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The Exploration of FDI Dynamics and Economic Growth in the Context of South Africa

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Declaration

Thanduxolo Theophelus Mbili, student number 216060795 declares that

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ABSTRACT

The relationship between Foreign Direct Investment (FDI) and economic growth has been the subject of extensive theoretical and empirical inquiry. While FDI is widely viewed as a potential catalyst for economic development through capital inflows, technological spillovers, and productivity enhancements, the strength and direction of this relationship remain context dependent. In South Africa, a country characterized by structural inequalities, economic volatility, and a highly concentrated investment landscape, the role of FDI in stimulating sustained growth warrants closer examination. This study investigates the dynamic interrelationship between FDI and key macroeconomic variables-GDP, trade openness, real effective exchange rate, and household consumption-in South Africa over the period 1990Q1 to 2022Q4. Using a Bayesian Vector Autoregression (BVAR) framework, the analysis accounts for the complex, interdependent nature of macroeconomic interactions under conditions of limited sample size and parameter uncertainty. Impulse Response Functions (IRFs) are employed to evaluate the short- to medium-term effects of shocks to FDI on the broader economy. The results indicate that FDI shocks in South Africa exert limited and statistically weak effects on GDP, trade, exchange rates, and consumption. Forecast Error Variance Decomposition (FEVD) further confirms that FDI contributes marginally to explaining fluctuations in macroeconomic aggregates, with only a small and gradually increasing influence on GDP. These findings suggest that while FDI has some positive association with growth, it does not act as a dominant driver of macroeconomic performance. Consequently, policy strategies should focus not only on attracting FDI but also on improving domestic absorptive capacity, enhancing trade integration, and ensuring that investment inflows align with inclusive and sustainable development goals.

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CHAPTER 1: INTRODUCTION

1.1 Background and Context

Foreign Direct Investment (FDI) remains a vital component of economic development strategies for emerging economies such as South Africa. It provides capital inflows, facilitates the transfer of advanced technologies, enhances managerial expertise, and creates employment opportunities (UNCTAD, 2020). Historically, FDI in South Africa has been predominantly concentrated in resources-intensive sectors, notably, mining – particularly gold, platinum, and diamonds - as well as financial services and manufacturing (DOT, 2010; & UNCTAD, 2019). For instance, data from the SARB (2010) Annual Report shows that FDI inflows peaked at approximately 6 billion USD in 2008 but declined sharply during the global financial crisis, with subsequent volatility in subsequent years.

Despite these inflows, South Africa faces profound socio-economic challenges, including high income inequality - reflected in a Gini coefficient exceeding 0.63 (Statistics South Africa, 2021) - and persistent unemployment rates around 34%, with youth unemployment surpassing 60% (Gomis, et al., 2020). These disparities diminish the developmental impact of FDI, especially when investments remain concentrated in sectors that do not generate broad-based employment or address structural inequalities. Moreover, external shocks such as the 2008 financial crisis, the commodity price slump of the mid-2010s, and the COVID-19 pandemic have further destabilized FDI inflows, amplifying economic vulnerabilities (UNCTAD, 2020). For example, global FDI fell by approximately 49% in 2020, with South Africa experiencing significant declines that hinder recovery efforts (UNCTAD, 2020). These fluctuations influence key macroeconomic variables such as GDP, exchange rates, and household income, creating a feedback loop where external shocks impact FDI, which in turn affects economic stability (Geda & Twaissi, 2010).

In addition to sectoral concentration and external shocks, South Africa's broader economic environment significantly influences FDI inflows and their impact on growth. Structural issues such as infrastructural deficits, regulatory uncertainties, and socio-political instability continue to challenge the country's attractiveness as an investment destination (Mugowo, 2017). For instance, frequent power outages, inadequate transport networks, and complex bureaucratic procedures have been cited by investors as deterrents, reducing the effective contribution of FDI to economic development (Kalenga, 2000). Moreover, policy uncertainty, exemplified by

frequent changes in investment regulations and ambiguous land reform processes, undermines investor confidence and leads to delayed or reduced investments (Jain, 2001). This is compounded by socio-political factors, including high crime rates and inequality, which influence the spatial distribution of FDI and its social impacts (Bhorat & Van der Westhuizen, 2008). The uneven distribution of FDI - primarily concentrated in resource extraction and financial sectors - raises questions about whether foreign investments are effectively contributing to economic diversification and inclusive growth (Moyo, 2012; Loots & Kabundi, 2012). Despite numerous reforms and policy initiatives aimed at improving the investment climate, empirical evidence suggests that FDI's role in fostering broad-based socio-economic progress remains limited and highly context dependent (Bengoa & Sanchez-Robles, 2022). Additionally, global economic shifts - such as rising geopolitical tensions, trade disputes, and technological disruptions - further complicate the investment landscape, requiring a nuanced understanding of how external and internal factors jointly influence FDI's trajectory and its macroeconomic effects.

The external environment also plays a crucial role. Rising geopolitical tensions and trade disputes, coupled with technological innovations and disruptions, are reshaping the global investment landscape (Góes & Bekkers, 2022). These shifts influence investor confidence and decision-making processes, often leading to fluctuations in FDI flows. For example, recent trade tensions between major economies and the ongoing impact of technological shifts in automation and digitalization have created uncertainty, prompting investors to reassess their strategies in emerging markets like South Africa (OECD, 2021). Furthermore, the global response to crises such as the COVID-19 pandemic has demonstrated the vulnerability of the investment climate, with many foreign investors adopting a cautious approach or redirecting investments to more stable regions. These multi-layered influences underscore the importance of understanding how both external shocks and internal vulnerabilities interact to shape FDI inflows and their macroeconomic consequences over time (Geda & Twaissi, 2010).

Despite the acknowledged importance of FDI, most existing empirical research in the South African context tends to treat FDI as a static or aggregate variable, focusing primarily on its volume or sectoral distribution without adequately capturing the dynamic, bidirectional relationships with key macroeconomic indicators such as GDP, trade openness, and household income (Makhoba & Zungu, 2021). This limited approach constrains the ability of policymakers to formulate strategies that effectively leverage FDI as a driver of sustainable and inclusive growth. Advanced econometric models - such as Bayesian Vector Autoregression

- offer the potential to analyse these complex, time-dependent interactions, revealing whether FDI acts primarily as a catalyst for growth or as a consequence of favourable economic conditions, especially during crises (Lütkepohl, 2005). Understanding these feedback mechanisms is essential for designing policies that not only attract higher FDI inflows but also ensure that such investments contribute meaningfully to economic resilience and social equity. This research aims to fill this significant gap by examining the evolving, dynamic relationship between FDI and macroeconomic indicators over time, providing evidence-based insights for policymakers seeking to foster resilient and inclusive growth in South Africa amid a rapidly changing global environment.

1.2 Problem Statement

Foreign Direct Investment (FDI) is widely recognized as a critical catalyst for economic growth, particularly in emerging economies like South Africa. Despite concerted efforts by policymakers to attract foreign investment through liberalization initiatives, tax incentives, and the creation of special economic zones, FDI inflows have remained volatile and heavily influenced by external shocks - such as the 2008 global financial crisis, commodity price fluctuations, and the recent COVID-19 pandemic. These shocks have caused sharp declines and unpredictable fluctuations in FDI, often failing to translate into sustained or inclusive economic growth.

Existing empirical research predominantly treats FDI as a static or aggregate variable, focusing on total inflows or sectoral distributions, and rarely investigates the dynamic, bidirectional relationships between FDI and macroeconomic indicators such as GDP, trade openness, and household income. This limited approach hampers policymakers' ability to understand how external shocks and internal vulnerabilities jointly influence FDI's impact over time, and how fluctuations in FDI subsequently affect economic stability and growth trajectories.

Furthermore, there is a notable gap in the application of advanced time series methodologies - such as Bayesian Vector Autoregression (BVAR) - which can capture the complex feedback mechanisms and dynamic interactions among macroeconomic variables. Without such analysis, it remains unclear whether FDI primarily acts as a driver of growth or as a response to favourable economic conditions, especially during periods of crisis. This lack of understanding impairs the development of targeted policies aimed at attracting not only higher FDI volumes but also investments that contribute meaningfully to sustainable, inclusive development and economic resilience.

The core question this research seeks to address is: To what extent do FDI inflows dynamically influence South Africa's macroeconomic indicators - such as GDP, trade openness, and household income - over time, particularly during periods of external shocks? Through employing sophisticated econometric techniques, this study aims to uncover the feedback mechanisms and assess the resilience of the South African economy in response to FDI shocks. The insights derived will inform policymakers on how to craft more effective investment strategies that foster sustainable growth, mitigate economic volatility, and reduce socio-economic disparities.

1.2.1 Research Objectives

In alignment with the identified problem, this study has established a set of research objectives, which include:

1. To empirically examine the dynamic interactions between FDI inflows and macroeconomic variables - as GDP, trade openness, and exchange rates in South Africa, with particular attention to how external shocks influence these relationships.

2. To evaluate the implications of macroeconomic shocks for economic stability and policy effectiveness, providing evidence-based insights to support strategies aimed at optimizing FDI's contribution to sustainable growth.

1.2.2 Research Questions

1. What are the long-term relationships and short-term dynamics between FDI inflows and key macroeconomic variables (GDP, trade openness, exchange rates) in South Africa?

2. How do external shocks, such as global financial crises and the COVID-19 pandemic, influence the relationships between FDI and macroeconomic stability, and what are the implications for policy?

3. What are the dynamic relationships and feedback effects between FDI, and key macroeconomic indicators as captured by the Bayesian VAR model?

4. How resilient is the South African economy to shocks originating from external FDI fluctuations, and what are the implications for economic stability and policy design?

1.3 Significance of the Study

This research is significant because it addresses a critical gap in understanding how external shocks influence the stability and effectiveness of FDI in promoting sustainable economic growth in South Africa. Existing literature largely treats FDI as a static variable or overlooks the complex feedback mechanisms that determine its impact during periods of economic turbulence. By employing a rigorous Bayesian VAR framework, this study provides empirical evidence on the dynamic relationships and transmission channels between FDI and macroeconomic stability. The findings will offer policymakers scientifically grounded insights into how external shocks - such as global financial crises and pandemics affect FDI inflows and, consequently, broader economic outcomes. This contributes to the theoretical discourse on macroeconomic resilience and provides practical guidance for designing policies that enhance South Africa's capacity to attract and retain high-quality FDI, ultimately supporting the country's goals of inclusive and sustainable development.

1.4 Structure of the Study

This study will be organised into several chapters, commencing with this introductory chapter, which sets the stage for the research by outlining its background, problem statement, objectives, and significance. The subsequent literature review will engage with existing studies on FDI and economic growth, critically analysing theoretical frameworks and empirical evidence. Following this, the research methodology section will detail the approaches employed to gather and analyse data. The findings chapter will present the results of the analysis, while the discussion chapter will interpret these findings in light of the research questions. Finally, the conclusion will summarise the key contributions of the study, propose recommendations for policymakers, and outline directions for future research.

Through this structured approach, the study aims to deliver a comprehensive examination of FDI dynamics and economic growth in South Africa, contributing to a deeper understanding of their interrelation and informing practical strategies for the country's economic advancement.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Understanding the complex relationship between FDI and economic growth has been a central focus of developing economics and international business research. Over the years, a diverse array of theoretical frameworks has emerged to explain how and under what conditions FDI influences a nation's economic trajectory. These theories serve as a foundational lens through which policymakers and scholars analyse the motivations behind FDI inflows, their potential benefits, and the challenges they pose - especially in nations facing unique socio-economic and institutional hurdles (Cohen & Dooley, 2008).

South Africa's experience with FDI and economic growth exemplifies the nuanced, multifaceted nature of this relationship. As the continent's most industrialized and globally integrated economy, South Africa attracts substantial FDI across various sectors, from mining and manufacturing to services and technology (UNCTAD, 2020). Yet, despite high levels of inward investment, the country continues to grapple with persistent inequality, high unemployment, infrastructural deficits, and institutional weaknesses (World Bank, 2019). These socio-economic challenges influence both the volume and the impact of FDI, complicating the narrative of FDI as a straightforward engine of growth (Rogerson, 2018).

Given this context, a thorough review of existing growth and FDI theories is essential to understand their relevance and limitations in explaining South Africa's development process. Traditional models such as classical and neoclassical growth theories provide foundational insights but often fall short in capturing the socio-political realities that shape FDI dynamics (Solow; Romer, 1990). Conversely, newer paradigms like endogenous growth, institutional, and strategic FDI frameworks offer more nuanced explanations, emphasizing innovation, governance, and strategic decision-making (Barro and Sala-i-Martin, 1995; North, 1991; Dunning, 1980).

This chapter critically examines these prominent theories, evaluating their empirical support and theoretical advancements within the South African context. It investigates how each framework addresses key aspects of FDI such as sectoral preferences, socio-economic challenges, and institutional factors and identifies gaps that require more integrative, multidimensional approaches. Recognizing the limitations of individual theories, the chapter also discusses the potential for combined frameworks that synthesize the strengths of multiple

perspectives, aiming to provide a more holistic understanding of how FDI influences sustainable economic growth in South Africa.

By systematically analysing these theoretical approaches, this chapter aims to lay a solid conceptual foundation for subsequent empirical analysis and policy discussions, ultimately contributing to a more comprehensive understanding of FDI's role in South Africa's development journey.

2.2 Theoretical Framework

The academic literature is occupied by two main theoretical perspectives on economic growth namely: dependency and modernization (Aga, 2014). Raul Prebisch and Hans Singer (1949) first came up with the dependency theory. The two main scholars that the dependency theory originated from didn't agree with the perceived role that FDI supposedly plays towards the economic development of developing countries. Their opinions lean towards FDI having a negative effect on the distribution of income and economic growth (Aga, 2014). Asiedu (2002) indirectly supports the dependency theory as he identifies how the impact of FDI on Sub Saharan African (SSA) countries is different to other nations due to the marginal benefit of trade openness being lower for SSA. Underdeveloped countries benefited a lot from international trade which was demonstrated by the positive effect on their national income (Singer, 1950). Raul Prebisch and Hans Singer developed the idea around Prebisch-Singer hypothesis which states that primary commodities decrease relative to manufactured goods prices over a long period of time. Singer (1950) states that resources moved to selective wealth countries from economically disadvantaged countries. This led to the deterioration of the terms of trade for underdeveloped nations over time, which ended up affecting the expansion of the economy and welfare. Developed nations imported less manufactured goods and more raw materials from less developed countries (LDCs) which ended up impeding the development of developing nations (Singer, 1950). It is ironic that what hindered less developed countries was the introduction of technology, capital, and management skills from well developed countries. Dependency theorist argued against the idea that growth in developing countries can be promoted by inward FDI because countries that export capital benefit from numerous repayments in the following manner: 1) enjoying increasing incomes in their own nations through the benefit brought by having unskilled workers do all the manufacturing in host countries; 2) primary goods generated from technological progress in production are mainly consumed by them; 3) A way of moving their labor force from low to high productivity work

after increasing their manufactured goods exports (Singer, 1950). The issue with some multinational enterprises is that they tend to undermine local culture and distort local economies through crowding out effect which can contribute to unemployment in the host country (Seyoum, et al., 2015).

The neoclassical and endogenous growth models are a source of many theories that were developed, and the modernization theories is one of them (Aga, 2014). According to neoclassical theory, FDI only affects the level of output but the growth rate in the long run (Haddad, 2016). In the neoclassical growth model, increases in FDI only have temporal growth in the short run as economies tend to converge to a steady state resulting to no permanent economic development because of diminishing marginal product of capital. However, the exogenous element technological progress is equal to the income per capita in the long run (Haddad, 2016). Belloumi (2014) states that economic development is affected by FDI through permanent growth of labour force and technological advancements. The assumption made by the neoclassical growth model is that an economy operates in perfect competition (Romer, 1994). The Harrod-Domar model which proposed that the long run rate of growth in the economy is exogenously determined by savings rate was rejected by the Solow growth model (Solow, 1956).

The Harrod-Domar model assumes a closed economy, describing the long run as a point at which the economy reaches equilibrium development and reaches stillness (Solow, 1956). Chapter 2 below briefly discusses how the Solow model follows the Cobb-Douglas production function to demonstrate cumulative long run economic growth through technological advancement and the accumulation of economic growth (Seyoum, et al., 2015). The aggregate production function represents technological possibilities through the connection of two elements, namely: capital and labour, to calculate the output of an economy (Haddad, 2016). A high level of disposable capital investment is a result of fast capital stock increases (Haddad, 2016, as cited in Solow, 1956). Out of the four variables/ Factors that are in the Solow model, Robert Solow identified technological advancement as the factor that determines long run economic growth because the efficiency of labour and labour force growth rates goes hand in hand with the growth rate of the economy. Under the neoclassical growth theory, capital investment improves under the knowledge that FDI has positive effects in economic growth (Aga, 2014).

The Solow growth models and the Harrod Domar in neoclassical theories failed to explain the technological progress rate and the savings rate. The attempt to overcome the limitations was through the endogenous growth theory which depended more on internal factors (Pomini, 2012). Policies that were proposed by endogenous growth theory encouraged economic growth through international trade, competition and innovation (Haddad, 2016). The foundation of growth theory was layered by the work of multiple authors, namely, Uzawa (1965), Shell (1966), Romer (1986), and Lucas (1988) (Pomini, 2012). Imperfect competition was introduced by endogenous growth theory rather than assuming perfect competition which the neoclassical model advocated for (Haddad, 2016, as cited in Romer, 1956).

There are four prominent endogenous models, namely: AK, Schumpeterian, Spillover, and Linear growth models. The AK model displays constant marginal product to capital showing that long run economic growth can be achieved. It states how growth depends on distinct capital and investment in technological advancements (Aga, 2014). The Schumpeterian growth model is based on three main concepts, namely: Innovations create long-run economic growth, The prospect of monopoly rents motivates entrepreneurial investment resulting in innovations, old technology replaced by new innovations. Through globalisation, FDI improved economic growth using knowledge and technology spillover effects (Haddad, 2016). Capital investments raised the levels of technology and capital stock through the spillover of knowledge for all firms in the economy (Haddad, 2016). The linear growth model states that the higher the savings ratio, the more an economy will grow; and the higher the capital-output ratio, the higher the rate of growth. It has human capital and physical capital as ordinary inputs, but technology and knowledge as non-rival goods. It is the simplest of all the endogenous models stating that people invest in technology to influence economic change (Haddad, 2016, as cited in Romer 1994)

Despite the appeal of endogenous theories, empirical evidence indicates that domestic capacities such as human capital, infrastructure, and institutions are critical for FDI to translate into sustainable growth (Klasen & Thangavelu, 2013). Without these, FDI remains resource-driven rather than endogenous, which limits its developmental impact

2.3 Theoretical overview

2.3.1 Classical Resource-Driven Theories and Their Limitations

The earliest conceptualizations of economic growth, rooted in classical economics, are centred on resource endowments and comparative advantage. Adam Smith's (1776) The Wealth of Nations laid the foundation for understanding wealth creation through specialization, free markets, and resource utilization. Smith emphasized that nations could increase their wealth by exploiting their natural resources efficiently and trading freely based on comparative advantage. This perspective naturally led to the recognition that resource-rich countries like South Africa attracted significant FDI into sectors such as mining, agriculture, and forestry, especially during the colonial and apartheid eras when resource extraction was prioritized.

Similarly, Ricardo's (1817) theory of comparative advantage highlighted how countries benefit from specializing in sectors where they are most efficient, attracting foreign investment into resource sectors where they hold a comparative advantage. South Africa's mineral wealth - gold, platinum, diamonds - has historically been a magnet for FDI, fuelling economic activity during commodity booms. Empirically, during the 19th and early 20th centuries, resource booms resulted in rapid GDP growth, infrastructure development, and employment creation (Auty, 1993; Havemann & Kerby, 2021).

However, classical resource-driven theories are increasingly recognized as insufficient for explaining long-term growth sustainability, especially for resource-dependent economies (Sachs & Warner, 2001; Cabrales & Hauk, 2011). The resource curse literature (Auty, 1993; Sala-i-Martin & Subramanian, 2003) critically highlights that resource dependence often leads to adverse outcomes such as currency overvaluation, inflation, and neglect of manufacturing and services sectors. Recent empirical evidence from South Africa confirms these concerns: during resource booms, the appreciation of the real exchange rate (REER) hampers competitiveness in manufacturing and exports outside resource sectors—a phenomenon known as Dutch disease (Hodge, 2012; Herderschee, et al., 2021). This over-reliance on resource exports fuels economic volatility, exacerbates inequality, and limits diversification, which jeopardizes long-term sustainable growth (Leonard, et al., 2022).

Furthermore, classical models largely ignore endogenous factors such as technological progress, human capital development, and institutional quality - elements now recognized as crucial for sustained development (Rodrik, 2017). As resource prices fluctuate globally,

resource-dependent countries experience boom-bust cycles, undermining macroeconomic stability and inclusive growth (Mbeki, 2000). For South Africa, resource abundance alone cannot guarantee resilient, broad-based growth; policies must foster diversification, value addition, and technological upgrading.

2.3.2 Neoclassical Growth Models and the Role of Capital

The neoclassical growth framework, especially Solow's (1956) model, provides a more systematic understanding of growth dynamics. The model posits that growth results from capital accumulation, labour force expansion, and technological progress - exogenous in nature. FDI, as foreign capital inflows, naturally fit into this framework as a means of augmenting the capital stock, temporarily boosting output.

In South Africa, empirical analyses indicate that FDI inflows, particularly during resource booms, have contributed to short-term increases in GDP and employment (Ndikumana & Sarr, 2019). For instance, during the commodity price surge of 2004–2008, FDI in mining and energy sectors spurred investment and growth. However, these gains are often temporary unless accompanied by structural reforms, infrastructural development, and institutional improvements (Mahembe & Odhiambo, 2016).

A significant limitation of the neoclassical model is its assumption that technological progress occurs outside the model's scope and remains exogenous. This neglects the influence of domestic capacities - such as human capital, innovation systems, and governance—on technological change (Aghion & Howitt, 2008). Consequently, FDI inflows that do not generate technological spillovers or productivity improvements offer limited long-term benefits. South Africa's experience exemplifies this: resource-related FDI injected capital into the economy, but the lack of complementary policies to develop domestic technological capabilities has kept growth heavily resource-dependent and vulnerable to external shocks (Masipa, 2018).

Additionally, the neoclassical approach tends to understate issues of inequality, environmental sustainability, and growth quality - factors increasingly regarded as vital for sustainable development (OECD, 2021; World Bank, 2021). For South Africa, where inequality remains high and environmental degradation is mounting, models that incorporate social and environmental dimensions are increasingly necessary.

2.3.3 Endogenous Growth Theories: Knowledge, Innovation, and Human Capital

Endogenous growth theories - pioneered by Romer (1990) and Lucas (1988) - address the limitations of neoclassical models by emphasizing internal, policy-driven processes such as investments in knowledge, innovation, and human capital. Knowledge and technology are regarded as non-rival goods, leading to increasing returns to scale and sustained growth (Jones, 2019).

For South Africa, this paradigm highlights the potential of FDI to facilitate technological spillovers and capacity building. Recent empirical studies (Kleynhans & Zwedala 2012; Ikuabe, et al., 2022) demonstrate that FDI's benefits are maximized when domestic capacities - such as skilled labour, innovation infrastructure, and strong institutions - are aligned to absorb and utilize new technologies. FDI in high-tech sectors such as ICT, pharmaceuticals, and renewable energy can enable leapfrogging of traditional development paths if domestic capacities are enhanced.

However, South Africa faces persistent challenges: skills shortages, infrastructural deficits, and weak institutional frameworks limit the ability to fully leverage FDI's endogenous growth potential (Kleynhans & Zwedala, 2012). The education system suffers from disparities in access and quality, constraining the development of a skilled workforce capable of engaging in advanced sectors (OECD, 2021). Moreover, weak linkages between foreign multinationals and local suppliers or innovation hubs diminish spillovers that could accelerate technological upgrading (Kleynhans & Zwedala, 2012). Empirical evidence confirms that FDI's productivity gains are significantly higher when domestic firms effectively interact with foreign investors (Kleynhans & Zwedala, 2012). Addressing these domestic capacity constraints is vital to transforming FDI from resource-seeking to endogenous growth-driving.

Recent policy frameworks (South African National Development Plan, 2021; UNCTAD, 2022) emphasize fostering innovation ecosystems, R&D incentives, and skills development to maximize FDI's endogenous growth benefits. These initiatives align with the insights from endogenous growth models, emphasizing that sustainable benefits depend on domestic policies that create an environment conducive to innovation and human capital development.

2.3.4 Knowledge-Based and Digital Paradigms: The New Frontier

The global economy is increasingly characterised by digital transformation, innovation ecosystems, and knowledge clusters (Nambisan, et al., 2019). Countries can accelerate

development by fostering digital infrastructure, regional knowledge hubs, and entrepreneurship networks that facilitate spillovers and regional competitiveness. FDI plays a strategic role here, especially in high-tech sectors, generating technological spillovers and regional growth (Osano & Koine, 2016).

In South Africa, nurturing innovation ecosystems - such as the Cape Town and Johannesburg tech hubs - can amplify FDI benefits in knowledge-intensive sectors. Recent empirical evidence (Sachs, 2022; United Nations Economic Commission for Africa, 2022) indicates that FDI in these sectors, combined with policies supporting digital infrastructure and entrepreneurship, significantly enhances productivity and export diversification. However, realising this potential depends critically on addressing institutional weaknesses - corruption, regulatory bottlenecks, and infrastructural gaps - that undermine investor confidence (OECD, 2021).

Moreover, digital divides - marked by disparities in internet access and digital literacy - pose barriers to inclusive growth. As FDI increasingly concentrates in knowledge sectors, broad-based benefits require investments in digital infrastructure, education, and regulatory reforms that promote fair competition and protect intellectual property rights (OECD, 2019). Recent initiatives (Pisu, et al., 2021) reinforce the importance of digital transformation for inclusive development.

2.3.5 Institutional and Strategic Dimensions: The Critical Role of Governance and Firm Strategies

The success of FDI in fostering sustainable growth depends critically on domestic institutions and strategic corporate behaviour. North (1990) highlights that well-functioning institutions - property rights, legal systems, regulatory frameworks - are essential for attracting high-quality FDI and translating it into productivity gains. Weak governance increases transaction costs, deters high-value FDI, and limits spillover effects (Ross, 2019).

In South Africa, issues such as corruption, policy uncertainty, and regulatory instability have hampered high-quality FDI inflows. Empirical study (Russell & Smorodinskaya, 2018) shows that sectors with strong linkages to local suppliers and innovation ecosystems are most likely to generate spillovers when governance is robust. Dunning's (1980, 1988) Eclectic Paradigm (OLI framework) explains that firms invest abroad when they possess Ownership advantages, perceive favourable Location advantages, and gain Internalization benefits. South Africa's

resource wealth offers strong location advantages, but political risks and policy instability diminish firms' internalization benefits, limiting high-value FDI.

Ultimately, firm strategic behaviour - especially in volatile environments depends on macroeconomic stability and credible policy commitments (Khan, 2016). Currency volatility, policy debates, and social unrest have historically led to delays or divestments, underscoring the importance of governance and macroeconomic stability for maximizing FDI's developmental benefits.

2.4 Empirical Overview

2.4.1 Global Evidence on the Impact of FDI on Economic Growth

Before researching into the specific context of South Africa, it is instructive to consider the broader empirical landscape concerning the relationship between FDI and economic growth globally. This body of literature offers valuable insights into the mechanisms, conditions, and heterogeneity of FDI effects, which can inform understanding of South Africa's experience.

At the global level, numerous studies have documented that FDI can serve as a catalyst for economic development, particularly through capital accumulation, technology transfer, and integration into international markets. Borensztein, De Gregorio, and Lee (1998) pioneered this line of research by demonstrating that FDI has a positive and significant effect on economic growth, especially in countries with a sufficiently high level of human capital. Their findings suggest that FDI enhances productivity and fosters technological spillovers when domestic factors are conducive, highlighting the importance of an absorptive capacity.

Lensink & Morrissey (2000) states that the evidence that foreign direct investment contributes to economic growth is encouraging rather than compelling and economic growth does not mean poverty reduction. The countries that receive the least FDI are more likely to be the poorest ones that are not able to derive benefits from economic growth (Velde & Morrissey, 2002).

Basu and Chakraborty (2003) used a Panel cointegration approach to explore a two-way link between FDI and GDP in 23 developing countries. They also explored the impact of liberalisation on the dynamics of FDI and GDP relationships. The study found that there was a long run cointegrating relationship between FDI and GDP after allowing for heterogenous country effects. What was also revealed from the study is a bidirectional causality relationship between FDI and GDP for more open economies. Long-run causality appeared to be unidirectional moving from GDP to FDI for relatively closed economies meaning that under

restrictive trade, FDI and GDP are not mutually reinforcing each other. (Basu & Chakraborty, 2003)

Building on this, Li and Liu (2005) employed panel data analysis across multiple countries and found that FDI significantly contributes to economic growth in emerging economies, with the magnitude of effects varying according to institutional quality and macroeconomic stability. Similarly, Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004) showed that financial development amplifies the positive impact of FDI, underscoring the importance of domestic reforms.

Domarchi & Nkengapa (2007) investigate FDI and economic growth in 7 transition economies of CEE and the Baltic States. The results from the study showed a substantial and positive correlation between direct investment from abroad and research & development (proxied as knowledge of the host country) when there is an interaction between the two. This means that R&D and FDI are great sources of technological advancement, since the results showed that it can increase the economy's technology thus improving economic growth. The results from the study are in line with economic theory and what is generally expected from foreign direct investment. The findings of the study also suggest the improving human capital through R&D greatly influences FDI inflows which leads to economic growth.

In contrast, some empirical evidence points to the conditional nature of FDI's growth effects. Rodriguez-Clare (1996) argued that in countries with weak institutions, FDI might lead to rent-seeking behaviours, environmental degradation, and limited spillovers, which can dampen or even reverse growth benefits. This heterogeneity underscores that FDI's contribution to growth is context-dependent, shaped by factors such as governance, infrastructure, and human capital.

Cross-country analyses further reveal that the sectoral composition of FDI matters manufacturing and high-tech FDI tend to have higher spillover potential compared to resource-based FDI (Motta & Vannoni, 2014). For example, studies by Kinoshita, Takamatsu, and Yamanaka (2013) have shown that FDI in manufacturing sectors significantly improves productivity and exports in developing economies, emphasizing the importance of sectoral targeting.

On a macroeconomic level, the literature also recognizes that the impact of FDI on growth can be influenced by exchange rate regimes, trade policies, and macroeconomic stability. Gagnon and Kamin (2007) demonstrated that exchange rate volatility can deter FDI inflows, which in

turn hampers growth prospects. Similarly, the presence of trade openness often amplifies the positive effects of FDI by facilitating knowledge spillovers and market access (Asiedu, 2006).

While most empirical work affirms a generally positive relationship between FDI and economic growth, it is evident that the magnitude and sustainability of these benefits depend heavily on domestic policies and institutional quality (Borensztein, et al., 1998). Consequently, developing countries seeking to leverage FDI for growth must invest in human capital, infrastructure, and governance reforms to realize its full potential.

This global evidence provides a crucial backdrop for understanding South Africa's specific experience. It underscores that the impact of FDI on growth is not automatic but requires conducive conditions, including a skilled workforce, stable macroeconomic policies, and robust institutions - factors that South Africa continues to develop. The subsequent section examines whether South Africa's FDI-led growth aligns with these international insights and the particular challenges it faces.

2.4.2 The Impact of FDI on Economic Growth in South Africa

South Africa's economic development has been significantly influenced by FDI inflows since the end of apartheid, as policymakers have viewed foreign investment as a key engine of growth, technological progress, and employment creation (Ssekitoleko & Mbukanma, 2022). Empirical studies within South Africa show mixed but generally positive effects of FDI on growth, contingent upon sectoral composition and institutional factors. For example, Kinoshita, Nwabisi (2021) found that FDI enhances productivity and technological spillovers in manufacturing industries, especially when domestic firms possess absorptive capacity, such as skilled labour and infrastructure. Similarly, Ghebrihiwet (2019) documented that FDI in South Africa's mining and manufacturing sectors contributed to efficiency gains and export diversification.

Tshepo (2014) conducted research that assessed the influence that FDI has had on economic progress (measured by GDP) from 1990 to 2013 in South Africa. The research used a Johansen cointegration test to check for a long-run link between the variables that were specified in the model. In the South African economy, the results from the empirical study show a positive long-run correlation between economic progress (measured by GDP) and FDI. This shows that globalization is essential helpful in to stimulating growth and the levels of job occupation creation in the South African economy. The analysis also found inward FDI in South Africa to be stimulated by human capital, labour costs and return on investment which is also similar to

what (Domarchi & Nkengapa, 2007) found. Using cross-sectional data, the results from Tshepo (2014) show that foreign direct investment has a positive effect on employment and economic development for some developing countries

However, the literature also highlights limitations. Moyo (2012) argued that FDI tends to concentrate in resource-extractive sectors, which offer limited linkages with the broader economy, thereby failing to generate widespread employment or technological diffusion. This sectoral bias diminishes the potential for FDI to foster inclusive growth. Moreover, institutional quality plays a crucial role: studies by (Quazi, et al., 2014; Yahyaoui, 2021) show that corruption, regulatory bottlenecks, and weak governance have constrained the positive impact of FDI on growth. Their analysis suggests that FDI's contribution is maximized when complemented by policies promoting innovation, skill development, and infrastructure expansion. Studies by Braunstein & Epstein (2002), Spiezia (2004) and Vacaflores (2011) at the aggregate stage indicate that expansions in foreign direct investments do not in actuality lead to increases in growth and employment levels at the nationwide level. This shows that this depends on countries and the level to which the research is being conducted.

International evidence supports these findings. Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004) found that FDI significantly boosts growth in countries with high human capital levels, an aspect relevant for South Africa's education and skills development policies. Similarly, Li and Liu (2005) demonstrated that FDI contributed positively to growth in China, with spillovers facilitated by government policies that promote technological adoption. Conversely, Rodriguez-Clare (1996) and Javorcik (2004) warn that in environments with weak institutions, FDI can lead to rent-seeking behaviour and environmental degradation, underscoring the importance of governance.

In summary, the empirical literature underscores that FDI can be a potent growth driver for South Africa, especially when institutional quality is high and sectoral policies are aligned. However, without addressing structural challenges, the benefits remain limited, emphasizing the need for policy coherence and institutional reforms.

2.4.3 FDI and Trade: A Bidirectional Relationship

Trade openness and FDI are mutually reinforcing in development contexts. The literature consistently indicates that trade liberalization attracts FDI by signalling market potential and reducing entry barriers (Dunning, 1988; Asiedu, 2006). For South Africa, trade liberalization reforms initiated in the 1990s aimed to integrate the economy into global markets, and

empirical studies have documented positive effects. Bhorat, Hirsch, Kanbur and Ncube (2014) analysed the post-apartheid trade reforms and found that increased trade openness contributed to GDP growth, although they also highlighted rising income inequality, suggesting that the benefits of trade were unevenly distributed.

Empirical work by Mphigalale (2011) confirms that trade openness has been a significant determinant of FDI inflows in South Africa, with resource-based sectors such as mining and agriculture particularly benefiting. These sectors attracted FDI because of their export orientation and access to global markets. Similarly, Roberts (2000) showed that trade policy reforms helped stabilize FDI inflows, but volatility in global commodity prices and exchange rates posed challenges to sustained investment.

The reverse causality - how FDI influences trade - has also been extensively examined. For instance, Aitken, Hanson, and Harrison (1997) found in Latin America that FDI significantly increased exports, especially in manufacturing sectors, through spillovers and supply chain linkages. In South Africa, Masipa (2018) observed that FDI contributed to export diversification and growth, particularly when supported by trade policies and infrastructure. Additionally, Markowitz (2020) found that FDI in South Africa's financial and manufacturing sectors boosted exports through technology transfer and improved supply chain management.

However, the empirical evidence highlights that the relationship is sensitive to macroeconomic stability and institutional quality. High exchange rate volatility, as documented by Aido (2017), can distort the trade-FDI nexus by increasing transaction costs and reducing competitiveness. Moreover, trade liberalization without accompanying reforms can lead to increased inequality and sectoral dislocation, as shown by (Bhorat, et al., 2014). These findings emphasize that trade and FDI policies should be designed coherently, with focus on building institutional capacity and macroeconomic stability.

2.4.4 Exchange Rate Volatility and Its Effect on FDI and Trade

The exchange rate, especially the Real Effective Exchange Rate (REER), is a critical determinant of economic competitiveness and the attractiveness of FDI. The empirical literature indicates that exchange rate volatility can significantly influence FDI inflows and trade flows, with effects that depend on the nature and sectoral composition of these flows.

Aidoo (2017) analysed the impact of exchange rate volatility on FDI in South Africa and found that high volatility deterred long-term investment, particularly in sectors requiring stable

operating environments, such as manufacturing and services. Their findings align with Klein and Rosengren (1994), who argued that unpredictable exchange rate movements increase risk, raising the cost of capital for foreign investors. Similarly, Gagnon and Kamin (2007) demonstrated that exchange rate volatility reduces export volumes and FDI inflows in emerging markets by increasing transaction costs and uncertainty.

In contrast, some studies suggest that exchange rate depreciation can temporarily attract FDI by improving export competitiveness. Aidoo (2017) observed that rand depreciation in South Africa initially spurred FDI in resource sectors, yet prolonged depreciation without macroeconomic stability could lead to inflationary pressures and capital flight. Morris and Nelson (2016) further argued that exchange rate misalignments - either overvaluation or undervaluation - can distort trade and investment decisions, emphasizing the importance of exchange rate management.

In terms of trade, exchange rate fluctuations directly influence export and import prices, affecting trade balances. Aidoo (2017) found that exchange rate stability fosters a conducive environment for trade growth, especially in export-oriented sectors. Conversely, volatile exchange rates can lead to trade disincentives, stockpiling, or under-invoicing, which hamper export growth (Tarasenko, 2021). These empirical insights underscore the importance of macroeconomic policies aimed at exchange rate stability to promote FDI and trade.

The role of consumption (household or private consumption) is increasingly recognized as a vital component in this dynamic. Fluctuations in exchange rates and FDI flows can influence household income and confidence, thereby affecting consumption levels (Kraay & Raddatz, 2007; Akerlof & Shiller, 2010). For example, currency appreciation can increase household purchasing power, boosting consumption, while depreciation or economic uncertainty can dampen household spending (Romer, 1993). Furthermore, FDI in consumer sectors or infrastructure projects can create jobs and income, stimulate household consumption and further support economic growth (Javorcik, 2004). Conversely, declines in consumption can exacerbate economic downturns, especially when external shocks disrupt household income or confidence (Bhorat et al., 2014; Deaton, 1992).

2.4.5 The Dynamic Interplay Between FDI, Trade, and GDP Growth

The interrelationship among FDI, trade, and GDP growth is well-documented in empirical literature, with many studies highlighting bidirectional causality and feedback loops. For South Africa, the evidence suggests that these variables are mutually reinforcing but also susceptible

to macroeconomic shocks and institutional weaknesses. Jenkins & Thomas (2002) provided early evidence that FDI contributed to South Africa's economic growth by enhancing productivity and export capacity, especially in resource sectors. Conversely, Maseko (2015) demonstrated that higher growth rates increased FDI inflows, indicating a positive feedback loop. Similarly, Bhorat, et al., (2014) showed that trade liberalisation contributed to GDP growth, which in turn attracted further FDI, highlighting a virtuous cycle.

However, the empirical literature also emphasizes that this system is sensitive to external shocks, such as commodity price swings or global financial crises. Essers (2013) observed that during the 2008 global financial crisis, FDI inflows declined sharply, trade volumes contracted, and growth slowed, revealing the vulnerability of these linkages. Furthermore, institutional deficiencies, including corruption and policy uncertainty, weaken the transmission mechanisms among these variables (Markowitz, 2020).

Some studies have employed causality tests to unravel the directionality. For example, Li and Liu (2005) found evidence that in China, FDI Granger-causes growth, but the reverse is also true, emphasizing simultaneity. In South Africa, Maseko (2015) reports a bidirectional causality at tertiary level, suggesting that fostering one variable (e.g., FDI) can catalyse the others, provided macroeconomic stability and institutional quality. Policies aimed at stabilising macroeconomic variables and strengthening institutions are crucial to sustaining these linkages.

2.5 Factors influencing FDI in South Africa

2.5.1 Natural resource availability

The inflow of FDI can be associated with the availability of natural resources if the host country is heavily endowed with natural resources, this is especially relevant for resource seeking FDI. Asiedu (2006) studied the foreign direct investment in Africa: The role of natural resources and concluded that endowments in natural resources is an important determinant of FDI. The findings of the study were that developing countries that are heavily endowed with natural resources tend to draw more inflows of resource-seeking FDI. For a sample of African countries over time, the study also found FDI inflows to be correlated with natural resources (oil and share of minerals) and the size of the market. Compared to other African countries, inflows of resource-seeking FDI would lead to high investment returns in South Africa since it has natural resources in abundance which leads to relatively low cost of doing business and a

relatively stable political regime compared to other countries in Africa (Hlongwane, 2011). However, something to note is that too much investment on resource-seeking FDI may not always be profitable for the host country as it could mean low value adding activity low capital expenditure on plant and equipment except for extractive industries.

2.5.2 Labour Cost

South Africa is still a developing country where the costs of labour are low, so investors generally take advantage of these low labour costs to invest in the country of Africa as a whole. To evaluate labour costs, the real wage rate is used as a main measure to determine the labour costs in the host country (Dunning & Zhang, 2008). What is to be expected is that real wage rates should attract FDI inflows for the host country. What was also noted in the book is that the focus is not only on inexpensive labour but also to consider productivity, adaptability, and flexibility of the labour force in the host country, which leads to lower costs.

2.5.3 Market Size

The size of the market and its potential growth is known as another important factor that investors look at when planning to make an investment. Using GDP as proxy, numerous studies that carried out research in this area have established a correlation between market size and FDI (Asiedu, 2006). Asiedu (2006) determined that many of those studies found investment decisions to be heavily influenced by GDP growth rate.

2.5.4 Return on Investment

Multiple studies involving FDI view return on investment as one of the main determinants of FDI because of the motive to make profit. MNEs will look at the benefits they could gain from investing in a host country to determine whether investing there will bring benefit to their company home country. This can then result in the employment of local workers which I believe is just the effect of trying to gain profit from investment.

2.5.5 Corruption and Political stability

The determinants that are said to impact FDI comprise of political stability, corruption, and risk of expropriation in host countries. Political orientation influences the inflows of FDI if nations perceive FDI and being overly dependent on other foreign nations as a threat to their sovereignty (Habib & Zurawicki, 2001). It is generally harder to measure the impact of political determinants on FDI hence why there is less empirical studies than other determinants of FDI – particularly for developing countries. Jain (2001) focuses on looking at the theoretical

relationship between FDI and corruption. They concluded that the perceived corruption may act as either a "grabbing hand" or as a "helping hand" for the inflows of FDI.

Murphy et al (1993) proposed the grabbing hand of the state which explores the negative effects caused the by corruption on FDI. Numerous researchers have noted that uncertainty caused by corruption and political instability has a negative effect on FDI and domestic investment in developing economies. High levels of corruption can increase business costs making it unprofitable, which leads to decreases in FDI inflows. In this sense, corruption falls within the wider negative effects of being a rent seeking activity that raises transaction costs of the economy (Moustafa, 2021). Instead of using such costs on collecting information on partners and market conditions, they may be spent. Corruption causes more costs through the distortions it causes to the aggregate economy created by fraudulent government officials to generate payoffs. Economic distortions can take different forms, namely, production delays, inefficient privatization, and government contracts, approving low quality goods and services, and illegal activities. By raising taxes and cutting spending, these high costs would be later reduced which would negatively affect economic growth through the consumption component. Mauro (1995) also established how capital inflows are swayed by corruption towards bank loans and portfolio investments at the expense of FDI.

As mentioned above, perceived corruption can also act as a "helping hand" to foster the inflows of FDI. Houston (2007) determined that substituting corruption for poor governance can expand the economy. The efficient greasing hypothesis is what the argument is based on. The hypothesis means the issues that the bureaucracy tends to create may be solved by corruption the "greasing of wheels" of the economic activity. Although majority of research points towards the negative effects that corruption causes, a few studies have proved this hypothesis to be valid (AI-Sadig, 2009). Rather than calling for the retention of corruption, such studies are done to encourage reinforcing the legal and institutional framework of the nation in question.

2.5.6 Human capital availability

Human capital is also regarded as another important determinant of the location of foreign direct investment inflows into the host country. Farhad, et al., (2001) hypothesises that human capital in host countries is one of the determining factors for foreign investment in developing nations. In less developed countries, lack of human capital discourages foreign investments (Lucas Jr, 1990). A model presented by Zhang and Markusen (1999) shows that skilled labour

availability in the host country is a direct requirement for transnational corporations (TNCs) and affects the inflows of FDI. As an investor you'd want to invest on a business that is situated in an area that is populated by skilled and knowledgeable individuals. A study sampling developing countries to test the effects on FDI inflows from school enrolment showed the proxy used for human capital to be significantly positively related to the inflows of FDI (Rusike, 2007).

2.6 Conclusion

2.5.1 Theoretical

An integrated understanding of growth and FDI theories reveals that their relevance and applicability are highly contextual. Classical resource-based theories provide foundational insights into the role of natural endowments but fall short in explaining sustainability and diversification. Neoclassical models emphasize capital accumulation but underestimate the importance of technological progress and institutional quality. Endogenous and knowledge-based frameworks highlight the centrality of innovation, human capital, and spillovers, yet their effectiveness hinges on domestic capacities and policy support. Lastly, institutional and strategic models underscore that governance, policy stability, and firm-specific advantages ultimately determine whether FDI becomes a conduit for sustainable and inclusive growth.

South Africa's development path exemplifies the importance of adopting a holistic approach leveraging its resource wealth while simultaneously strengthening institutions, investing in human capital, fostering innovation ecosystems, and ensuring policy stability. Only through such an integrated strategy can the country harness the full potential of FDI to achieve resilient, equitable, and sustainable growth an imperative that underscores the relevance of these diverse yet interconnected theories.

2.5.2 Empirical

The extensive empirical literature reviewed affirms that Foreign Direct Investment (FDI) can significantly contribute to economic growth, but its impact is highly conditional on country-specific factors. Globally, studies such as Borensztein et al. (1998), Alfaro et al. (2004), and Li & Liu (2005) show that FDI fosters growth primarily through technology transfer, capital

accumulation, and productivity gains, particularly in countries with high levels of human capital, sound institutions, and stable macroeconomic environments.

In the South African context, the evidence also supports a generally positive relationship between FDI and economic growth, with stronger effects seen in manufacturing and high-tech sectors, provided that supportive conditions such as infrastructure, skilled labour, and trade openness are in place (Masipa, 2018; Makhoba & Zungu, 2021). However, challenges such as institutional weaknesses, corruption, and the sectoral concentration of FDI in resource-extractive industries limit the breadth and sustainability of FDI-led growth (Moustafa, 2021)

Empirical findings also highlight the bidirectional relationship between FDI and trade, where liberalized trade regimes attract investment and FDI in turn boosts export capacity, especially under stable macroeconomic and political conditions (Aitken, et al., 1997). Exchange rate volatility, however, has a dampening effect on both trade and FDI, underlining the need for sound macroeconomic policies.

Finally, key determinants of FDI inflows in South Africa include natural resources, labour costs, market size, returns on investment, institutional quality, and human capital availability. The interaction between these factors ultimately shapes the effectiveness of FDI in driving growth and development.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter describes the research design and analytical framework employed to investigate the dynamic relationships between Foreign Direct Investment (FDI) and economic growth in South Africa. Building upon the theoretical insights reviewed in previous chapters, this study adopts a quantitative econometric approach, specifically a Time Series Bayesian Vector Autoregression (BVAR) model. This choice is motivated by the model's capacity to handle small sample sizes, incorporate prior information, and generate robust inference in the presence of multicollinearity among variables.

The model focuses on five key macroeconomic variables: Gross Domestic Product (GDP), FDI inflows, Trade openness, Consumption (CONS) and the Real Effective Exchange Rate (REER). These variables encapsulate the core theoretical channels through which FDI influences economic growth, economic openness, and macroeconomic stability, aligned with the empirical and theoretical frameworks discussed earlier.

3.2 Research Design

This study employs a quantitative, time-series econometric design, leveraging historical macroeconomic data for South Africa. The primary aim is to analyse the dynamic interdependencies among GDP, FDI, Trade, CONS, and REER over the period from 1990q1 to 2022q4, capturing post-apartheid economic transformations and recent global shocks.

The core analytical tool is a Bayesian VAR model, which allows for probabilistic inference and the incorporation of prior beliefs particularly advantageous given the relatively limited sample size and potential multicollinearity among variables.

3.3 Rationale for using a Bayesian VAR (BVAR)

The adoption of a Bayesian Vector Autoregression (BVAR) framework in this study is motivated by several key advantages that align with the research objectives. First, macroeconomic data, particularly for emerging markets like South Africa, often involve limited sample sizes or data gaps, which can pose challenges for traditional estimation methods. The Bayesian approach addresses this by incorporating prior beliefs about the relationships among variables, effectively shrinking estimates towards plausible values and reducing overfitting.

Second, the BVAR allows for the simultaneous modelling of multiple interdependent variables GDP, FDI, Trade, and REER enabling a comprehensive analysis of their dynamic interactions and feedback mechanisms. This is particularly important given the complex, bidirectional relationships hypothesized in this study. Third, the Bayesian framework enhances forecast accuracy and stability by reducing variance in parameter estimates through shrinkage, which is critical for policy-relevant analysis and simulation of shocks. Fourth, it provides a full posterior distribution of the parameters, allowing for probabilistic inference and a quantification of uncertainty, an essential feature for macroeconomic decision-making under uncertainty. Lastly, the BVAR's flexibility, especially with the Minnesota prior, facilitates the incorporation of economic theory into the estimation process, ensuring that the model aligns with established macroeconomic expectations about persistence and cross-variable influences. Collectively, these advantages make the BVAR an appropriate and powerful econometric tool for exploring the complex, dynamic relationships among FDI, trade, exchange rates, consumption and growth in South Africa, thereby providing robust insights for policy formulation

3.4 Research Variables

The core aim of this research is to understand the dynamic interactions among these variables, specifically focusing on how FDI influences economic growth within South Africa, and how exchange rate, trade, and household consumption dynamics modulate this relationship.

3.4.1 Gross Domestic Product

GDP measures the total monetary value of all goods and services produced within South Africa over a specific period. It serves as the primary indicator of the country's economic activity and overall growth. In this study, we utilize the real GDP series, which adjusts nominal GDP for inflation, providing a more accurate measure of economic growth over time. The central focus is on how FDI, trade, exchange rate movements, and household consumption influence South Africa's GDP, capturing the aggregate effect of internal and external factors.

3.4.2 Foreign Direct Investment

FDI represents the net inflows of investment by foreign entities into South African enterprises, typically involving a lasting interest and managerial control. It is a vital source of external capital, technology transfer, and managerial expertise. We measure FDI as the annual net inflow (in USD), capturing the volume of foreign investments that potentially stimulate productivity,

employment, and technological advancement. The study examines how FDI responds to macroeconomic variables and, in turn, how it influences GDP growth.

3.4.3 Trade (Exports + Imports)

Trade is proxied by the sum of South Africa's total exports and imports, often expressed as a ratio to GDP to measure openness. Trade openness facilitates market access, resource allocation efficiency, and technology diffusion, all of which can promote economic growth. The variable captures South Africa's integration into the global economy, and the study investigates whether increased trade flows contribute to or result from FDI and economic growth.

3.4.4 Real Effective Exchange Rate

REER is an inflation-adjusted measure of a country's currency value relative to a basket of major trading partners, weighted by trade shares. It reflects the country's international price competitiveness. An appreciation of the REER indicates a stronger currency, which can impact export competitiveness and FDI attractiveness. Conversely, depreciation can boost exports but may signal macroeconomic instability. The study assesses how fluctuations in the REER influence trade balances, FDI inflows, household consumption, and overall economic performance.

3.4.5 Consumption

Household or private consumption measures the total value of goods and services purchased by households. It is a critical component of aggregate demand and a key driver of economic growth. In this study, consumption will be measured as real household expenditure, obtained from the South African Reserve Bank (SARB).

3.4.6 Relevance of variables to the study

Theoretical models suggest that FDI contributes to economic growth through capital accumulation, technology spillovers, and employment creation (Borensztein et al., 1998; Alfaro et al., 2004). Empirically, the study investigates whether increases in FDI are followed by or lead to higher GDP growth rates, testing the hypothesis that FDI acts as a growth driver. Openness to trade is widely regarded as a catalyst for growth, enabling resource specialization, market expansion, and technological adoption (Dollar, 1992; Edwards, 1998). The study assesses whether higher trade volumes or openness ratios are associated with accelerated GDP growth, and how trade interacts with FDI and household consumption. The REER influences the competitiveness of exports and the attractiveness of FDI. A depreciated REER may boost

exports and attract resource-seeking FDI, while an overvalued REER might hinder exports but signal macroeconomic stability. Fluctuations in the REER can also affect household consumption by altering import prices and household purchasing power. FDI in consumer sectors or infrastructure can create jobs and income, stimulate household consumption and further support economic growth. Conversely, declines in consumption can exacerbate downturns, especially when external shocks disrupt household income or confidence.

3.5 Model specification

Below is a specification of a standard VAR model with 5 endogenous variables, p lags, and m exogenous variables:

$$\begin{pmatrix} LGDP_{,t} \\ LFDI_{,t} \\ LREER_{,t} \\ LTRDO_{,t} \\ LCONS_{,t} \end{pmatrix} = \begin{pmatrix} a_{11}^1 & a_{21}^1 & \dots & a_{51}^1 \\ a_{12}^1 & a_{22}^1 & \dots & a_{52}^1 \\ a_{13}^1 & a_{23}^1 & \dots & a_{53}^1 \\ a_{14}^1 & a_{24}^1 & \dots & a_{54}^1 \\ a_{15}^1 & a_{25}^1 & \dots & a_{55}^1 \end{pmatrix} \begin{pmatrix} LGDP_{,t-1} \\ LFDI_{,t-1} \\ LREER_{,t-1} \\ LTRDO_{,t-1} \\ LCONS_{,t-1} \end{pmatrix} + \dots +$$

$$\begin{pmatrix} a_{11}^p & a_{21}^p & \dots & a_{51}^p \\ a_{12}^p & a_{22}^p & \dots & a_{52}^p \\ a_{13}^p & a_{23}^p & \dots & a_{53}^p \\ a_{14}^p & a_{24}^p & \dots & a_{54}^p \\ a_{15}^p & a_{25}^p & \dots & a_{55}^p \end{pmatrix} \begin{pmatrix} LGDP_{,t-p} \\ LFDI_{,t-p} \\ LREER_{,t-p} \\ LTRDO_{,t-p} \\ LCONS_{,t-p} \end{pmatrix} + \begin{pmatrix} c_{11} & c_{21} & \dots & c_{51} \\ c_{12} & c_{22} & \dots & c_{52} \\ c_{13} & c_{23} & \dots & c_{53} \\ c_{14} & c_{24} & \dots & c_{54} \\ c_{15} & c_{25} & \dots & c_{55} \end{pmatrix} \begin{pmatrix} \chi_{1,t} \\ \chi_{2,t} \\ \chi_{3,t} \\ \chi_{4,t} \\ \chi_{5,t} \end{pmatrix} + \begin{pmatrix} \varepsilon_{1,t} \\ \varepsilon_{2,t} \\ \varepsilon_{3,t} \\ \varepsilon_{4,t} \\ \varepsilon_{5,t} \end{pmatrix} \quad (1.1)$$

LGDP: Gross domestic product.

LFDI: Foreign direct investment.

LREER: Real effective exchange rate log linearized.

LTRDO: Total trade volume as a share of gross domestic product (GDP).

LCONS: Consumption of goods and services log-linearized.

In compact form, the model rewrites as:

$$y_t = A_1 y_{t-1} + A_2 y_{t-2} + \dots + A_p y_{t-1} + C\mathcal{X}_t + \varepsilon_t \quad (1.2)$$

Where $y_t = (y_{1,t}, y_{2,t} \dots, y_{k,t})$ is the vector $(LGDP_t, LFDI_t, LREER_t, LTRDO_t, LCONS_t)$ is an $k \times 1$ vector of endogenous variables, A_1 through A_p are $k \times k$ matrices of parameters, χ_t *is a vector of exogenous variables* $m \times 1$ which includes for this dissertation a

constant terms. C is a $k \times m$ matrix and $\varepsilon_t = (\varepsilon_{1,t}\varepsilon_{2,t}\ldots\varepsilon_{k,t})$ is a vector of normally distributed residuals given by:

$$E(\varepsilon_t) = 0,\ E(\varepsilon_t\varepsilon'_t) = \sum,\ \ E(\varepsilon_t\varepsilon'_s) = 0\ for\ t \neq s. \tag{1.3}$$

From the standard VAR, we specify the Bayesian VAR since the model wants to treat every parameter of interest as a random variable that is determined by some underlying probability rather than assuming that true parameters exist. Dieppe (2016) states that the base of the Bayesian analysis is to combine information contained in the data and prior information to get an updated distribution considering both sources of information, known as posterior distribution.

The Bayesian analysis follows the Bayes rule which is naturally denoted as:

$$\pi(\theta|y) = \frac{f(y|\theta)\pi(\theta)}{f(y)} \tag{1.4}$$

where $\pi(\theta|y)$ is the posterior distribution of θ conditional on the information contained in y. This posterior is equal to $f(y|\theta)$, the likelihood of the data, multiplied by the prior distribution and divided by $f(y)$, the density of the data (Dieppe, 2016). The denominator $f(y)$ only plays the role of a normalizing constant with respect to the posterior $\pi(\theta|y)$ since it does not include θ. Thus, ignoring it, we have:

$$\pi(\theta|y)\ \alpha\ f(y|\theta)\pi(\theta) \tag{1.5}$$

According to this specification, the posterior is proportional to the likelihood of the data multiplied by the prior. This is to allow us to obtain the posterior distribution $\pi(\theta|y)$ that combines all the information we have about θ into one single expression as it represents the object of inference. This posterior distribution is then used to carry inference about the parameter values, compute point estimates, and draw comparisons between models (Dieppe, 2016).

3.6 Minnesota Prior

We use the simplest form of prior distribution known as Minnesota prior. This prior assumes that the VAR residual variance-covariance matrix $\sum$ is known (Dieppe, 2016). Meaning the only object left to estimate is the vector parameters of β. To obtain the prior distribution of β from equation 1.4, we find the likelihood function $f(y|\beta)$ for the data and a prior distribution $\pi(\beta)$ for β.

Assuming that β follows a multivariate normal distribution with β_0 and covariance matrix Ω_0:

$$\pi(\beta) \sim \mathcal{N}(\beta_0 \Omega_0) \tag{1.6}$$

Since most macroeconomic variables are characterized by a unit root, our prior belief should be that each endogenous variable follows a random walk. Therefore, we will assume that lags greater than 1 and cross-variable lag coefficient are zero (Litterman, 1986; Diepper, 2016). The same applies to our prior belief about exogenous variables with their coefficients equal to zero as well due to absence in prior belief. This leads to β_0 being a vector of zeros except for the values of the variables on the first lag which are 1.

We then assume that no covariance exists between terms in β, therefore Ω is diagonal for the variance-covariance matrix Ω_0.

The default hyperparameters commonly used are grounded in the theoretical framework of the Minnesota prior, which is designed to regularize the estimation of high-dimensional VAR models.

The default hyperparameters are specified as follows:

Overall tightness $\lambda_1 = 0.1$ (1.7)

This hyperparameter governs the general degree of shrinkage applied to all coefficients towards the prior mean (often zero). A value of 0.1 indicates a relatively tight prior, reflecting the belief that most relationships are small unless strongly supported by the data. This helps prevent overfitting, especially in high-dimensional models with limited data. (Sims, 1980; Litterman, 1986).

Cross-variable weighting $\lambda_2 = 0.5$ (1.8)

This controls the degree of shrinkage on coefficients of lagged variables of other variables (cross-effects). A moderate value like 0.5 suggests that while cross-variable effects are plausible, they are not overly strong, encouraging a parsimonious model that avoids spurious correlations. (Doan, Litterman & Sims, 1984; Koop & Korobilis, 2010).

Lag decay $\lambda_3 = 2$ (1.9)

This hyperparameter models the decay of influence over lags. A value of 2 implies a belief that the influence of past observations diminishes as the lag length increases, aligning with

economic intuition that recent lags are more informative than distant ones. (Sims, 1980; Litterman, 1986).

Exogenous variable tightness $\lambda_4 = 100$ (2.0)

This indicates a very loose prior on exogenous variables, allowing them to have a broader influence. The high value reflects less prior constraint, giving the data more freedom to determine the impact of exogenous regressors (Koop & Korobilis, 2010).

The posterior distribution of β is as follows:

$\pi(\beta|y) \sim \mathcal{N}(\bar{\beta}, \bar{\Omega})$ (2.1)

3.7 Time series of variables

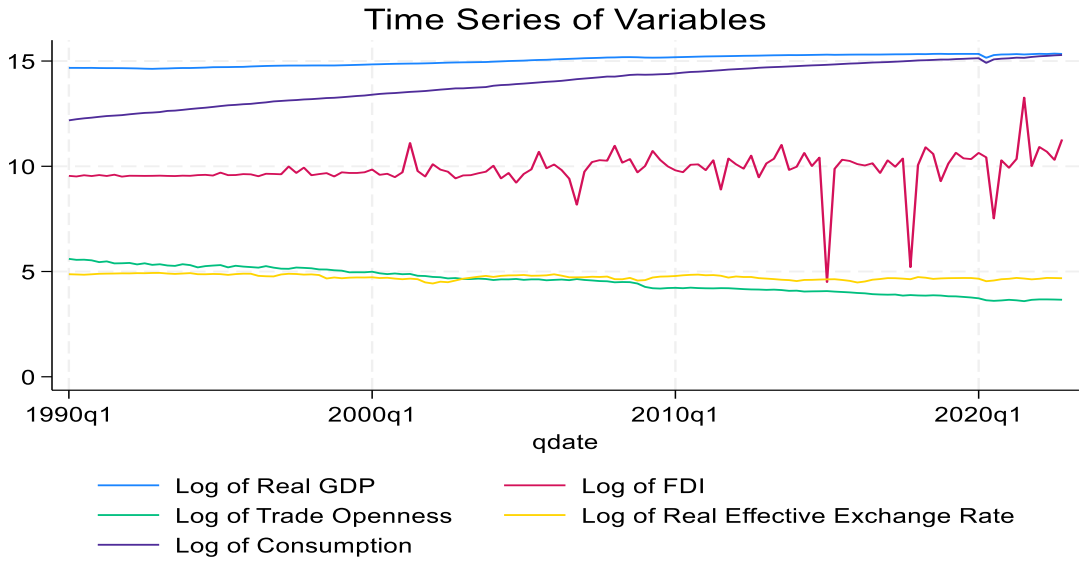

Figure 1 Time series of variables

The time series plot above presents the logged values of five key macroeconomic variables for South Africa from 1990Q1 to 2022Q4: real GDP, Foreign Direct Investment (FDI), trade openness, real effective exchange rate (REER), and private consumption. The log transformation smooths out volatility and enables the analysis of percentage changes. Over the sample period, the log of real GDP (blue line) and the log of consumption (purple line) display a clear and persistent upward trend, consistent with the long-run growth trajectory of the South African economy. This pattern reflects economic expansion and the gradual increase in aggregate demand over time, despite episodic downturns. The log of FDI (red line), however, is markedly volatile, with noticeable spikes and drops—particularly during the periods around

the global financial crisis (2008–2009) and the COVID-19 pandemic (2020–2021). These fluctuations suggest FDI's sensitivity to global uncertainty and domestic macroeconomic instability. The dramatic dips may be indicative of capital flight or divestment during periods of economic distress or political uncertainty. In contrast, the log of trade openness (green line) and the log of REER (yellow line) display a mild downward trend. The decline in trade openness could reflect structural challenges in South Africa's export sector, shifts in global trade dynamics, or reduced integration with international markets. Similarly, the declining REER implies a long-term depreciation of the currency in real terms, potentially aimed at maintaining competitiveness, although it may also reflect inflation differentials and capital account pressures. Overall, the figure highlights South Africa's steady output and consumption growth, in stark contrast to the erratic and relatively subdued behaviour of FDI and external sector variables. This divergence suggests that while domestic demand has been a stable growth engine, the country's integration with global capital and trade flows has been uneven and possibly constrained by macroeconomic and institutional vulnerabilities.

3.8 Stationarity Test

The research uses the Augmented Dicky Fuller test which was developed and popularized by Dicky and Fuller (1979). The test was used to check whether each time series data had a unit root. For vector autoregressive models, it is important to check for a unit root in each variable. If a regression is run with some of the variables being non-stationary, results would be spurious because the F and t distributions no longer approximate the standard distribution. If the mean and variance are constant over time, then the series is stationary. The reason for using the ADF instead of the normal Dicky Fuller is because the ADF helps with the order of integration and the degree of differencing needed to make each series stationary.

The series being integrated of order 0 which is known as I (0) imply that the time series is stationary without differencing. If on the other hand it was stationary at first difference, the series would then be called an I (1). Specification of the hypothesis of the ADF test is as follows:

H0: $\delta = 1$ is the Null Hypothesis indicating unit root, and

H1: $\delta < 1$ is the Alternative Hypothesis indicating stationary?

To use the DAF test, identifying the optimal lag length is required. Akaike information criterion (AIC), final prediction error (FPE), Schwarts-Bayesian criterion (SBC), and Hanna and Quinn information criterion (HQIC) were used to determine the lag length for the model

3.9 Conclusion

This chapter has outlined the methodological framework employed to investigate the dynamic interactions between Foreign Direct Investment (FDI) and economic growth in South Africa, incorporating trade openness, the real effective exchange rate (REER), and household consumption as additional macroeconomic variables. The study adopts a Bayesian Vector Autoregression (BVAR) model due to its strengths in managing small samples, addressing multicollinearity, and incorporating prior beliefs to enhance inference and forecasting. Key justifications for using the BVAR framework include its ability to quantify uncertainty and model complex interdependencies, making it well-suited for macroeconomic policy analysis in emerging markets. The chapter also provided detailed descriptions of the five core variables, explaining their economic relevance and theoretical underpinnings. A standard VAR model specification was presented and extended into its Bayesian form, using the Minnesota prior to regularize parameter estimation. Furthermore, time series plots of the logged variables were examined, highlighting trends and volatility across the sample period from 1990Q1 to 2022Q4. Finally, stationarity was assessed using the Augmented Dickey-Fuller (ADF) test to ensure the validity of the time series analysis. Overall, the methodology presented in this chapter establishes a rigorous empirical foundation for analysing the dynamic and evolving role of FDI in South Africa's macroeconomic environment.

CHAPTER 4: RESULTS AND DISCUSSIONS

This chapter presents and discusses the results obtained from estimating the model and conclusions drawn from researching other author's findings. We first present the unit root results, then present the model results, impulse response functions, variance and historical decomposition, conclusion and policy implications to answer the research questions presented.

4.1 Stationarity

It is important to assess the stationarity properties of the variables to ensure the validity of the inference. Stationarity tests help identify whether the statistical properties of the variables such as mean and variance remain constant over time, which is a key assumption in many time series models. Table 1 below shows the results from the ADF test for the variables in their level form.

Table 1 Unit Root summary

Variable	**Test Stat**	**5% Critical**	**p-value**	**Stationary?**
GDP	-0.806	-2.888	0.8174	Not stationary
FDI	-10.815	-2.888	0.0000	Stationary
Trade openness	-1.007	-2.888	0.7508	Not stationary
Consumption	-2.838	-2.888	0.0530	Borderline (10% level)
Real exchange rate	-2.471	-2.888	0.1226	Not stationary

In this study, the Augmented Dickey-Fuller (ADF) test was employed to evaluate the stationarity of each variable. The results indicated that only FDI was stationary at its levels with consumption being stationary only at 10% confidence level, while the remaining variables trade openness, and REER exhibited non-stationarity. Despite this, these non-stationary variables were included in their levels within the Bayesian VAR framework. This approach is supported by the robustness of the Minnesota prior, which allows for effective estimation even in the presence of certain non-stationarities, aligning with standard practice in Bayesian VAR modelling.

4.2 BVAR Estimation Results and Interpretation

Estimation Results and Interpretation

This section presents the Bayesian VAR (BVAR) model estimates for the South African macroeconomic variables, estimated using the BEAR toolbox over the period 1990Q1 to 2022Q4. The logged linearised variables included in the model are: Foreign Direct Investment (FDI), Trade Openness (Trade_open), Real Effective Exchange Rate (REER), Consumption (CONS), and GDP (GDP).

Table 2 Overview of the Bayesian VAR Specification

Specification	Details
Estimation Period	1990Q1 – 2022Q4
Lag Length	2
Variables	FDI, Trade_open, REER, CONS, GDP
Prior Type	Minnesota Prior
Hyperparameters	$\lambda1=0.1$, $\lambda2=0.5$, $\lambda3=2$, $\lambda4=100$

The BVAR model is estimated with a Minnesota prior using Choleski decomposition for structural identification. The Minnesota prior shrinks' coefficients of non-own lags towards zero while allowing own lags to be more flexible.

Stationarity and Stability

The roots of the characteristic polynomial lie within the unit circle, indicating that the VAR model satisfies the stability condition. This ensures that the impulse response functions derived from the model are valid and interpretable.

Interpretation of Posterior Coefficients

Table 3 FDI Dynamics (Dependent Variable: FDI)

Regressor	Median	Std. Dev	Lower Bound	Upper Bound
FDI (-1)	0.433	0.066	0.304	0.562
FDI (-2)	-0.002	0.024	-0.049	0.045
Trade open (-1)	0.154	0.634	-1.088	1.397
GDP (-1)	0.276	1.030	-1.743	2.295
CONS (-1)	0.426	0.702	-0.950	1.802

The equation for FDI reveals a significant autoregressive term (FDI (-1)) indicating that past FDI inflows strongly influence current values. Other macroeconomic variables show wide confidence intervals crossing zero, suggesting a weak short-run relationship.

Table 4 GDP Dynamics (Dependent Variable: GDP)

Regressor	Median	Std. Dev	Lower Bound	Upper Bound
FDI (-1)	-0.000	0.001	-0.002	0.002
FDI (-2)	0.000	0.000	-0.001	0.001
GDP (-1)	0.952	0.028	0.897	1.008
CONS (-1)	0.014	0.016	-0.017	0.044
Trade open (-1)	0.010	0.013	-0.017	0.036

The GDP equation confirms strong autoregressive behaviour with significant coefficients on its own lag. FDI does not have a statistically significant short-run effect on GDP growth, suggesting that any effect from FDI likely manifests over a longer horizon

4.3 Impulse response functions

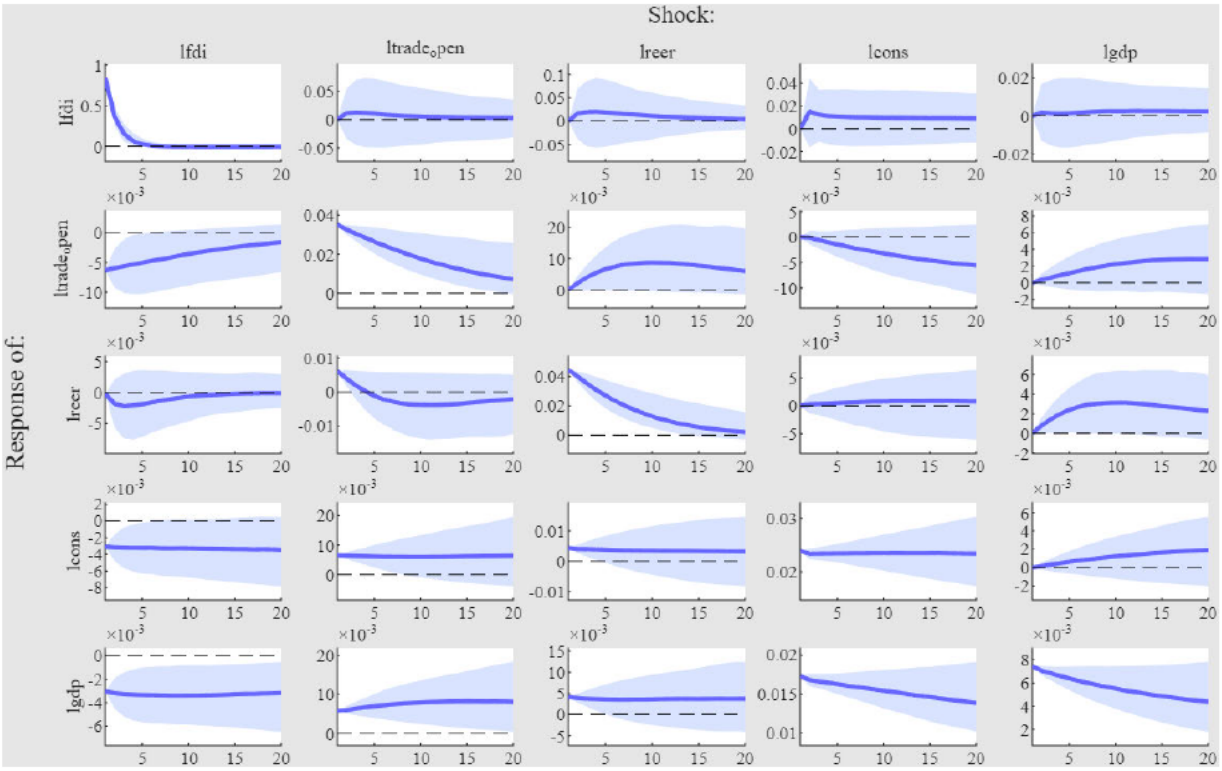

Figure 2 Impulse response functions

Source: Author's estimation using BEAR Toolbox (2025).

Impulse Response Analysis to FDI Shock

The figure above presents the impulse response functions (IRFs) capturing the dynamic effects of a structural FDI shock on key macroeconomic variables - namely, FDI, trade openness (Trade open), real effective exchange rate (REER), household consumption (CONS), and real GDP - over a 20-quarter horizon. These responses are derived from the Bayesian posterior estimates using the Minnesota prior, and each response is accompanied by 68% and 90% credible intervals, which reflect the range within which the true response likely falls with the specified probability.

The response of FDI to its own shock shows an initial positive movement, with the 90% credible interval indicating a likely increase in the short run. However, this response diminishes rapidly, with the credible intervals widening and including zero beyond the short-term horizon. This pattern suggests that while there may be a short-term momentum effect in FDI flows - possibly driven by herd behaviour or signalling effects - these effects are not persistent, and the response becomes increasingly uncertain over time. The inclusion of zero in the credible intervals at longer horizons indicates a high degree of uncertainty regarding the long-term impact of FDI shocks on FDI itself.

The IRF for trade openness exhibits a muted response, with the 90% credible interval largely including zero throughout the horizon. This suggests that, given the data and model, there is a high probability that FDI shocks do not have a substantial or consistent impact on trade openness in the South African context. This aligns with the notion that resource-seeking FDI tends to operate in enclaves with limited integration into broader trade networks, which reduces the expected spillover effects on trade (Narula & Dunning, 2000).

Similarly, the response of the real effective exchange rate (REER) shows a slight appreciation in the immediate aftermath of the shock, with the credible intervals indicating a high probability that this effect is small or transient. The intervals include zero at most horizons, implying that FDI shocks are unlikely to cause significant or sustained exchange rate movements within the model's framework. This suggests that macroeconomic management policies or the size of FDI inflows may mitigate potential currency effects.

The response of household consumption appears negligible, with the credible intervals encompassing zero across the horizon. This indicates a high probability that FDI shocks do not

produce immediate or substantial impacts on household welfare or disposable income, possibly due to the sectoral composition of FDI - focused on capital-intensive industries that generate limited employment and income spill overs to households.

Finally, the trajectory of real GDP shows a slight positive trend over the medium term, with the 90% credible interval indicating a likely increase. However, the wide intervals that include zero at several horizons reflect considerable uncertainty, suggesting that FDI's impact on overall economic output in South Africa may be limited or heavily influenced by other institutional and structural factors, such as human capital quality or infrastructure development.

In summary, the Bayesian IRFs imply that FDI shocks in South Africa are associated with limited and uncertain effects on macroeconomic variables. While short-term momentum in FDI flows is observable, the spillover effects on trade, exchange rates, household consumption, and GDP are generally small and embedded within wide credible intervals. These findings highlight the importance of policies that improve the quality and absorptive capacity for FDI, as well as the need to address structural constraints that hinder the realization of FDI's developmental benefits.

4.4 Forecast Error Variance Decomposition

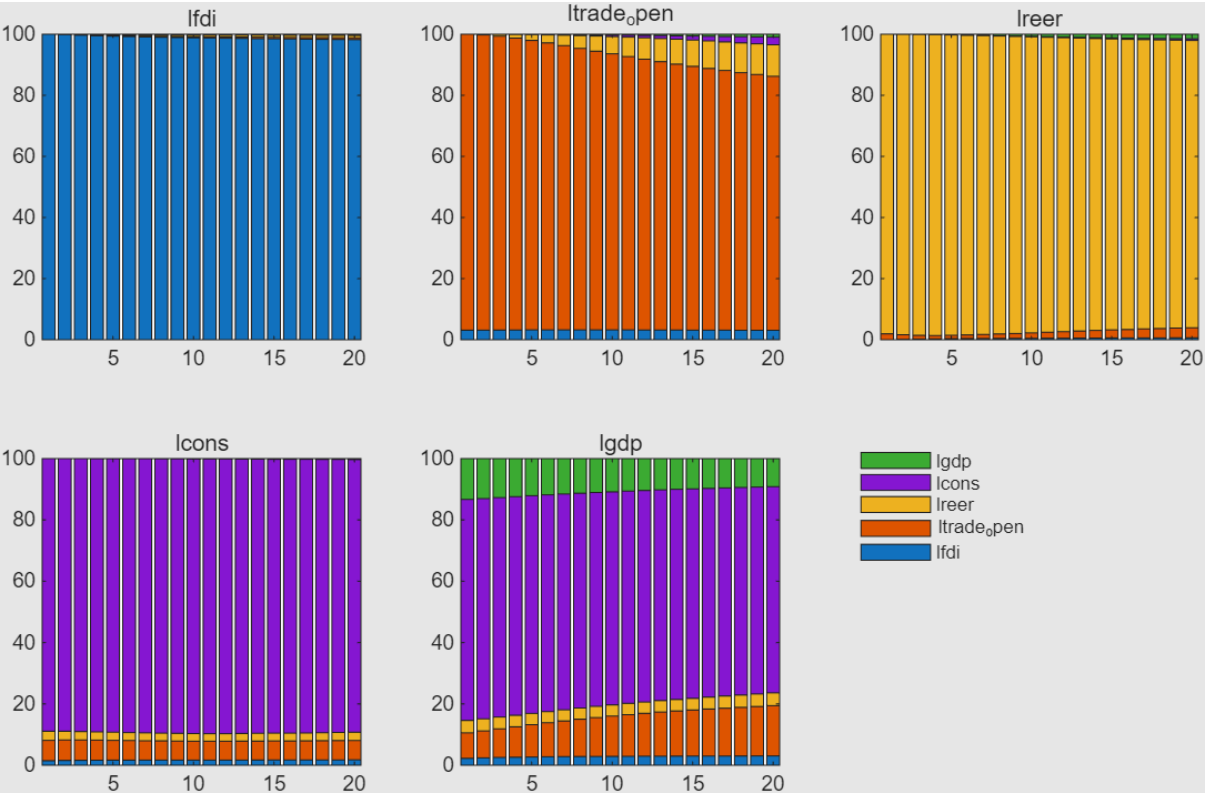

Figure 3 Forecast Error Variance Decomposition

Source: Author's estimation using BEAR Toolbox (2025).

Forecast Error Variance Decomposition (FEVD) Analysis

The FEVD provides a deeper understanding of the relative influence of structural innovations in the system, offering critical insights into the transmission mechanisms between foreign direct investment (FDI) and macroeconomic aggregates. This section interprets the FEVDs across five variables: FDI, trade openness, real effective exchange rate (REER), household consumption, and real GDP, with an emphasis on the role of FDI shocks.

4.4.1 Foreign Direct Investment

The variance of FDI is overwhelmingly explained by its own shocks across the 20-period horizon, accounting for over 95% of the forecast error variance at all horizons. This strong own-shock dominance reflects the exogenous nature or poor transmission of FDI shocks into the broader macroeconomy. According to Blonigen and Wang (2005), such behaviour is common in developing economies where FDI is highly volatile, driven by external investor sentiments and global commodity cycles, rather than domestic fundamentals. This pattern

suggests that FDI flows into South Africa may be primarily resource-seeking or speculative, thereby remaining largely disconnected from domestic economic feedback loops (Narula & Dunning, 2000).

4.4.2 Trade Openness

The variance in trade is dominated by shocks to trade openness itself, contributing approximately 85–90% throughout the 20-quarter horizon. Interestingly, FDI contributes a small and stable portion (~5%). This suggests that FDI shocks play only a minor role in explaining trade fluctuations, possibly due to the structure of South Africa's FDI, which tends to be concentrated in non-tradable or enclave sectors (UNCTAD, 2005). Theoretically, FDI is often associated with increased trade openness when it is market- or efficiency-seeking (Helpman, et al., 2004), but in contexts like South Africa, the weak vertical integration between foreign firms and domestic exporters limits this channel.

4.4.3 Real Effective Exchange Rate

In the case of REER, over 90% of its variance is explained by its own shocks, with negligible contributions from FDI or trade openness. This indicates that exchange rate fluctuations in South Africa are driven largely by independent factors, such as monetary policy, terms of trade shocks, and global risk sentiment, rather than direct FDI flows (Calvo, & Reinhart, 2002). The minimal explanatory power of FDI shocks for exchange rate volatility further weakens the Dutch Disease hypothesis in this context, where one would expect FDI inflows to appreciate the currency through excess demand for domestic assets (Corden & Neary, 1982). In line with empirical evidence from Sub-Saharan Africa, FDI in South Africa appears insufficient in magnitude or impact to induce significant REER effects (Lee & Chang, 2009).

4.4.4 Household Consumption

The variance of consumptions is primarily explained by own shocks (about 85–90%), with modest influence from GDP, REER, and trade. The contribution of FDI shocks is minimal throughout the period. This suggests that FDI does not significantly influence household consumption, at least not in the short to medium term. This is consistent with findings from De Mello (1999) and Borensztein et al. (1998), who emphasize that FDI's impact on household welfare depends heavily on the sectoral allocation and the employment-generation capacity of foreign investment. If FDI is channelled into capital-intensive industries, its ability to raise

household income or consumption is marginal, especially in an economy grappling with structural unemployment.

4.4.5 Real GDP

The FEVD of GDP provides a more diversified picture. While its own shock and household consumption dominate the variance (together explaining over 85%), the contribution of FDI shocks gradually rises over time, reaching around 5% at the 20-quarter mark. Although modest, this pattern reflects long-run spillover effects from FDI to GDP, potentially through capital accumulation, technology transfer, and productivity gains (Borensztein, et al., 1998). However, the limited share also aligns with the contingent nature of FDI's growth effects, as highlighted by Alfaro et al. (2004), who show that benefits are conditional on human capital levels, institutional quality, and financial market development - factors that remain challenging in the South African context.

4.5 Historical decomposition

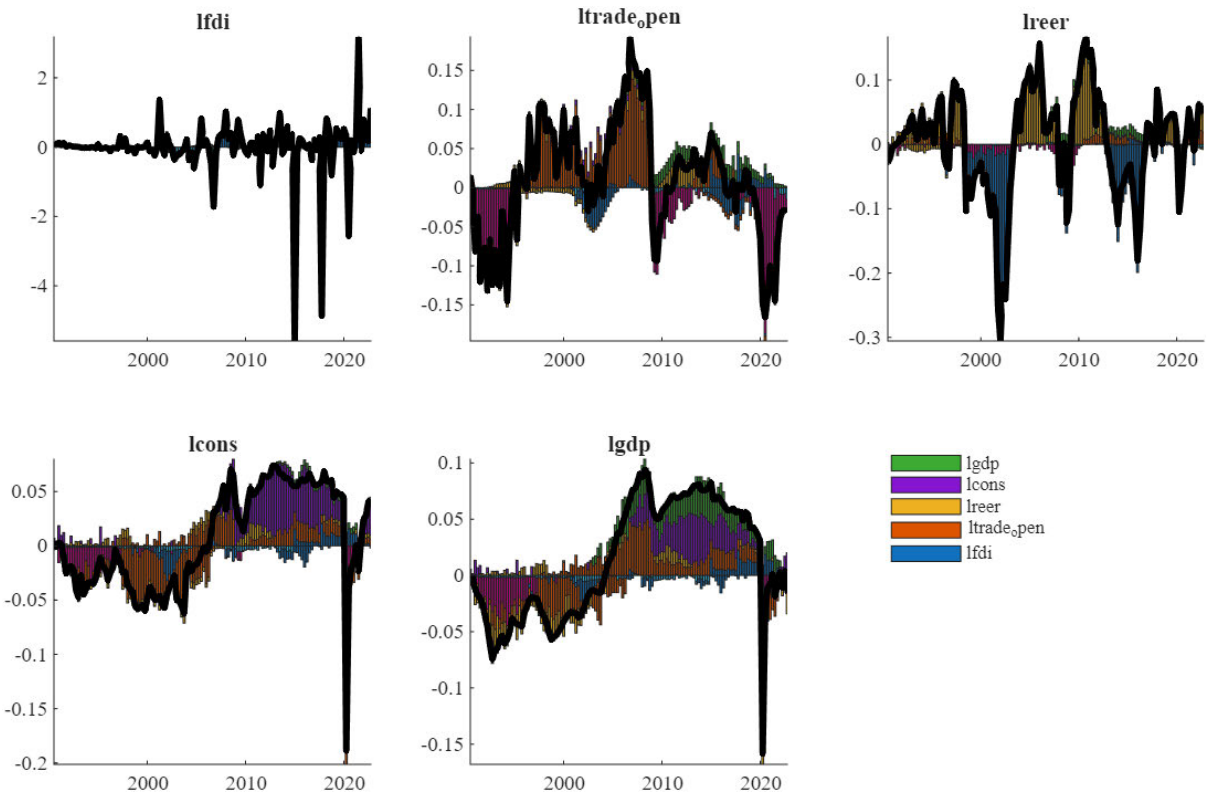

Figure 4 Historical decomposition

Source: Author's estimation using BEAR Toolbox (2025).

The five panels correspond to different identified shocks: FDI, Trade open, REER, CONS, and GDP (log of foreign direct investment, trade openness, real exchange rate, consumption, and GDP, respectively). Each panel shows how the respective shock contributed to the overall movement of the variable since the late 20th century, with notable periods of turbulence, especially around the 2008 financial crisis and other significant economic events.

4.5.1 The FDI component

The FDI (log of foreign direct investment) shock exhibits relative stability with occasional spikes, notably around the early 2000s and 2020. The sharp increase in 2020 likely correlates with the global economic upheaval caused by the COVID-19 pandemic, aligning with literature indicating that FDI flows are sensitive to global crises (Bénassy-Quéré, et al., 2011). The negative contributions during earlier periods suggest that declines in FDI, perhaps due to geopolitical tensions or economic downturns, have historically dampened the overall economic activity.

4.5.2 The Trade openness component:

This shock reflects changes in trade openness. The decomposition shows significant fluctuations, with pronounced peaks and troughs, particularly around the 2008 crisis and post-2010. The sharp decline during 2008 aligns with the global trade contraction during the financial crisis (Baldwin, 2012). The subsequent recovery period indicates how trade openness contributed positively to growth, supporting the view that trade liberalization acts as a catalyst for economic expansion (Helpman, et al., 2008). The decline post-2010 may reflect increasing trade restrictions or protectionist policies, which have been noted in recent literature as impacting global trade dynamics (Rodrik, 2017).

4.5.3 The Real effective exchange rate component:

The real exchange rate shows substantial oscillations, with significant deviations around 2000, 2008, and 2020. A depreciating exchange rate during crises typically stimulates exports, which could explain some positive contributions during downturns. Conversely, appreciation periods tend to suppress export competitiveness. These findings resonate with the literature on exchange rate dynamics' role in macroeconomic stabilization (Obstfeld & Rogoff, 1995). The large negative contribution around 2008 and 2020 indicates that currency appreciation during these periods may have adversely affected export-driven growth.

4.5.4 The Consumption component

The decomposition of consumption reveals moderate fluctuations, with some positive contributions during recovery phases. The decline around 2008 supports the idea that household consumption contracted during the crisis, a common feature in macroeconomic downturns (Mankiw, 2014). Post-crisis rebounds are visible, aligning with literature emphasizing consumption's role in macroeconomic recoveries (Carroll, 2009). The contribution of consumption shocks appears less volatile than trade or exchange rate shocks, suggesting consumption's more stable nature over time.

4.5.5 The growth component

The GDP itself demonstrates pronounced volatility, with sharp declines during the 2008 crisis and the 2020 pandemic, consistent with the literature on business cycle fluctuations (Bryan & Cecchetti, 1994). The decomposition reveals that these shocks are primarily driven by the combined effects of the above-mentioned shocks, with some periods where specific shocks dominate. The large negative contributions during 2008 and 2020 underscore the severity of these shocks and their dominant role in economic downturns.

4.5.6 Broader Implications

The interpretation of this decomposition aligns with the broader macroeconomic literature emphasizing the importance of shocks in explaining output volatility. For instance, the New Keynesian models highlight how shocks to technology, preferences, and policy can induce business cycle fluctuations (Smets & Wouters, 2007). The observed contributions of trade openness, FDI, and exchange rates support models that incorporate international linkages as key drivers of macroeconomic dynamics (Gali & Monacelli, 2008).

Moreover, the significant impact of the 2008 financial crisis is well documented as a global shock that propagated through financial markets, trade, and exchange rates, leading to synchronized downturns (Reinhart & Rogoff, 2009). The recent COVID-19 pandemic similarly caused unprecedented disruptions, which are reflected in the sharp contributions from the FDI and Trade openness components.

In summary, the historical decomposition provides a nuanced picture of the macroeconomic landscape over recent decades. It emphasizes that economic fluctuations are predominantly driven by shocks related to international trade, financial stability, and exchange rates, consistent with existing literature. The periods of crisis and recovery are characterized by distinct patterns

of contribution from these shocks, highlighting the interconnectedness of global financial and trade systems. Policymakers aiming to stabilize the economy must therefore consider the multifaceted nature of these shocks and their timing to mitigate adverse impacts effectively.

CHAPTER 5: CONCLUSION

This study explored the dynamic relationship between Foreign Direct Investment (FDI) and key macroeconomic variables in South Africa, employing a Bayesian Vector Autoregression (BVAR) approach with quarterly data from 1990 to 2022. The analysis examined the short- and medium-term effects of FDI shocks on variables such as GDP, trade openness, household consumption, and the real effective exchange rate.

The empirical results indicate that FDI shocks have limited and statistically insignificant impacts on South Africa's GDP and other macroeconomic indicators within the observed horizon. The impulse response functions and variance decompositions reveal weak dynamic linkages between FDI and GDP, with variables like trade openness and consumption playing a more prominent role in explaining economic fluctuations. The findings suggest that the contribution of FDI to short-term growth in South Africa is minimal, aligning with previous research indicating limited spillovers from FDI in the country's capital-intensive sectors.

Overall, the results challenge the assumption that FDI automatically drives economic growth, highlighting the importance of sectoral composition and domestic absorptive capacity. The study underscores the need for a strategic focus on sectoral diversification and strengthening institutional frameworks to improve the developmental impact of FDI.

In conclusion, while FDI remains an important aspect of South Africa's external economic relations, its effect on growth appears limited without complementary policies and structural reforms. The findings reinforce the importance of a comprehensive approach to development that considers sectoral strategies and domestic capabilities.

CHAPTER 6: POLICY IMPLICATION

The empirical findings of this study provide nuanced insights into the role of Foreign Direct Investment (FDI) in influencing South Africa's macroeconomic dynamics. The impulse response functions revealed that shocks to FDI produce only mild and statistically insignificant effects on real GDP, consumption, trade openness, and the real effective exchange rate in the short run. Similarly, the FEVD results indicate that FDI shocks explain only a small proportion of the variance in GDP and other macroeconomic variables over the 20-quarter horizon, with domestic variables such as consumption and trade openness dominating the variance in output.

These results suggest that while FDI remains an important source of capital, its marginal contribution to short- and medium-term macroeconomic fluctuations in South Africa is limited. This finding aligns with existing literature that points to the enclave nature of FDI in South Africa, where investment is often concentrated in capital-intensive sectors such as mining and finance, offering limited spillovers to the broader economy (UNCTAD, 2005; Fedderke & Romm, 2006).

Given this context, policymakers should focus on enhancing the absorptive capacity of the domestic economy. This includes investing in human capital, infrastructure, and innovation systems that can better leverage FDI inflows for productive transformation. Furthermore, reorienting FDI-attraction strategies toward labour-intensive and export-oriented industries, such as manufacturing and green technologies, may yield stronger developmental outcomes.

Additionally, the prominence of consumption and trade openness as key drivers of GDP dynamics in the FEVD analysis implies that domestic demand policies and trade integration efforts could be more effective levers for macroeconomic stability and growth than passive reliance on FDI. Hence, industrial policy should be coupled with active trade facilitation and support for small and medium enterprises to amplify domestic linkages.

Finally, these results highlight the importance of policy coherence between investment promotion, trade strategy, and macroeconomic planning. While FDI remains a desirable component of external finance, its effectiveness depends on the structural characteristics of the host economy and the policy environment. For South Africa, this means that FDI alone is not a silver bullet for growth and that complementary reforms are essential to translate investment into inclusive development.

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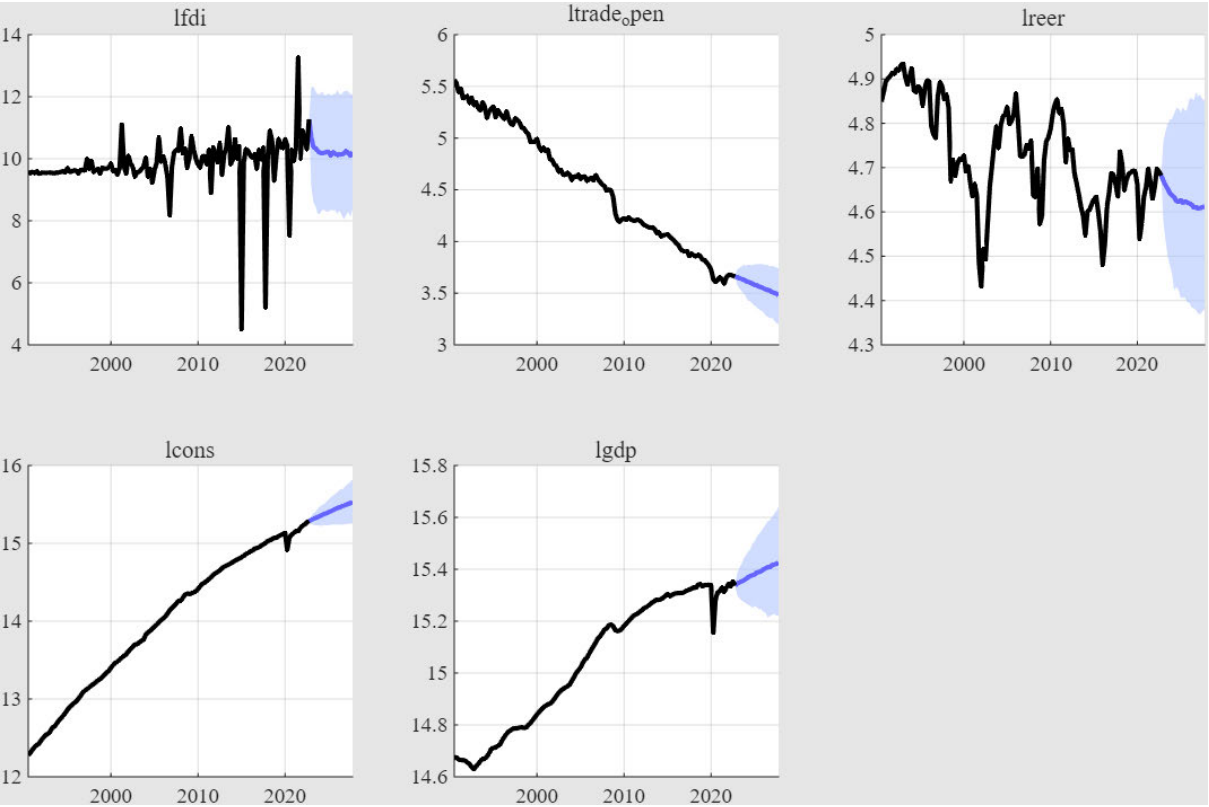
Appendix

Unconditional Forecasts



FDI Inflows Forecasts

The forecast for FDI inflows shows a relatively stable trend over the medium term, with the central forecast (black line) remaining around an index of 12, but with increasing uncertainty as indicated by the widening blue confidence interval. The recent sharp spike suggests that FDI may experience volatility driven by external factors such as global economic recovery or geopolitical developments. Overall, the forecast indicates that FDI inflows are expected to remain volatile but near their historical average, with the potential for upward movement influenced by global investment climate improvements.

Trade Openness Forecasts

The forecast for trade openness exhibits a steady decline over the forecast horizon, with the central projection moving from around 5.5 down to approximately 3.5. The widening confidence interval suggests increasing uncertainty about future trade openness, possibly reflecting concerns about global protectionism or structural shifts in global trade patterns. The downward trend aligns with recent global trends of de-globalization and trade tensions

documented in the literature (Rodrik, 2018). This decline could imply a future where South Africa's integration into global trade networks diminishes, potentially impacting export-driven growth.

Real Exchange Rate Forecasts

The forecast indicates a gradual decline in the real exchange rate index from about 4.9 to near 4.5. This suggests an expected depreciation trend, which could enhance export competitiveness but may also lead to inflationary pressures if sustained. The increasing confidence interval signifies that exchange rate movements are highly uncertain, especially given external shocks and domestic monetary policy responses. Such depreciation might be consistent with efforts to stimulate exports but also warrants caution due to potential inflation risks.

Household Consumption Forecasts

The forecast for household consumption displays a steady upward trend, with the index rising from around 13 to above 15. The relatively narrow confidence interval implies high certainty about a continued increase in household consumption, possibly driven by income growth, policy measures, or improved consumer confidence. This aligns with macroeconomic theories that consumption tends to grow steadily in recovering economies (Mankiw, 2014), and suggests resilient domestic demand in the foreseeable future.

GDP Forecasts

The GDP forecast shows gradual growth from approximately 14.6 to nearly 15.8, indicating an optimistic outlook for economic expansion. The slight widening of the confidence interval toward the end reflects some uncertainty, but the overall trend suggests continued growth, supported by rising consumption and moderate depreciation of the exchange rate. The forecast aligns with the typical post-crisis recovery trajectory, assuming no major external shocks or policy disruptions.