significant portion of government debt and the government engages in substantial domestic borrowing. First, it limits the available credit for the private sector. Second, because the public sector is perceived as a lower-risk borrower, banks may prioritize lending to it over private enterprises. Third, the increased demand for credit from the public sector raises borrowing costs for the private sector. As a result, the growing public debt held by domestic creditors diminishes the credit resources available to the private sector, which are essential for economic activity and resource efficiency. Consequently, reducing public debt would allow banks to allocate more credit to the private sector, fostering investment

and economic growth. Enhanced bank productivity often promotes financial development and reduces deadweight loss (DWL).

The primary aim of Joy and Panda's (2020) study is to analyze and compare the public debt trends of the BRICS countries—Brazil, Russia, India, China, and South Africa. The study also seeks to assess whether these countries experience the debt overhang effect as proposed by Krugman (1988). The analysis utilizes annual panel data from 1980 to 2016 for the BRICS nations. The co-integration results reveal a significant long-term equilibrium relationship between economic growth, capital formation, domestic savings, and debt servicing in these countries. The Granger causality test shows that debt servicing Granger-causes capital formation and domestic savings. Furthermore, the fully adjusted ordinary least squares coefficients indicate that both gross domestic savings and gross capital formation are negatively affected by debt payments. This suggests that debt servicing has an adverse impact on capital development and savings, providing strong evidence of the debt overhang effect in the BRICS countries.

In their panel analysis of 11 countries in Central and Eastern Europe, Sadic, Yildiz, and Guney (2021) confirmed the negative impact of public debt on the development of the banking sector. Using the PMG estimator, their findings indicate that, over both short and long periods, public domestic debt has a statistically significant negative effect on financial development in these countries from 1994 to 2017. The authors assert that a 1% increase in public domestic debt leads to a long-term reduction in financial development of approximately 0.45%. Furthermore, the study reveals that a 1% rise in public domestic debt results in a 0.073% decrease in financial development in the short term.

Akanbi's (2020) study explored the effect of domestic government borrowing on private sector lending in Nigeria. Using OLS multiple regression to analyze data from 2009 to 2018, the study found a negative relationship between domestic government credit and private sector credit. However, the lack of statistical significance in this relationship suggests that government borrowing may not have significantly crowded out private sector lending. The study also revealed a positive effect of the prime lending rate on government bond issuance, though this effect was not statistically significant. These findings are important for understanding the underlying mechanisms at play.

Ahmad and Ali (2016) investigated the impact of government borrowing from both commercial and central banks on the growth of the financial system. The study utilized annual time series data from Pakistan covering the period from 1972 to 2015. The relationship between the variables was analyzed using the ARDL bounds-testing approach to cointegration. The results indicate a long-term association among the variables in the model. Specifically, the long-term findings suggest that public domestic debt significantly hinders financial development. Based on these results, which also show negative effects on inflation and savings, the study recommends reducing public domestic debt to facilitate increased access to credit for the private sector from the banking system.

Janda and Kraviston (2017) examined the extent to which public debt influences various indicators of financial sector development, including financial depth, access, efficiency, and stability, focusing on the CEE, Balkan, and Baltic regions. Their findings suggest that increases in public debt have a negative impact on private credit in the short to medium term within these regions. However, no strong evidence was found for a long-term effect. The results imply that the availability of private credit in the CEE region may be influenced by public sector debt.

There are studies which have carried out a cointegration analysis in analysing the link between variables. Of these, Kipyego, Njoka, and Muniu (2022) investigated the relationship between state debt and the growth of Kenya's financial sector from 1964 to 2019. The research employed the Autoregressive Distributed Lag (ARDL) model, and the results revealed a stable long-term relationship between interest rates, public external and domestic debt, and financial development. The findings indicate a statistically significant negative relationship between Kenya's financial development and public domestic debt, both in the short and long terms.

Sağdı, Yıldız, and Güney (2021) utilized the Autoregressive Distributed Lag (ARDL) model to examine the impact of domestic public debt on financial development in Central and Eastern European countries from 1994 to 2017. The study fills a gap in the existing literature on "safe assets" and "lazy banks" in these regions. The results reveal that public domestic debt negatively affects the financial markets of these countries in the long term.

Additionally, the findings provide strong support for the "lazy banks" theory, suggesting that government economic activities, including the accumulation of public domestic debt, hinder the growth and deepening of financial markets.

Osei-Amoako's (2023) study investigated the effects of Ghana's rapidly growing public debt on the country's banking sector and overall financial development. With Ghana's public debt reaching a concerning 78.3% of GDP by 2022, it is crucial for both domestic and international policymakers to comprehend the relationship between periods of high public debt and global economic downturns. This research provides a comprehensive analysis spanning three decades, from 1992 to 2022. The stationarity of the study variables was confirmed using the ADF test, while cointegration tests revealed a long-term equilibrium relationship among the variables. In the medium term, a significant and positive correlation was found between domestic bank intermediation, financial development, and public debt. Regression analysis further indicates a positive relationship between public debt and financial resources.

Ahmed and Rahman (2016) used time series data from Pakistan gathered between 1972 and 2016 to investigate the effects of these variables on private borrowing. The ARDL technique is used to analyze the relationships between these factors and private borrowing over the specified period. The study's key conclusions suggest a nuanced relationship between economic factors and financial advancement. Public domestic debt clearly has a negative effect on financial development over a long period of time. This implies that high levels of national debt may limit the effectiveness and growth of financial markets, hence limiting capital available and preventing economic growth.

Makambi, Muhindi, and Nduku (2017) employed the Auto-Regressive Distributed Lag (ARDL) and Markov switching models to analyze the impact of government debt on private sector loans during shifts in Kenya's fiscal regime from 1966 to 2014. The study found that changes in Kenya's fiscal system were driven by policy adjustments and economic shocks. The authors emphasized the importance of understanding the relationship between public debt and private credit, which is influenced by fiscal policy changes. The study primarily focused on the crowding-out effect, specifically examining

government bank loans. In contrast, the current study aims to investigate the broader relationship between the total domestic public debt and financial development.

Lidiema (2018) examines the relationship between domestic government borrowing and private investment, with gross fixed capital formation as the dependent variable. The analysis utilizes data from 1975 to 2014, including GDP per capita, real interest rates, gross domestic savings, domestic debt, and financial development. The study employs the Auto-Regressive Distributed Lag (ARDL) technique to assess both the long- and short-term co-integration relationships between the independent variables and gross fixed capital formation. Additionally, CUSUM and CUSUMSQ tests are applied to evaluate the stability of the model. The findings reveal a negative and statistically significant relationship between domestic debt and gross fixed capital formation, although this effect has diminished over time. Furthermore, a significant positive relationship is found between financial development (FD) and domestic loans to the private sector.

Ali, Ahmed, and Rahman (2016) investigated the impact of government borrowing on the growth of Pakistan's financial sector from 1972 to 2005 using the ARDL methodology. Financial development was measured by comparing the private sector's credit to GDP, while the explanatory variables included government borrowing to GDP, inflation, GDP, and net taxes. The analysis concluded that, over time, government debt was negatively correlated with the expansion of Pakistan's financial sector. The study also identified that both savings and inflation had a negative impact on financial development. Furthermore, it examined the direct effects of inflation and public debt on financial development, emphasizing the need for additional research to determine whether inflation moderates the relationship between public debt and financial growth.

A number of authors have focused on establishing a long-term relationship between domestic debt and financial development. These authors have relied on methods which seek to establish a long-term relationship using Gaussian Mixture Model,

Mbulawa (2015) examined the factors influencing financial development for eleven nations in the Southern African Development Community by using fixed effect and dynamic Gaussian Mixture Model (GMM) estimators. Domestic credit was used to gauge financial progress, and the explanatory variables included trade openness, interest rates,

inflation per capita GDP, and credit extended to the public sector. The study found that the selected countries' financial development is positively impacted by GDP, interest rate, and financial openness. Furthermore, a government must maintain low levels of public debt and guarantee supportive credit and monetary policies in order for any significant financial development to take place.

Other studies used a panel data. These studies are (Omet,2023; Bloemberg ,2020; Zouari, Saidance & Gabsi ,2022 and Abdel-Halim ,2022). Omet (2023) used annual data (1982–2021) on total bank credit to the private sector, total bank credit to the government, and the discount rate. Among the methods used are the stationarity test, vector error-correction (VECM) estimates, optimal lag structure, and co-integration. To answer the second question, the study uses annual bank level data (2010–2021) for each of the 13 listed Jordanian banks. Because the data contains both time series and cross-sectional elements, panel data analysis is used to evaluate the impact of bank-level lending to the private sector on bank-level credit to the government. The results show that bank holdings of government securities, or bank loans to the government, have a significant macroeconomic impact.

Abdel-Halim (2022) examined the impact of state debt on Jordan's financial development as an emerging market. We analyze the empirical predictions of two hypotheses, "safe asset" vs. "lazy banks," about the role of public debt that are based on previous evidence. employing the Fixed Effect (FE) and Bias Correction Fixed Effects (BCFE) approaches, which take into consideration time-specific and unobservable variables particular to each bank, and annual data from 2008 to 2018. We find that public debt has a positive impact on financial development after controlling for bank risk and size. Bank capitalization, ROA, and capital adequacy. The findings offer shaky support for the "Safe Asset" theory, which holds that banks invest in government securities because they are secure assets.

Bui (2018), using a balanced panel of 22 economies in the Asia-Pacific area, this study examines the nonlinear relationship between the level of financial development and fiscal policy (as defined by total domestic public sector debt). Governments that control less

developed financial institutions like those in emerging markets—often misuse their authority by meddling in the domestic debt market. This study demonstrates how improved financial institutions support government discipline. The findings point to a detrimental impact of domestic public sector debt on financial development, but only when it comes to a low degree of financial integration and flexibility. Increased financial integration and freedom would lessen the effect of domestic public sector debt crowding out.

Saidance, Gabsi, and Zouari (2022) using a panel of 19 banks that operate in the Arab Maghreb region, this study examines the effects of domestic governmental debt on the availability of credit to the private sector from 2005 to 2018. The findings validate the presence of both linear and quadratic impacts of domestic public debt on the availability of credit for the private industry. An estimated 9.77 percent of total assets was determined to be the criterion. For varying amounts of domestic public debt, the regression results are robust across two alternative specifications that exclude state banks and account for the influence of the Arab Spring on the flow of credit to the private sector.

Bui (2018) investigates the nonlinear link between fiscal policy (as measured by total domestic public sector debt) and financial development using a balanced panel of 22 economies in the Asia-Pacific region. The domestic debt market is frequently manipulated by governments that have control over less developed financial institutions, such as those in emerging nations. This study shows how government discipline is supported by better financial institutions. The results indicate that domestic public sector debt has a negative effect on financial development, but only in cases when financial integration and flexibility are inadequate. The impact of domestic public sector debt crowding out would be mitigated by more financial independence and integration.

Benayed (2020) investigates the nonlinear effects of domestic public debt on financial development between 2000 and 2010, utilizing a panel of 20 low-income Sub-Saharan African countries. Building on the framework proposed by Lind and Mehlum (2010), our analysis reveals an inverted-U relationship between bank loans to the private sector and

domestic government debt, with a threshold approximately at 52% of GDP. The regression outcomes remain robust across various estimation techniques and specifications.

3.4 Assessment of the Literature

The review of both the theoretical and empirical literature revealed that there has been a concerted effort to establish the possible effect of public debt on financial sector development. At theoretical level there is no consistence given that there are different views on how an increase in domestic debt influences financial sector development. The same is also evident at empirical level. As indicated earlier under significance, the available studies on South Africa are studies which have largely been done focusing on the crowding out model (Biza et al 2015). The current study will be looking at how an increase in public debt may impact both the banking sector and financial markets.

CHAPTER FOUR

METHODOLOGY AND EMPIRICAL ESTIMATION TECHNIQUES

4.1 INTRODUCTION

The study approach used to investigate the impact of domestic public debt on the growth of South Africa's financial sector is covered in this chapter. By outlining a process for addressing the empirical goals established in the first chapter, the chapter establishes the analytical framework utilized in this investigation. The literature studied in the previous chapters served as the foundation for the study's empirical analysis and methodology.

4.3 RESEARCH APPROACH

There are three different to data analysis, qualitative, quantitative, and mixed method. Naturalistic and interpretive approaches to various subject subjects are used in qualitative methods, which strive to address the scientific and practical difficulties that society faces. These studies make use of a range of empirical materials, including case studies, real-world examples, and narratives that illustrate the habits and issues that people face. Utilizing numerical values acquired from observations to describe and explain processes that observations can reflect on is known as quantitative research. Additionally, empirical evaluations are used to ascertain the extent to which a norm or standard is met by a certain policy or program. Mixed-method methods simply combine qualitative and quantitative approaches to better comprehend the subject. However, given the chosen integration process, the focus can be split evenly between the two ways or on just one of them (Taherdoost, 2022). The quantitative research approach will be used in the study. Quantitative data can be used to compare groups, quantify trends, test hypotheses, and determine causal links. The nature of the study and the data which is being employed makes the quantitative approach the relevant technique.

4.3 MODEL SPECIFICATION

The study is underpinned by the Safe Asset model of De Soto (2000) which was discussed in detail in the literature review section, which proposes that as public debt increase, that may influence financial sector development. Based on the model, the following functional model of Mun & Ismail (2015) was adopted:

$$FD = f(LDD) \dots\dots\dots 4.1$$

Based on this model, the following empirical model will be estimated:

$$LFD_t = \alpha \beta_1 LDD_t + \beta_2 INF_t + \beta_3 DRI_t + \beta_4 LR GDP_t + \beta_5 GFCF_t \mu_t \dots\dots\dots(4.2)$$

Where:

DCP_t = Domestic Credit to private sector t .

LDD_t = Domestic Debt t .

INF_t = Inflation Rate t .

DRI_t = Deposit Interest Rate t .

$LR GDP_t$ = Real Gross Domestic Product t .

$GFCF_t$ = Gross Fixed Capital Formation t .

4.4 Definition of variables and a priori

1. Financial Development (LFD) Financial development refers to the expansion of financial institutions and markets, driven by the creation of new financial products and related services. According to Muniu and Kipyego (2022), a nation's financial development helps mitigate the adverse effects of currency exchange rate fluctuations on a firm's liquidity, while also fostering long-term investment. In this context, financial sector development will be measured using two indicators: Bank credit to the private sector, which represents the volume of financial resources provided by banks to support private investment, and the Financial Institutions Efficiency Index, which assesses the performance of both the banking sector and financial markets.

2.Domestic Public Debt (LDD). Internal debt, or domestic debt, represents the segment of a country's total public debt owed to domestic creditors (Ncanywa, 2018). The impact of domestic debt on financial development is examined using the domestic debt variable. Statistically, LDD exhibits a negative sign, though it is not significant. However, when a dummy variable for the financial crisis is included, LDD shows a statistically significant result, indicating that external shocks indirectly affect domestic debt, thereby crowding out private expenditure.

3. Inflation Rate, Inflation refers to the overall rise in the prices of goods and services, commonly referred to as the inflation rate (LINF). As prices increase, the purchasing power of money declines, meaning that each unit of currency can buy fewer goods and services. It is expected that inflation will have a negative interaction with private credit, which, in turn, may influence financial development. This relationship has been explored in studies such as those by Semose and Ogujiuba (2021).

4 Total deposit rates

The real deposit rate this captures the return to depositors. The higher the rate, the more savings which can be deposited into the bank and the higher the profits from loanable funds (Kagan, 2020).

5. Real Gross Domestic Product

Real GDP (LRGDP) is a macroeconomic indicator that adjusts for price changes to measure the value of goods and services produced within an economy over a specific period. Essentially, it reflects the total economic output of a country while accounting for the effects of inflation or deflation (Ganti, 2022). LRGDP also incorporates changes in market size, which, in turn, influences the availability of credit for private investment and supports economic growth. Therefore, it is expected that private credit and real GDP will exhibit a positive correlation.

6. Gross Fixed Capital Formation (GFCF)

Gross capital formation (GCF) is a key indicator of total investment within an economy, reflecting the value of all new capital goods—such as machinery, equipment, buildings,

and infrastructure—purchased within a given period. It essentially measures the resources dedicated to enhancing an economy's productive capacity. According to King and Levine (1993), there is a reciprocal relationship between GCF and financial development, with each reinforcing the other. A well-functioning financial system plays a vital role in supporting investment and fostering economic growth, while increased investment, in turn, promotes the growth of financial markets and institutions. This suggests a positive correlation between gross capital formation and financial sector development.

4.5 ESTIMATION TECHNIQUES

The study will follow a quantitative research design using time series analysis to estimate the models for the period 1985-20 using quarterly and annually data. Following Brooks (2008), the data is all will be tested for stationarity. Apart from informal testing which involves graphical analysis, formally we do a unit root test using Augmented Dickey Fuller model (ADF) and Phillips Perron (PP) methods.

4.5.1 Stationarity tests

When underlying variables are derived from time series data, the stationarity test is crucial. According to Brooks (2008), a stationary series is one that has a consistent mean, auto-covariances, and variance for each given lag. According to Demetrious and Stephen (2007), non-stationary data leads to erroneous regression. Therefore, researchers should ensure that all variables are steady in an effort to prevent false results. Furthermore, it is crucial to differentiate the data until it becomes stationary if the researcher examined at the level series and discovered that the variables are non-stationary (Brooks, 2008).

Stationary tests are done for robustness check and are before cointegration testing. The current study uses both formal and informal techniques to check for stationarity in the times series data. Since graphs will be inspected to determine stationarity, informal tests are also known as graphical tests. Two formal tests, the Phillips-Perron (PP) and the Augmented Dickey Fuller (ADF), will be employed to test for stationarity. The Phillips-Perron test will then be utilized for a follow-up test.

4.5.2 Informal unit root tests

The goal of the thesis was to examine the trend and use a graphical method to investigate stationarity. A non-stationary series is implied by an upward trend in the graph. At this stage, the researcher must make differences in the data until stationarity is achieved. If all of the data series show trends that are centered around the zero mean, then the data series is said to be stationary (Brooks, 2008). The Phillips-Perron (PP) and Augmented Dickey Fuller (ADF) tests were used for the official assessments. The next section discusses these tests.

4.2.3 Formal unit root tests

Quite a few techniques can be employed to do a stationarity test. In this study, we will make use of Phillips-Perron (PP) and Augmented Dickey Fuller (ADF) unit root tests.

i) Augmented Dickey-Fuller test

This formal test considers auto-correlation in the error terms and that makes it differ from other formal tests. This enables the ADF to differ and unique from other unit root test methods. Chakraborty (2007) attests ADF technique assumes error terms with constant variance and statistically independent.

The ADF method utilizes the equation below:

$$\Delta x_t = \phi_0 + \beta_1 x_{t-1} + \delta_2 t + \sum_{i=1}^p \theta_i \Delta x_{t-i} + u_t$$

Where:

t = trend variable, u_t = white noise residual, x_t = variable tested, Δ = difference operator. $\phi_0, \beta_1, \delta_2$ and θ_i includes the coefficients being tested and Δx_t equals to $(x_t - x_{t-1})$. Chakraborty (2007) argues that with a known error term, researcher can empirically determine the number of lagged differences. The research and null hypothesis to be tested are given below:

$$H_1: \beta_1 = 0$$

$$H_1: \beta_1 \neq 0$$

H1 stated above depict or assumes a non-stationary time series data and H0 will be rejected in favour of alternative hypothesis when β_1 is below zero ($H1: \beta_1 < 0$). Accepting null hypothesis and reject alternative hypothesis it means the data is not stationary and it is imperative for the researcher to difference until the data is stationary and the time series will be integrated of order I(0).

The ADF has significant disadvantages. Lack of power suggests that when the series follows a stationary process, the ADF is unable to detect stationarity and is unable to identify a false null hypothesis (Brooks, 2008). This can happen if the null hypothesis was right and the sample has too little data to support rejection. Using a stationarity test and expanding the sample size are two ways to address this issue. While a stationarity test can be used without altering the data, the addition of sample size could be compromised by unavailable data. The Phillip Perron (PP) exam is therefore advised.

ii) Phillips-Perron test

The sole distinction between this test and the ADF test is that the latter computes error terms while accounting for auto-correlation (Brooks 2008). The Phillips-Perron Technique assumes that error terms have the same distribution and are independent. Additionally, to address auto-correlation in error terms, PP tests use non-parametric techniques without the addition of lagged difference terms. The AR (1) is the test regression for the PP test, and it looks like this:

$$\square Y_{t-1} = \square 0 + \square y_{-1} + \mu_t \dots\dots\dots (4.2)$$

The PP and ADF tests work best together to test for stationarity since they make up for each other's deficiencies. However, they usually yield the same results and share the same asymptotic distribution. Furthermore, the robustness of the results will be confirmed using both the PP and ADF tests. However, because it does not require lag length specification and is robust to many types of heteroscedasticity in the error term, the PP test is preferred over the ADF test.

4.5.4 Criticisms of ADF and PP tests

To verify for stationarity, several scholars have used and recommended the PP and ADF tests; nevertheless, each method has limitations. Size and power present the first and

most important barrier. When the process is motionless, the two tests have very little power. Limitations in sample size and power, which are also related to simulation, plague the two experiments. Neither PP nor ADF provide strong evidence for the H1 hypothesis, which states that the series have stationary, massive, auto-regressive roots. De Jong et al. (1992) state that when the series has a large negative moving average root, both tests are known to show severe size distortion, which causes the null hypothesis to be over-rejected. The two tests will be employed in this inquiry due to the previously indicated limitations of the ADF and the PP. The dependability of the test-based outcomes will be examined and compared with those obtained via unofficial testing.

4.5.5 The Autoregressive Distributive Lag (ARDL)

The study employs a co-integration test to ascertain the relationship and causality between income inequality and economic growth, as well as the effect of fiscal policy tools on the Real GDP growth rate and income inequality. The Autoregressive Distributed Lag (ARDL), the Johansen cointegration test, and the Engle Granger technique are some of the methods for cointegration. However, the ARDL approach was used in the current thesis for a number of reasons, such as the fact that it is more effective for long-term parameter estimates and is frequently more diverse since it allows for the unbiased estimation of standard errors. Compared to the Engle Granger technique, the error correction coefficient needs to be restricted far less frequently and more of the ARDL parameters can be freely determined. The fact that Pesaran & Pesaran (1997) address both the autocorrelation issue and endogenous regressors simultaneously gives them an edge over alternative methods.

Additionally, the following are additional benefits of the ARDL technique in comparison to other approaches. According to Pesaran and Pesaran (1997), the strategy is thought to be flexible since it can be used even if the variables are of a different order, but other approaches, such as the Johansen approach, need the variables to be of the same order. When compared to alternative methods, ARDL estimations and t-test sizes are thought to be dependable and efficient. Last but not least, the method is preferred over the Johansen methodology because of its remarkable estimation capability, which is shown to be dependable and more effective with small samples.

Equation 2 is presented in the ARDL model, capturing both the long-run and short-run model as follows:

$$\Delta LFD_t = \alpha + \lambda_1 LFD_{t-1} + \lambda_2 LDD_{t-1} + \lambda_3 LIFN_{t-1} + \lambda_4 LDRI_{t-1} + \lambda_5 LR GDP_{t-1} + \sum_{i=1}^m \beta_{1i} \Delta LFD_{t-i} + \sum_{i=0}^n \beta_{2i} \Delta LDD_{t-i} + \sum_{i=0}^p \beta_{3i} \Delta LINF_{t-i} + \sum_{i=0}^q \beta_{4i} \Delta LDIR_{t-i} + \sum_{i=0}^r \beta_{5i} \Delta LR GDP_{t-i} + e_t \dots \dots \dots 4.3$$

Where Δ is the first difference operator, α is the drift component, m, n, p, q and r are the optimal lag lengths in the ARDL model and e_t is white the error term. λ_1 to λ_5 represent the long run relationships in the model while β_{1i} to β_{5i} represent the short run dynamic relationships.

After establishing cointegration, it will be crucial to specify the Error Correction Model (ECM) if there is short-term variable disequilibrium. All of the short-term dynamics of fluctuating disequilibrium will be described by the ECM model. Additionally, the ECM can be derived from the ARDL model via a straightforward linear transformation that preserves long-term information while integrating short-term modifications and long-term equilibrium. The Ramsey RESET approach will be used in the study to check for model specification issues. Stationarity and unit roots in the data will be checked using the Phillips-Peron and Augmented Dickey-Fuller tests. Following these steps, the autoregressive distributive lag (ARDL) technique was used to examine the short- and long-term associations between variables. Instead of using the multiple equation system used by the VAR and Johansen (1991) models, the model uses a single reduced-form equation.

Furthermore, as was mentioned in the evaluation of empirical literature, the majority of studies chose to use panel data, while only a small number used time series data. Time series design was chosen for the following reasons: it creates a baseline measure, describes changes over time, monitors trends, and predicts future short-term trends. Since this thesis's primary goal is to investigate the relationship between fiscal policy tools, GDP growth rate, and income distribution, it is crucial to take time into account and monitor changes.

It is crucial to take into account the temporal effect because South Africa saw several economic transformations and different economic policies were put in place before and after apartheid. The "best" analysis to deal with temporal effects, in theory, is the time series.

4.5.6 ARDL diagnostics

The diagnostic tests include determining if the model is suitable for analysis (goodness of fit), specifically by examining the model's associated heteroscedasticity, serial correlation, and misspecification (Brooks, 2008). The Jarque-Bera test was used in the study to check for normalcy.

4.5.7 Heteroskedasticity

The basic premise of the model is that the residuals are i.i.d. The homoskedasticity idea assumes that the variances of the errors are equal [$\text{var}(\mu_t) = \sigma^2$]. $E(\mu_t) = 0$ represents the residuals with a zero mean constant variance. When the assumption is violated and the residuals have the problem of having a non-identical distribution, they are regarded as heteroskedastic [$E(\mu_t) \neq 0$]. Since heteroskedasticity can result from a number of factors pertaining to data collection and estimation, it is impossible to assume that it is not present at the surface. The inclusion of outliers, advancements in data collection methods, learning that lowers error variances over time, and improperly defined models (either faulty data transformations and/or functional forms) can all result in residuals that are unequally distributed. When heteroskedasticity is present, estimating models would preserve σ^2 . The estimators would continue to be impartial and reliable. Inefficient estimators and inaccurate standard errors that result in improper inferences are the issues caused by heteroskedastic residuals.

4.5.8 White heteroscedasticity test

Because it tests both the null hypothesis—that there is no heteroscedasticity—and the alternative hypothesis—that there is heteroscedasticity—the study favors the White's LM test. If there is heteroscedasticity, the alternative will be accepted and the null hypothesis will be rejected. Rejecting the null hypothesis and asserting heteroscedasticity allows us to re-estimate the model.

4.5.9 Normality Test- Residual normality test

Inaccurate functional forms, measurement mistakes, and the omission of pertinent or irrelevant variables can all lead to a misspecified model. The relevant variables are omitted from the model when variables or factors that influence the dependent variables are not included as explanatory variables. Additionally, it will be necessary to include irrelevant factors if the variables selected to be explanatory are not determinants of the dependent variable. Thirdly, the model will be misspecified because of the incorrect functional form if the linear relationship is expected yet the model has a non-linear relationship. Finally, measurement error will be a contributing factor to misspecifications if the researcher measures the variable incorrectly. According to Brooks (2008), the researcher must ensure that the residuals have a normal distribution. The Jarque-Bera test was used in the study to check for normalcy.

4.5.10 Serial correlation

According to the traditional linear regression model, the variance and correlation of each disturbance are equal to zero. The error terms are said to be independently distributed, which explains this. Accordingly, there exist dependently distributed error terms when this assumption is broken (Brooks, 2008). This demonstrates the presence of serial correlation in the context of econometrics. Inaccurate functional forms, measurement errors, irrelevant variables, and omitting relevant factors can all contribute to serial correlation. Serial correlation can be found in two ways, one of which is the informal technique. and the formal method. Graphical method can be regarded as the informal technique while tests like Glesjer-Godfrey LM and Durbin-Watson are regarded as formal techniques as they are done using formal statistical tests. The Durbin Watson test, according to Demetrious and Stephen (2007), is a formal test that makes the assumption that the model contains constants, only initial autocorrelation, and that dependent variables that are not lagged are excluded from the equation. However, because factors that are not lagged are excluded from the equation, it is thought that the DW cannot provide definitive answers and cannot be the best test for correlation. Higher orders of autocorrelation are also not taken into account. The Glesjer-Godfrey LM test, which incorporates lagged variables and tests the hypothesis that there is autocorrelation while

rejecting the hypothesis that there is, was used in the study to address these issues with the DW test.

4.6 DATA SOURCES

The data for this research came from the South African Reserve Bank's (SARB) and World Bank's official internet websites. The data covers financial development, domestic public debt, real gross domestic product, deposit interest rate and inflation rate. The data is presented on a yearly basis and covers the period of 1994 to 2023. The period of study was specifically chosen with the aim of capturing after independence, as well as enabling a better analysis of the long-term relationship.

4.7 CHAPTER SUMMARY

The present chapter presented one models that investigated the influence domestic debt on financial sector development in South Africa. The main dependent variable is domestic credit to private sector. The main explanatory variables being domestic debt, deposit interest rate, inflation rate, real GD and gross capital formation. As indicated before, it is important that stationarity is tested first to our time series data for avoid biased results and spurious regressions. It has been highlighted that both formal and informal stationarity tests were carried out. In the event that these stationarity tests yield conflicting results, Phillips-Perron method is conducted and the robustness of results based on the different tests are examined. The ARDL is employed to capture the existence of long run and short-run equilibrium dynamics. Different diagnostics were also employed to tests for heteroscedasticity, auto correlation and normality. Langrage Multiplier (LM) will be used to test autocorrelation. Engle-Granger approach test is then employed to test for co-integration. After the methodology chapter, the following chapter (Chapter five) presents empirical results from the model.

CHAPTER 5

PRESENTATION OF EMPIRICAL RESULTS AND DISCUSSION

5.1 INTRODUCTION

Analyzing the impact of domestic public debt on the growth of South Africa's financial sector was the primary goal of this study. The Autoregressive Distributed Lag Model was used for this. The examination of estimate approaches and the specification of various models were presented in the prior. The findings from the empirical analysis are presented in this chapter.

There are seven sections in this chapter. In part 5.2, the descriptive statistics are completed, following the introduction in section 5.1. Unit root testing is covered in Section 5.4, whereas stationarity tests are used to analytically portray the data's time-series characteristics in Section 5.3. Section 5.5 discusses the chosen model and the Autoregressive Distributed Lag Model Test; Section 5.6 conducts diagnostic testing; and Section 5.7 concludes.

5.2 DESCRIPTIVE STATISTICS

Descriptive statistics are short descriptive coefficients that summarize a particular collection of data, which may be the complete population or a sample representation. The descriptive figures are separated into measurements of heterogeneity (spread) and indexes of important patterns. Standard deviation, variability, minimum and maximum factors, kurtosis, and skewness are all utilized in measures of central inclination. (In 2008, Arnold). Consequently, kurtosis indicates whether the data is heavy-tailed or light-tailed in relation to a normal distribution, whereas the approximate values of all descriptive figures in the Skewness table are considered a measure of heterogeneity and are defined as a measure of symmetry or, more generally, a lack of symmetry. Arnold (2008).

Table 5.2.1 Descriptive Statistic

Mean	107.0338	12.92692	7.065265	16.98961	7.850566	28.79767
Median	112.8209	12.84448	6.776250	16.45639	6.374602	28.78445
Maximum	142.4220	15.16762	11.61250	23.04763	18.65492	29.15692
Minimum	64.85738	10.39931	3.815000	13.18371	-0.692030	28.40748
Std. Dev.	21.76109	1.321419	1.996079	2.362717	4.480393	0.274238
Skewness	-0.674313	-0.153111	0.693246	0.554754	0.748822	-0.029779
Kurtosis	2.497213	2.213711	2.784575	2.687282	2.823010	1.387214
Jarque-Bera	3.193700	1.127369	1.804705	2.103936	3.600915	4.123991
Probability	0.202534	0.569108	0.405614	0.349250	0.165223	0.127200
Sum	3960.250	491.2230	155.4358	645.6050	298.3215	1094.311
Sum Sq. Dev.	17047.61	64.60748	83.67094	206.5499	742.7352	2.782649
Observations	37	38	22	38	38	38

Note: DCP=Domestic Credit to Private Sector, DD=Domestic Debt, DRI =Deposit Interest Rate, GFCF=Gross Fixed Capital Formation, INFL=Inflation and LRGDP= log of Real GDP

As shown on Table 5.2.1 the mean values for all the variables are positive. Domestic public Debt had a maximum value of 3865558 and a minimum value of 32837.00 meaning domestic debt in South Africa has increased from 1985- 2023. Financial development is proxied by Domestic Credit to private sector its mean value is also positive, with a maximum 142.4220 and a minimum value 64.85738 which also means the South Africa financial sector is well developed. Domestic Public debt is leptokurtic and has a long right tail because 4.490477 is greater than 3 and all the other variables are below 3 .

Table 5.2: Correlation matrix

Covariance Analysis: Ordinary						
Correlation						
Proba bility	DCP	LDD	DRI	GFCF	INFL	LREAL_GD P
DCP	1.0000	-0.2780	0.14090	0.7409	-0.0790	0.0728
LDD	-0.2780	1.0000	-0.6738	-0.2501	-0.0491	0.8867
DRI	0.1409	-0.6738	1.0000	0.2759	0.5478	-0.5858
GFCF	0.7409	-0.2501	0.27588	1.0000	0.3442	0.2002
INFL	-0.0790	-0.0491	0.5478	0.3442	1.0000	0.0361

LREA	0.0728	0.8867	-0.5858	0.2002	0.0361	1.0000
L_GD						
P						

Source: Author's own computation using E-views13

All variables, with the exception of inflation and domestic debt, showed a positive correlation with domestic credit to the private sector (DCP) in the first column, as shown in table 5.2.2. The aforementioned correlation values of -0.478038 between DD and DCP and -0.079035 between INFL and DCP indicate a negative relationship between both DD and DCP as well as INFL and DCP. It also suggests that rising inflation and domestic debt impede the development of the financial sector. The correlation between each of the variables is displayed in the remaining table. Nevertheless, the early findings mentioned above were insufficient to draw a conclusion. Below is an overview of additional tests that were carried out.

5.3 STATIONARITY TESTING

Using both formal and informal tests, the data used for the analysis was first tested for stationarity. Stationary time series are time invariant, according to Inyama (2015), and tend to return to their mean and constant amplitude variations around the mean. This then assumes that stationarity has a constant mean and constant variance under which it is very safe to consider the model stable and accurate.

Figure 5.1: graphical plot at (Level Series)



Source: Author's own computation using E-views 13

Figure 5.2. graphical plots (first difference form)



Source: Author's own computation using E-views 13

The graphical plots at level series except for INFL shows that there is no cointegration. But at first difference the graphs above appear to exhibit the characteristics of a stationary series. Therefore, we can conclude that there is cointegration at first difference.

5.4 UNIT ROOT ANALYSIS

Using the Augmented Dickey-Fuller and the Phillips-Perron trials, systematic studies were carried out. The unit root test results are represented in Table 2 and 3. The Phillips-Perron test is used to validate the ADF test findings obtained. The two measured the importance standard at 1 percent, 5 percent and 10 percent.

Table 5.3: UNIT ROOT TESTS AT LEVEL SERIES

	Augmented Dickey Fuller Test		Phillips Perron			
Variables	Intercept and Trend	Intercept	None	Intercept and Trend	Intercept	None
DCP	-0.2734	-1.4039	-0.0983	0.5926	-1.3871	-0.0828
GFCF	-2.5294	-2.4983	-1.5223	-2.5751	-2.6975*	-1.4168
LDD	-3.1643	-1.0678	2.2069	-1.9698	-1.0190	5.4907
DRI	-4.7352***	-3.7826***	-1.0024	-2.6018	-1.9613	-1.0918
LRGDP	-0.9568	-0.5664	5.3006	-0.5666	-1.3914	4.4133
INFL	-2.9006	-2.83304	-3.0974***	-1.9792	-2.1142	-1.9323**

Statistically significant at the: 10% level (*), 5% level (**), 1% level (***)

Source: Author's computation using EViews 13

Table 5.4: UNIT ROOT TESTS AT FIRST DIFFERENCE

	Augmented Dickey Fuller Test		Phillips Perron			
Variables	Intercept and Trend	Intercept	None	Intercept and Trend	Intercept	None
DCP	-3.3626*	-4.8475***	-4.9248***	-5.728965***	-4.7869***	-4.8846***
GFC	-4.2202***	-4.2926***	-4.2926***	-4.0559**	-4.1519***	-4.2680***

LDD	-3.0724	-3.0174**	-1.2252	-2.3472	-2.2651	-1.0572
DRI	-3.3339*	-3.4647**	-3.4551***	-3.3573*	-3.4003**	- 3.4793***
LRGDP	- 4.3714***	- 4.3885***	-2.8993***	-4.3714***	-4.3885***	- 2.7797***
INFL	- 6.6857***	- 5.7183***	-5.1808***	-13.3826***	-13.3826***- ***	- 5.7475***

Statistically significant at the: 10% level (*), 5% level (**), 1% level (***)

Source: Author's computation using Eviews 13

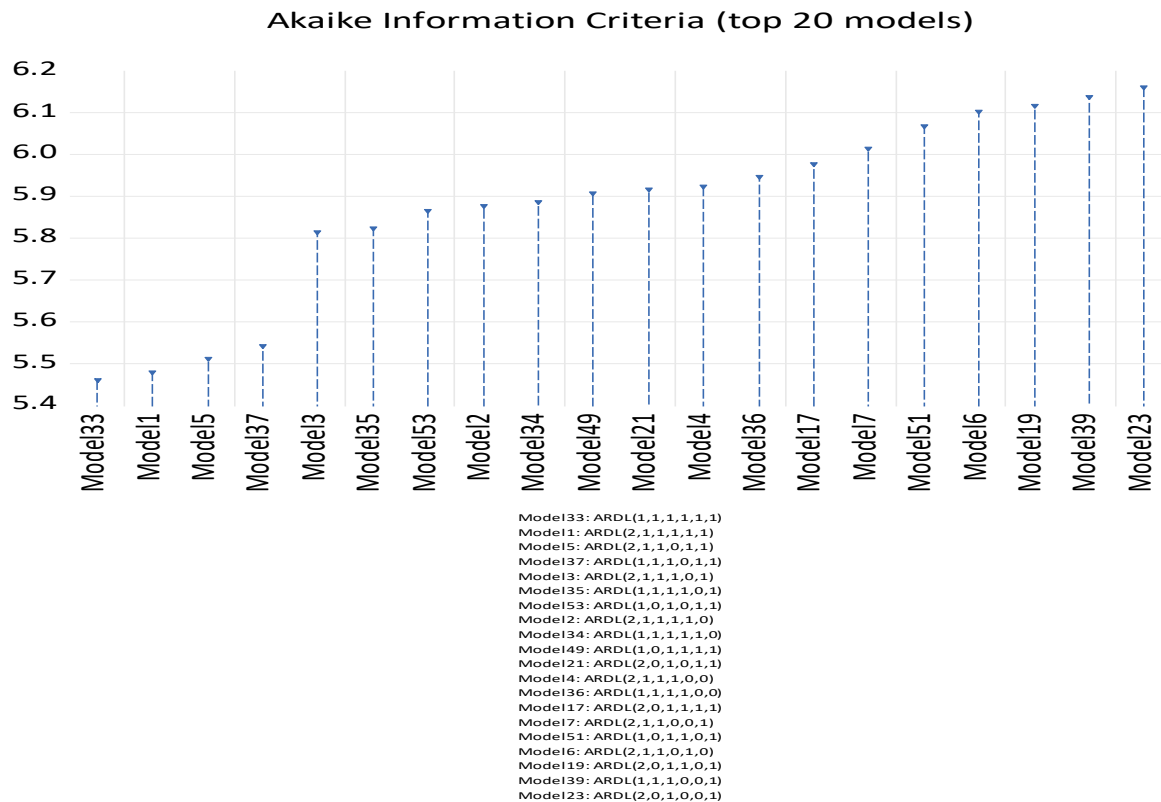
The data is now stationary at first difference series under the ADF and PP tests with significance at 1%, according to the results displayed in the tables above. Consequently, it can be said that the data is now reliable and important enough to be utilized in the following section's cointegration test using the Autoregressive Distributed Lag Model.

5.5. MODEL SELECTION

The Autoregressive Distributed Lag Model Co-integration Technique was utilized to conduct the study's co-integration analysis, which helped determine the long-term relationship between the development of the domestic public sector and the financial sector as well as other associated factors. This indicator, which is subject to co-integration proof, demonstrates that the variables in the model exhibit a similar kind of behavior with regard to their long-term variations. Nonetheless, there are some procedural measures that must be taken into account before the co-integration testing is established. These special procedures include choosing the right model with deterministic components in a multivariate system, choosing a suitable lag duration, and figuring out the integration sequence. In addition to obtaining standard normal terms that are unaffected by non-stationarity, autocorrelation, and heteroscedasticity, this is done to prevent erroneous rejection or acceptance of the estimated results.

The results of the estimated bounds test for ARDL are shown in the table below. According to Pesaran et al. (2001), limits testing is a step forward in its ARDL model technique to investigate a long-term relationship between variables. ARDL, or Autoregressive Distributed Lag, was applied. The rationale is that the ARDL method's estimations are objective, effective, and free from issues like autocorrelation and endogeneity. Furthermore, single equation methods like Fully Modified OLS or Dynamic OLS either require all variables to be $I(1)$ or require prior knowledge and specification of which variables are $I(0)$ and which are $I(1)$. Autoregressive Distributed Lag (ARDL) is a well-established method of estimating cointegrating relationships, as is the case with Engle-Granger (1987) or Johansen's (1991, 1995) method. Smith (2001) and Pesaran and Shin (1999) demonstrated that co-integrating systems can be estimated as ARDL models, which has the benefit of allowing the variables in the cointegrating relationship to be either $I(0)$ or $I(1)$ without requiring this information to be pre-specified. Pesaran and Shin also pointed out that the ARDL representation does not necessitate symmetry of lag lengths, in contrast to other techniques for estimating cointegrating connections; each variable may have a varying amount of lag terms.

Figure 5.3 Lag Length Selection Criteria



Source: Author's own computation using E-views13

The study's lag length was established by empirical means. This is crucial since choosing too few lags could result in the omission of essential data, while choosing too many lags could cause the model to contain more errors. As previously mentioned, the Akaike information criterion (AIC) was used to calculate the lag length. The Bounds tests were approximated based on the selected lags, and the results are shown in the table below, where the F-test is 9.39.

BOUND TEST

Decision Rule: The variables are $I(0)$, hence by definition there can be no cointegration if the calculated F-statistic is less than the lower bound. We determine that cointegration exists if the F-statistic is greater than the upper bound. Lastly, the test is inclusive if the statistics are inside the boundaries.

Table 5.5: Bound Test

Test Statistic	Value	K
F-statistic	9.3988	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.407	3.517
5%	2.910	4.193
1%	4.134	5.761

Source: Author's own computation using E-view 13

We reject the null hypothesis because the computed F statistics (9,3988) are higher than the upper bound (4,193) at the 5% level of significance. As a result, we acknowledge that the variables under examination have a long-term link. This suggests that the variables estimated by the model are cointegrated.

Long-run Model

Table 5.7: Long run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DD	-4.32E-05	1.83E-05	-2.361617	0.0377
DRI	0.655579	1.847085	0.354926	0.7294
GFCF	1.683951	1.402993	1.200256	0.2553
INFL	-4.195228	1.055955	-3.972923	0.0022
LREAL_GDP	10.64336	49.21879	0.216246	0.8328
C	324.9081	1380.359	0.235379	0.8182

Source: Author's own computation using E-views13

The estimated ARDL long run coefficients in the table above revealed that Deposit interest rate, gross fixed capital formation and real GDP have a positive relationship with Domestic Credit to private sector.

Table 5.5 The results of the study show a negative and statistically significant relationship between domestic debt (LDD) and domestic credit to the private sector (DCP), significant at the 1% level. This confirms the a priori expectation that excessive government

borrowing can crowd out private sector credit. Ahmed and Miller (2000) argue that when governments borrow excessively from domestic markets, they reduce the availability of credit for private businesses, thereby limiting their capacity to invest and expand. These findings are consistent with the conclusions drawn by Demirgüç-Kunt & Levine (2001), Khan & Sen (2005), Rajan & Zingales (2003), Chowdhury & Alam (2012), and Oduro & Agyei (2014), who also emphasize that high levels of domestic debt hinder financial development by crowding out private investment, increasing uncertainty, and raising interest rates.

Additionally, the results reveal a positive and statistically significant long-run relationship between gross fixed capital formation (GFCF) and DCP, significant at the 5% level, aligning with the a priori expectation. As King and Levine (1993) suggest, GFCF and financial development are mutually reinforcing: a well-developed financial system enhances the efficiency of investment, while increased investment stimulates financial deepening. Supporting studies include Beck, Demirgüç-Kunt, and Levine (2009), Chinn and Ito (2006), Arestis and Demetriades (2001), and Beck, Demirgüç-Kunt, and Levine (2000).

There is also a positive and statistically significant relationship between real GDP (RGDP) and DCP, significant at the 1% level, further confirming a priori expectations. This supports the view that GDP growth and financial sector development are closely linked and mutually reinforcing. According to King and Levine (1993), a well-functioning financial system supports economic growth through effective allocation of resources, risk management, and improved information flows. Economic growth (RGDP) increases the demand for credit, while the expansion of credit (DCP) promotes investment and productivity, creating a feedback loop that sustains development.

The results also indicate a negative and statistically significant relationship between inflation (INFL) and DCP, significant at the 1% level, which conforms to the a priori

expectation. High inflation generates macroeconomic instability, distorts pricing signals, and discourages both saving and investment, thereby impeding financial development. This view is supported by the findings of Mishkin (1996), Khan & Ahmad (2018), Batayneh, Al-Azzam & Al-Smadi (2021), and Alispahić & Alić (2023), all of whom confirm that inflation adversely affects financial sector growth.

Finally, a positive and statistically significant relationship was found between the deposit interest rate (DRI) and DCP, significant at the 5% level. This aligns with a priori expectations, as higher deposit rates encourage savings mobilization and strengthen the financial system's capacity to extend credit. Demirgüç-Kunt & Levine (2001) also highlight that competitive interest rates can enhance financial intermediation, promote investment, and contribute to financial stability.

In summary, the empirical findings suggest that while domestic debt and inflation negatively affect financial development, gross fixed capital formation, real GDP, and deposit interest rates have a positive long-term influence. These relationships are statistically significant at conventional levels (1% and 5%), offering robust evidence to support targeted macroeconomic and financial sector policies in South Africa.

Short-run Results using ARDL

Long-term correlation between the variables. The error correction term's coefficient indicates the rate of adjustment. A negative co-efficient indicates that a variable is expected to converge to equilibrium in the long term. and Domestic debt (LDD) , gross fixed capital formation (GFCF), Inflation (INFL) had a negative relationship in the short run , while real GDP (LREAL_GDP) and Deposit interest rate (DRI) had a positive relationship.

Table 5.8: Short run Results

Cointegration Short run				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
COINTEQ*	-0.685802	0.049286	-13.91461	0.0000
D(LDD)	-119.4481	10.70093	-11.16241	0.0000
D(DRI)	2.151114	0.738095	2.914415	0.0107
D(GFCF)	-5.674490	1.015509	-5.587827	0.0001
D(INFL)	-3.599084	0.377696	-9.529047	0.0000
D(LREAL_GDP)	128.2937	27.52341	4.661256	0.0003
R-squared	0.949479	Mean dependent var		-1.373129
Adjusted R-squared	0.932639	S.D. dependent var		9.547484
S.E. of regression	2.477951	Akaike info criterion		4.887697
Sum squared resid	92.10361	Schwarz criterion		5.186132
Log likelihood	-45.32082	Hannan-Quinn criter.		4.952465
F-statistic	56.38168	Durbin-Watson stat		2.342195
Prob(F-statistic)	0.000000			

Source: Author's own computation using E-views13

The findings support the apriori expectations and show that all the variables are significant in the short term in explaining the evolution of the financial sector. The F-statistic is statistically significant at the 1 percent level, and the Adjusted R-squared is 0.932639, which indicates that 93.26 percent of the change in independent variables is explained by explanatory factors. The probability (F statistics) is 0.0000, suggesting that every variable has a substantial impact on economic growth.

5.6. DIAGNOSTICS TESTS

Table 5.9 Diagnostics Tests

Test	Null Hypothesis	Test Statistics	Probability	Conclusion
Normality	Residuals are normally Distributed	JB Statistics =0,662804	0,717917	Residuals are normally Distributed
Breusch-Godfresh Serial Correlation LM Test	There is no autocorrelation in residuals	F stat =1.024052	Prob.F (1,8)=0,3412	There is no autocorrelation in residuals
Heteroskedasticity White Test	No heteroskedasticity	Obs Rsquared 11,34132	Prob.Chi Squared (11) 0,4151	No heteroskedasticity

Source: Author's own computation using E-views13

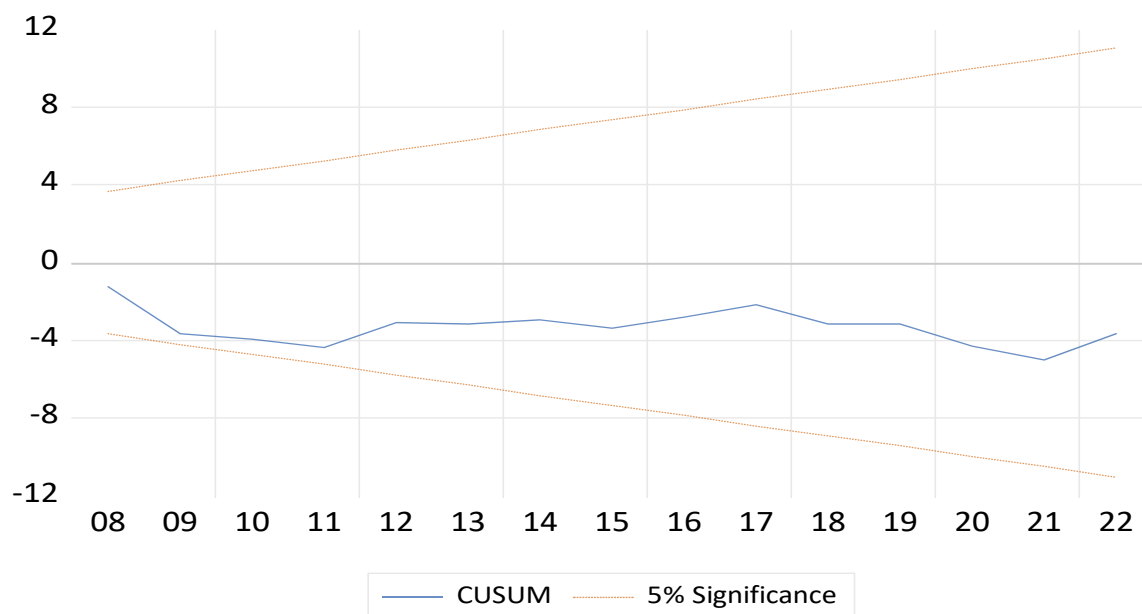
To assess the estimated model's dependability for forecasting or policymaking, post-estimate tests were utilized. In particular, the Breusch-Godfrey Serial Correlation LM Test, the Breusch-Pagan-Godfrey Heteroskedasticity Test, and the normalcy test were used. The ARDL model passed every diagnostic test that was taken into consideration, according to the post-estimate tests. In particular, the Error Term is normally distributed at the customary level (i.e., 5%), according to the Jarque-Bera statistic. This is because the Jarque-Bera statistic's probability value of 0.717917 is greater than the traditional level of 0.05%. The accompanying table reports the outcomes of various tests.

STABILITY TESTING

The model's stability for dynamic estimation utilizing bound testing was demonstrated by this CUSUM test. Using the Cumulative Sum of Recursive Residual (CUSUM) test, the structural stability of the estimated ARDL model is also examined to make sure that the data utilized in this investigation are free of any structural alterations over time. If, at a

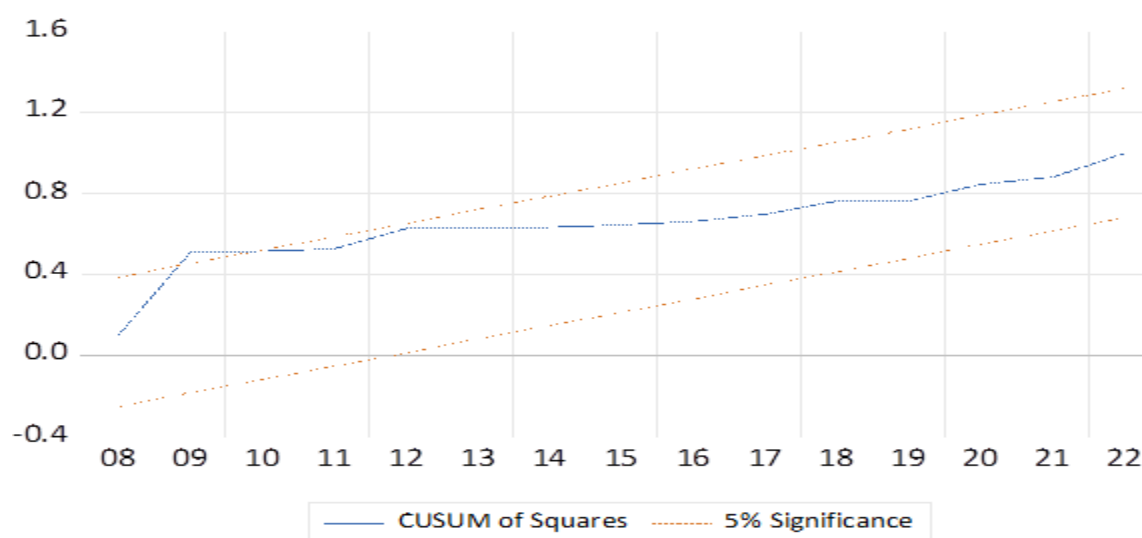
considerable level of 5%, the CUSUM graph falls within the critical limits, the computed coefficients of the UECM are structurally stable.

Figure 5.4: CUSUM test



Source: Author's own computation using E-views13

Figure 5.5 CUSUM SQUARE



Source: Author's own computation using E-views13

5.7. Conclusion

The estimation of the models that were introduced in the previous chapter was the main emphasis of this chapter. This was accomplished by examining the many factors—domestic debt (LDD), deposit interest rate (DRI), inflation (INFL), real GDP (LRGDP), and gross fixed capital formation (GFCF)—that affect domestic lending to the private sector (DCP). Using formal tests and graphical displays, this chapter first examined the variables' stationarity. Both approaches verified that the variables are stationary at level and first difference, meaning that they are all integrated at order one and some at order zero.

The lag length selection criterion was carried out following the variables' stationarity being established. The Autoregressive Distributed Lag Model Test used this experimentally established lag length, with the information criteria settling on a lag of ten. Following the limits test, we discovered that the DCP and its explanatory variables do, in fact, have a long-term relationship. Additionally, diagnostic tests were performed, and the findings demonstrated that the variables are free from issues with heteroscedasticity, serial autocorrelation, and instability. The findings demonstrate the structural stability of the ARDL model's calculated coefficients during the course of the investigation. A discussion of the findings presented following various calculations and policy recommendations based on the data acquired in this chapter will be covered in the following section, Chapter 6.

CHAPTER 6

SUMMARY, CONCLUDING REMARKS AND RECOMMENDATIONS

6.1 Summary and conclusions of the study

The main objective was on identifying the effect of domestic public debt on financial sector development in South Africa using the quarterly data from 1985 to 2023.

The several empirical research that were analyzed have conflicting findings and conclusions in addition to the theoretical component. These research' findings and connections differed significantly based on the economies they looked at, the frequency of the data, and the unique models they used. The empirical findings of this study are consistent with the findings of the reviewed studies by Chung-Yee, Ismail, and Ai-Lian (2020), Joy and Panda (2019), Sadic, Yildiz, and Guney (2021), Ahmad and Awan (2020), and Janda and Kraviston (2017). There is little relevance of other studies that reach the same conclusions as this one to South Africa.

Because of its robustness, the Autoregressive distributed lag model was chosen in this study to investigate the relationship between the independent and dependent variables. At first difference, the data was determined to be stationary. According to the research, the development of the financial sector (DCP) is negatively but statistically significantly impacted by both inflation (INFL) and domestic public debt (DD). It was discovered that DCP was positively impacted by real GDP (RGDP), gross fixed capital formation (GFCF), and deposit interest rate (DRI).

In conclusion, the study finds that domestic public debt (DD) has a negative and statistically significant impact on the development of the financial sector (DCP) in South Africa. This means that as public debt increases, the development and growth of the financial sector tend to decline. The use of the Autoregressive Distributed Lag (ARDL) model confirmed this inverse relationship, even after accounting for other key variables like inflation, real GDP, investment, and interest rates.

Despite differences in methodologies and contexts in the empirical literature, the findings of this study are consistent with a subset of previous research that also found a negative link between public debt and financial sector development. Therefore, the implication is that high levels of domestic public debt may crowd out private investment, reduce financial sector efficiency, and hinder its expansion, ultimately slowing down financial development in the country.

To promote financial sector growth, the study suggests that policymakers in South Africa should be cautious in their accumulation of public debt and prioritize maintaining macroeconomic stability alongside structural reforms that encourage investment and financial inclusion.

6.2 Policy implications and recommendations

According to the findings, it is advised that unnecessary spending be reduced and public spending be made more efficient. This can mean reducing subsidies, eliminating pointless initiatives, and streamlining government organizations.

Improving the effectiveness of public spending is essential to addressing the detrimental effects of public debt on the growth of South Africa's financial industry. Prioritizing the elimination of specific subsidies that provide little in the way of social or economic benefits is one of the best tactics. For instance, subsidies for fossil fuels ought to be cut back or eliminated entirely. These subsidies sometimes discourage investment in renewable

energy while disproportionately benefiting wealthier households with higher fuel consumption. Reducing or eliminating these subsidies could ease the strain on the national budget and free up funds for financial inclusion and sustainable infrastructure projects, which promote long-term economic resilience and a more robust financial industry.

Ineffective agriculture subsidies are another area that needs close examination. Large commercial farmers currently receive a substantial portion of these subsidies, frequently at the expense of new or small-scale farmers. This does little to increase economic participation and instead maintains inequality. South Africa may save fiscal waste and promote a more equitable financial ecosystem at the same time by reshaping agricultural subsidies to support more inclusive rural development, such as training for smallholder farmers or targeted rural credit initiatives.

Furthermore, a significant drain on public resources is the regular bailouts of state-owned firms (SOEs) like Eskom and South African Airways (SAA). These bailouts frequently take place in the absence of significant structural changes, creating a vicious circle of dependency and inefficiency. In the future, improved governance and performance-based restructuring should be prerequisites for financial support for SOEs. Reducing or improving these bailouts can boost investor confidence and increase the amount of money available for the expansion of the financial and private sectors.

To guarantee more effective use of resources, a number of government projects and programs should be reduced or discontinued in addition to subsidies. The spread of redundant development initiatives is one area that needs attention. Initiatives for job creation and economic empowerment are sometimes implemented concurrently by several government agencies and provincial entities, which leads to inefficiencies and little effect. Successful initiatives can be centralized and consolidated to improve coordination, cut down on duplication, and produce better results at a cheaper cost.

Similarly, the government has to review and reduce underperforming infrastructure projects, particularly those that are not in line with national development goals, are poorly designed, or are delayed. Wasteful spending includes projects like stadiums or opulent office complexes that don't produce positive results. Instead, funds ought to be allocated to infrastructure that directly aids in financial development, such as digital infrastructure,

hubs for SME financing, and logistical systems that lower obstacles to economic engagement.

Non-essential public employment initiatives that generate temporary work without advancing long-term skill development or job preparedness also require revision. These programs don't assist workers transition into permanent professions and are frequently unsustainable, even though they could provide temporary comfort. Investing in training, digital upskilling, and job placement programs that are in line with industries like technology and finance that are essential to economic modernization will have a greater impact.

Finally, in order to cut down on administrative burden and boost productivity, the government needs to concentrate on simplifying its organizational structure. Combining superfluous agencies is one strategy, particularly those with overlapping missions in sectors like rural assistance or small business development. Costs can be cut and service quality enhanced by combining these organizations. Furthermore, digitizing public services—like automating licensing, tax collecting, and regulatory compliance—can boost productivity, increase transparency, and lessen corruption potential. In addition to saving money, this digital transformation enhances the business climate and supports the expansion of the financial sector.

Last but not least, implementing performance-based budgeting can guarantee that government organizations are held responsible for their output. Ineffective or failing divisions can be found and reorganized, and successful initiatives can be expanded, by tying money to quantifiable results and key performance indicators. This results-driven strategy encourages budgetary restraint, supports the larger objective of South Africa's financial sector development, and connects public spending with national interests.

The findings indicate that macroeconomic stability, particularly low and stable inflation, plays a critical role in supporting the growth of the financial sector in South Africa. This is evident from the coefficient of inflation in the analysis, which likely revealed a negative relationship between inflation and financial sector development. High inflation can harm the financial sector by eroding the value of money, making it difficult for financial institutions to lend and plan effectively, and by discouraging long-term investment, as volatile inflation leads to uncertain and potentially negative real returns. Additionally, inflation increases economic uncertainty, which weakens consumer and business confidence, ultimately reducing the demand for financial products and services. It also diminishes the incentive to save, especially when inflation outpaces interest rates, thereby weakening the deposit base that financial institutions depend on. Given these adverse effects, the findings underscore the importance of keeping inflation low and stable to foster a conducive environment for financial sector development. A stable macroeconomic setting provides financial institutions with the confidence to expand services, attract investment, and support broader economic growth. Therefore, maintaining macroeconomic stability through effective inflation control policies is vital for the continued health and expansion of South Africa's financial industry.

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