

**AN INVESTIGATION OF THE INDIRECT LINKAGES BETWEEN FOREIGN
DIRECT INVESTMENT AND ECONOMIC GROWTH**

by

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ABSTRACT

This study examines the indirect linkages between foreign direct investment (FDI) and economic growth in South Africa utilising 36 years' (1980-2016) time series data obtained from the South African Reserve Bank (SARB). South Africa's economy has been experiencing unsteadiness in recent years. Despite the government's execution of different strategic initiatives to draw in FDI into South Africa, the country's FDI remains lower than that of other emerging economies. Domestic investment by government, public corporations and the private sector is also relatively unsteady. Slow economic growth has put tremendous weight on the government to borrow externally for developmental purposes.

This study tests two models – model I and model II. In model I, real GDP per capita (RGDP) is the dependent variable and foreign direct investment (FDI), domestic investment (DI), real exchange rate (EXR) and foreign debt (FD) are modelled as explanatory variables while in model II, FDI is the dependent variable and RGDP, DI, EXR and FD are modelled as explanatory variables. Domestic investment is sub-divided into credit to the domestic private sector (CPS), public investment (PI) by public corporations and government investment expenditure (GOVIN). The analysis of the relationship was carried out using econometric methods such as the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests to identify the order of integration of the variables. The bounds cointegration test was applied to establish the long-term association among variables. The Autoregressive Distributed Lag (ARDL) model was utilised to test the long-run and short-run equilibrium conditions. Diagnostic tests were employed to check the model adequacy and the Granger causality tests were utilised to establish the causal relationships among variables.

The discoveries from the ADF and PP tests uncovered that all the variables are non-stationary at level but became stationary at first differences. The bounds tests suggest that there is a long-run relationship and cointegration between variables. Following the presence of cointegration, the outcomes from ARDL model uncovered that FDI, CPS and GOVIN have a positive relationship with RGDP in the long run (crowding-in effect), while, a negative relationship occurs between PI, FD, EXR and RGDP in the long run (crowding-out effect) in model I. In model II, the outcomes revealed that RGDP, CPS, and PI have a positive relationship with FDI in the long run (crowding-in effect). Then again, the outcomes presented a negative connection between GOVIN, FD and

EXR to FDI in the long run (crowding-out effect). The short-run estimate of the coefficient of the error correction term (ECM) in model I and model II are statistically significant and negative. The negative indication of the error correction term shows a backward movement towards long-run equilibrium from short-run disequilibrium. In model I, the short-run coefficient results uncovered that FDI, lagged PI and lagged EXR are positively linked with RGDP (crowding-in effect). Then again, lagged CPS and lagged GOVIN are inversely related to RGDP (crowding-out effect). In model II, the short-run coefficient of FDI is certainly related to GOVIN (crowding-in effect). FDI, on the other hand, indicated a negative relationship with PI in the short run (crowding-out effect). The Granger causality tests for the variables uncovered a unidirectional causal connection running from RGDP to FDI and from FDI to RGDP in both models. The outcomes obtained for RGDP and FDI models pass all the diagnostic tests on serial correlation, normality and heteroscedasticity. The test for adequacy performed on the residuals demonstrates that they are homoscedastic and have no serial correlation, signifying that the model is acceptable. The Cumulative Sum (CUSUM) tests show that the extracted models are structurally steady and remain within the 5 percent level of critical bounds.

Keywords: Economic Growth, Foreign Direct Investment, Domestic Investment, Foreign Debt, Real Exchange Rate, ADRL Model, and South Africa.

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LIST OF ACRONYMS

ABSA	Amalgamated Bank of South Africa
ADF	Augmented Dickey- Fuller
AIC	Akaike Information Criteria
ANC	African National Congress
ARCH	Autoregressive Conditional Heteroscedasticity
ARDL	Autoregressive Distributed Lag
ARDL-ECM	Autoregressive Distributed Lag- Error Correction Model
ASGISA	Accelerated and Shared Growth Initiative for South Africa
BOP	Balance of Payments
BRICS	Brazil- Russia- India- China- South Africa
CPS	Credit to domestic Private Sector
CUSUM	Cumulative Sum
DF	Dickey Fuller
DI	Domestic Investment
DTI	Department of Trade and Industry
ECM	Error Correction Model
EXR	Real Exchange Rate
FD	Foreign Debt
FDI	Foreign Direct Investment
FIG	Foreign Investment Grant
FMOLS	Fully Modified Ordinary Least Squares
FNB	First National Bank
GARCH	Generalized Autoregressive Conditional Heteroscedasticity
GDP	Gross Domestic Product
GEAR	Growth, Employment and Redistribution
GFCF	Gross Fixed Capital Formation
GMM	Generalized Method-of-Moment
GOVIN	Government Investment Expenditure
HDR	Human Development Report
IDC	Industrial Development Corporation

IPAP	Industrial Policy Action Plans
IRCC	Import Rebate Credit Certificates
J-B	Jarque-Bera
LLDCs	Land Locked Developing Countries
M&A	Merger and Acquisition
MIDP	Motor Industry Development Plan
MNC	Multi-National Company
MNE	Multi-National Enterprise
NDP	National Development Plan
NGP	New Growth Path
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Square
ORM	Ordinary Regression Model
PP	Phillips Perron
PRC	Presidential Review Commission
R&D	Research and Development
RDP	Reconstruction and Development Programme
RGDP	Real GDP per capita
SARB	South African Reserve Bank
SEZs	Special Economic Zones
SOEs	State Owned Enterprises
SSA	Sub-Saharan African
Stats SA	Statistics South Africa
UECM	Unrestricted Error Correction Model
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
USD	United States Dollar
VAR	Vector Autoregressive
VECM	Vector Error Correction Model
WIR	World Investment Report

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Since the 1990s, noteworthy rivalry in pulling in foreign direct investment (FDI) inflows has emerged among emerging economies (Sabir, Rafique and Abbas, 2019). This is on the grounds that foreign direct investment is recognised as a significant factor influencing economic growth (Najeh and Walid, 2019). De Mello, (1997; 1999) affirmed that there is theoretical assent amongst development economists that FDI inflows are likely to have a huge influence in clarifying growth of recipient economies. FDI inflows to emerging economies are relied upon to deliver externalities through information transfer and spillover impacts (Mohamad and Bani, 2017).

Various domestic aspects are important in drawing in FDI to an economy. Saini and Singhania (2017) contend that per capita income, trade receptiveness, inflation, currency and external indebtedness are key for receiving the imminent growth effect of foreign capital inflows. Secondly, Jaiblai and Shenai (2019) affirm that the greater the market size in the host nation, the more noteworthy the possibility for FDI inflows. Lastly, Bjurling and Ingemarsson (2019) express a view that economic firmness is a pivotal factor in invigorating FDI inflows. Hirschman (1958) stressed that not all segments of the economy have the equivalent potential to ingest foreign innovation or to form links with the remainder of the economy. Masanja (2018) notes that mining and manufacturing segments, for example, delighted in greater FDI assimilation while in agriculture and tourism segments the connection is feeble. Then again, Doan, Mare and Iyer (2015) uncovered little indication of spillovers. Nonetheless, Gerschewski (2013) argues that it is not evident whether spillovers show increasingly positive or negative impacts on domestic companies.

In the present global world, South Africa is battling with various emerging economies for a part of the global pool of FDI. Foreign investment has assumed a significant role in the developmental process of the nation's economy, even though in later years FDI stays at low levels as compared with other emerging economies (Arvanitis, 2006; WIR, 2016). The huge portion of foreign investments into the nation has been market-seeking, as appeared by the focus in manufacturing, telecommunications, financial services and food and beverages (Olatunji and Shahid, 2015).

South Africa desires more grounded, proceeded and comprehensive economic growth to address the difficulties of high joblessness, imbalance, destitution and huge budget deficiency. Regardless of the headway made by the South African government to address these difficulties through various macroeconomic strategy mediations, to be specific the Reconstruction and Development Program (RDP) between 1994 and 1995, the Growth, Employment and Redistribution (GEAR) from 1996 to 2004, Accelerated and Shared Growth Initiative for South Africa (ASGISA) from 2005 to 2009, New Growth Path (NGP) from 2010 to 2012 and the present National Development Plan (NDP) from 2013 prompting 2030, the battle against 'jobless' growth and neediness still remains. The economic growth extent data from Statistics South Africa (Stats SA) (2019a) demonstrates that the economy advanced by 0.8 percent in 2018, littler than the genuinely necessary 5 percent annual growth. Rather than declining, the unemployment rate has expanded hugely from 17 percent in 1994 to 27.1 percent in 2018 (Stats SA, 2019b). South African's Gini coefficient, a proportion of income inequality, was anticipated to be 0.63 in 2015 (World Bank, 2016) among the highest on the world.

Foreign capital can effectually affect South African's local investment through what Kose, Prasad, Rogoff and Wei (2006) call "collateral benefits". To pull in foreign investment, the South African government is necessitated to frame-up great macroeconomic approaches, improve political and economic soundness. Given the nation's low degrees of local investment, more noteworthy foreign capital inflows are essential to spike growth. For example, Xolani (2011) stresses that emerging economies like South Africa should create a condition that is ideal to pull in foreign investors. Xolani, contends that the attraction of more FDIs can profit the nation not only by enhancing domestic investments, but also as far as job prospects, knowledge transfer and improved domestic competitiveness. Kinda (2010) pointed out another rationale why FDI is momentous for South Africa or any other emerging economy. In his study, he underlined that South Africa should accomplish more FDI inflows to support in lessening a portion of the nation's socio-economic difficulties, for example, joblessness and destitution.

Ali (2014) points out that factual economic growth and progress emerge when some activities are supported and brought out through lent assets. This emanates from the idea that the private sector alone cannot stimulate the economy. Rather, government input and impact are required. South Africa in this respect is not an exception. Languid economic growth has been cited as a huge

weight on public funds. The foreign debt state of South Africa has stayed on the expansion and has provoked a wellspring of caution about the future. National Treasury (2019) data uncovered that South Africa's debt-to-GDP proportion was upstanding at 55.6 percent in 2018/19 likened to 27.80 percent of GDP in 2008/09. Halkos and Paizanos, (2016) contend that greater government borrowings can crowd out private investment by raising the rate of interest and lead to greater tax-rates in the future. Given the pivotal role of FDI, some empirical works have attempted to determine the motives that sway FDI inflows into economies. One of the motives that recently has remained a root of conversation is the exchange rate. Birgul and Sevcan (2016) suggest that the weakening of the local exchange depresses the comparative cost of capital, and in this way, ropes foreign capital inflows. Then again, a weakening currency will make the servicing cost of external debt progressively expensive.

Several empirical works have explored the determinants of growth in South Africa, including the commitment of total investment spending on growth (Fedderke and Romm, 2005; Gadinabokao and Daw, 2013). Few have tended to the discrepancy between domestic investment and foreign investment spending on long-run progress and growth. The point of this investigation is to enhance the accessible literature in two different ways:

- There is a need for a regular study that distinguishes the principle effect of domestic investment on FDI inflows in South Africa in a short and long-run economic growth system. Lipsey (2000) focused on the significance of making sure that FDI inflows do not crowd out domestic enterprises or dangerously influence residential investment.
- To the best of my insight and comprehension, there is no empirical study in South Africa which endeavoured to establish the link between domestic investment, foreign debt, and exchange rate in relation to FDI inflows and economic growth.

Therefore, this empirical study expects to research (i) the indirect impact of domestic investment, foreign debt and exchange rate and FDI in promoting economic growth in South Africa and (ii) the indirect impact of domestic investment, foreign debt and exchange rate and economic growth in attracting FDI into South Africa using an endogenous growth model.

1.2 Problem statement

Despite huge economic reforms, post-apartheid South Africa has put forth various attempts to (i) liberalise trade (ii) improve the country's global attractiveness and (iii) advance FDI inflows. This has been reached through numerous policy instruments, involving tumbling tariffs, removing most significant controls and restructuring the regulatory milieu (Pakes and Nel, 1997).

Amirahmadi and Wu (1994) underline the consequence of fiscal incentives to pull in FDI. The necessity to draw in enormous FDIs and consolation of exports has been acknowledged as the drivers for growth. The Department of Trade and Industry (DTI) has started and built up various motivations schemes and keeps on reporting new incentives to qualifying firms primarily working within the manufacturing and industrial sectors. The DTI's grant is accessible for different economic doings, which include manufacturing, just as for FDI. In any case, it is also vital that the authorities must not dismiss the way that motivating forces are, yet one component investor consider when choosing where to invest. Elimam (2017) suggests that market size, infrastructure accessibility and trade transparency have a basic impact on moving FDI inside an economy.

Regardless of the absence of evidence to support the success of fiscal incentives, the South African government keeps on giving these fiscal backings. Why is this? Wells, Allen, Morisset, and Pirnia (2001) and Jordaan (2012) point out that tax incentives give a simple method to reward other government-framed burdens in the business milieu. As it were, fiscal stimuli react to government and market failure. Woods (2014) claims that market-seeking investment in South Africa does not utilise investment impetuses and most impetus activities are aimed at value-added production and concentrate on export promotion. World Bank's (2017) report proposed that South Africa must offer better tax incentives to explicit sectors of its economy to impulse growth and create job opportunities. The World Bank report also suggests that the trade, industrial, agricultural and construction sectors react altogether to tax incentives by expanding growth and job prospects. A comparative study by Wentzel and Steyn (2014), presented instinct into the motivations that are presently existing in the manufacturing industries of South Africa, Singapore and Malaysia. The study uncovers that Singapore and Malaysia provide some impetuses that South Africa does not. Wentzel and Steyn (2014) proposed that South Africa should consider changing the existing capital allowance on equipment used to deliver sustainable power sources by offering an augmented grant of 100 percent of the capital cost obtained and introduce a motivation to invigorate more FDI in

the manufacturing sector. Table 1.1 contains descriptions of some present DTI impetus programmes.

Table 1.1. Summary of the DTI Incentive Schemes.

Programme	Purpose	Target	Offering
Automotive Investment Scheme (AIS).	Investment in light engine vehicles, and machinery manufacturing	Resident and Foreign Investors Grant support for the improvement of new investment in recognized automotive and component makers.	20-25% funding for qualifying investment in apparatus & gear and buildings.
Foreign Film and Television Production and Post-Production Incentive (Foreign Film)	To motivate and pull in huge-budget films and television creations and post-production work that will add towards job creation in South Africa.	Foreign and South African investors	Shooting on-site in South Africa, the impetus will be calculated at 25% of Qualifying South African Production Spending with a cap of R50 million

Source: Author adapted from The DTI Incentive Schemes Guide, 2018a.

Even though South Africa's macroeconomic rudiments seem sound, the nation keeps on grappling with the manifold difficulties of joblessness, neediness, high disparity and highest budget shortfall. Despite the improvement made by the government to react to these hitches, the battle against 'jobless' growth and extreme degrees of imbalance proceeds. In this manner, the country faces alarming difficulties as it contests with other emerging economies for a portion of FDI (Human Development Report, 2010). As indicated by UNCTAD (2019), China positions first in the BRICS in overall FDI inflow followed by Brazil, (see Figure 1.2). India positions third in overall FDI inflow between 2014 and 2018 while Russian Federation positions fourth around the same time. It is imperative to highlight that the Russian Federation was positioned third between 2010 and 2013. South Africa pulled in an about consistent and little portion of the global FDI streams during the most recent 7 years contrasted with different BRICS individuals from the coalition. Figure 1.2 presents the BRICS' FDI inflows from the year 2010 to 2018.

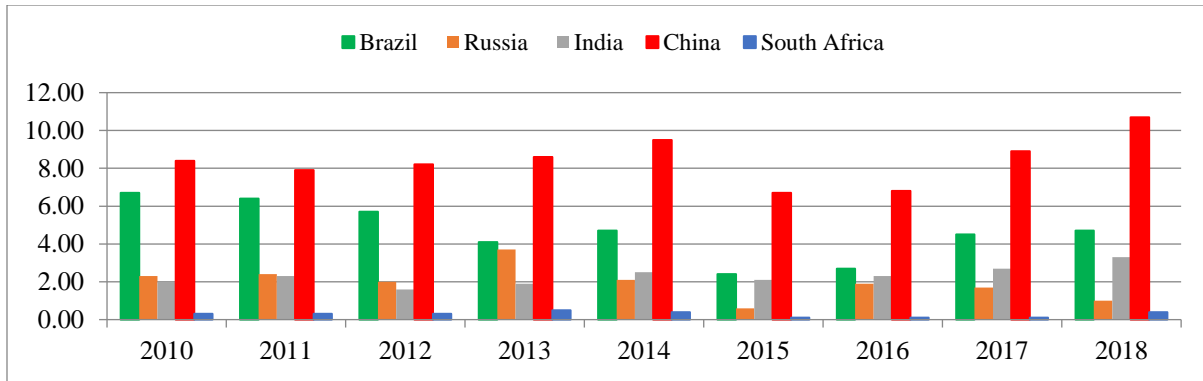


Figure 1.2. Foreign Direct Investment, inward flows (percentage of the world), 2010 -2018.

Source: Author's illustration using the UNCTAD (2019) data.

The affiliation between FDI and household investment is of utmost massiveness and both can impact each other in an economy (Ullah, Shah and Khan, 2014). Since the South African government and households have recorded ceaseless dissaving in recent years, the dependence has stayed on the private segment, just as on foreign capital inflows, to support savings-investments deficiency (IDC, 2017a). Ullah *et al.* (2014) claim that the growth in private investment indicates quantifiable profit in the domestic market whereas public investment shows the advancement in infrastructure and hence diminution in the cost of doing business. These parts of household investment reassure foreign investors to expand the advantages of great return. Given South Africa's low degrees of household investment and residential sparing, pulling in more prominent FDI inflows remained a test to animate growth.

South Africa's debt-to-GDP proportion keeps on becoming inferable from low growth, revenue deficiencies, currency devaluation, policy vulnerability and sovereign credit ratings, which added to an unfriendly investment condition (National Treasury, 2016). South Africa owes the greater part of what the nation produces every year to lenders. National Treasury (2019) data uncovered that the Government debt remains at R2.81 trillion or 55.6 percent of GDP in 2018/19 and premium costs keep on increasing. More prominent government debt is subsequent in growing debt servicing costs. A diminishing of the currency (Rand) causes the servicing costs of foreign debt progressively costly (National Treasury, 2017). Lily, Kogid, Mulok, Sang and Asid (2014) suggest that the depreciation of the host nation currency is probably going to draw in foreign capital inflows at least for the ensuing motive. The exchange rate reduction diminishes production overheads in the host nation, thus making it attractive for FDI searching for production viability and returns

(Blonigen, 1997). Despite a decline in the exchange rate, South Africa has failed to pull in higher FDI to animate growth.

Charkrabarti (2001) affirms that a growth model advanced by Lim (1983) supports the view that rapidly growing economies convey better estimates for profit-creation than slow or no-growth economies. South Africa's growth has remained slow throughout the years, demonstrating an absolute growth extent of under 4 percent between 1999 and 2007. It further dropped to 3.1 percent in 2008, 1.8 percent in 2009 before slightly growing to 2.9 percent in 2010. GDP growth rate was 1.9 percent in 2013, declining to 1.5 percent in 2014, 1.3 percent in 2015 and 0.3 percent in 2016 (Stats SA, 2017). Also, the GDP growth rate was 0.8 percent in 2018, down from 1.3 percent in 2017 (National Treasury, 2019).

Regardless of the expansion of FDI inflows to \$5.3 billion in 2018 likened to \$1.3 billion 2017, (UNCTAD, 2019), South Africa is yet confronting an economic fiasco highlighted by high degrees of destitution and inequality. In any case, the question remains whether FDI inflows have a momentous effect on economic growth in South Africa or how relevant FDI inflows are to South Africa's economic growth. Thus, in view of the preceding, the drive of the study is first to explore if there is a short and long-run linkage between FDI inflows and domestic investment and between FDI inflows and the exchange rate. Lastly, it aims to explore causality relationship between foreign debt in relation to FDI inflow and economic growth.

1.3 Objective of the study

Despite there being many studies carried out on FDI, domestic investment, foreign debt, the exchange rate and economic growth, little has been done to analyse linkages among them. Most studies tend to specialise in bidirectional causality as opposed to multiple causalities. Hence the most objective of this study is to look at the character of the causal relationship between FDI, domestic investment, foreign debt, exchange rate and economic growth in South Africa.

The specific objectives are as follows:

- To investigate the relationship between FDI and economic growth.
- To explore the impact of domestic investment on FDI and economic growth.
- To examine the influence of exchange rate on FDI inflows and economic growth.

- To investigate the impact of foreign debt on FDI and economic growth.

1.4 Hypothesis of the Study

The study will first, endeavour to explore whether domestic investment, foreign debt, exchange rate and FDI vitally add to economic growth in South Africa. Finally, the study will also endeavor to explore whether domestic investment, foreign debt, exchange rate and economic growth critically add to FDI inflows into South Africa. Contingent upon the reason, literature review and observations, eight points are conjectured to be confirmed statistically.

Hypothesis I

H₀: FDI has significant a positive effect on economic growth in South Africa.

H₁: FDI has no significant positive effect on economic growth in South Africa.

Hypothesis II

H₀: Domestic investment has a significant positive effect on FDI and economic growth.

H₁: Domestic investment has no significant positive effect on FDI and economic growth.

Hypothesis III

H₀: Real exchange rate has a significant negative effect on FDI and economic growth.

H₁: Real exchange rate has no significant negative effect on FDI and economic growth.

Hypothesis IV

H₀: Foreign debt has a significant negative effect on FDI and economic growth.

H₁: Foreign debt has no significant negative effect on FDI and economic growth.

If the outcomes, reveal that FDI has a positive and statistically significant effect on economic growth, the alternative hypothesis which states that FDI has a significant positive effect on economic growth in South Africa is accepted. The null hypothesis is rejected. This will agree with a priori expectation. Secondly, if the results of the analysis reveal that, domestic investment has a positive and statistically significant effect on FDI and economic growth, the alternative hypothesis which states that domestic investment has a significant positive effect on FDI and economic growth in South Africa is accepted. The null hypothesis is rejected. This will agree with a priori

expectation. Finally, if the result of the analysis uncovers that, exchange rate and foreign debt have a negative and statistically insignificant effect on FDI and economic growth, the alternative hypothesis which states that exchange rate and foreign debt have negative effect on FDI and economic growth in South Africa is accepted. The null hypothesis is rejected. This will be in accordance with the a priori expectation.

1.5 Significance of the study

The connection between FDI and economic growth in host nations remains one of the active conversations in literature (Sothan, 2017). Numerous policymakers and researchers contend that FDI can have vigorous valuable consequences for a host economy's formative procedure, (Alfaro, 2003; John, 2016). Owusi-Antwi, Antwi and Poku (2013); Hamza (2017) contend that FDI inflows to emerging nations give truly necessary funding to back domestic exercises making the stage for the transfer of innovation and specialised ability for the host nation. Melnyk, Kubatko and Pysarenko, (2014) suggest that when a local firm gets FDI, that firm acquires an upper hand because of the spillover of new information, experience, methods for creation and executives. FDI can impact the creation, employment, economic growth and general well-being of the recipient nation (Eradel and Tatoglu, 2002; Erum, Hussain and Yousaf, 2016).

Wöcke and Sing (2013), Olatunji and Shahid (2015) and UNCTAD (2017) contend that South Africa stays as one of the fundamental beneficiaries of FDI in Sub-Saharan-Africa even though it is unstable. As per Wang (2009) and Pegkas (2015), FDI is seen as a factor that drives economic growth. Arawomo and Apanisile (2018) discovered that market size and trade transparency have a beneficial outcome on FDI, while Olagbaju and Akinlo (2018) give an empirical indication that financial deepening improvement has a critical impact on connecting FDI to economic growth. Then again, Sidduqui and Ahmed (2017) underline the significance of minimum degrees of human capital improvement. Others demonstrate that the connection between FDI and growth is uncertain (Najaf and Ye, 2018). Likewise, some empirical discoveries do not bolster the notion that FDI has a positive effect on growth (Carbonell and Werner, 2018). Although the growth impact of FDI is sometimes doubted, it is also ardently argued that the variable has a basic role in economic growth as its advantages can be seen in numerous nations around the world (Sothan, 2017).

Examining South Africa is interesting, since although having the highest level of development in physical and financial infrastructure, as well as human capital accumulation in the African continent. Strauss (2015) contends that there is an equivocalness effect of foreign direct investment on economic growth in the long run. Strauss further contends that this prompts debate on whether the existing literature is inappropriate in clarifying the elements of foreign direct investment and economic growth satisfactorily or fairly due to South Africa's "dual economy" of sophisticated financial markets and industrialisation in some sectors but with persistent joblessness, poverty and policy ambiguity (Wocke and Sing, 2013).

Osinubi and Amaghionye (2010) affirm that foreign direct investment supplements residential financial capitals to enable a nation and increase the expectations of living. Given South Africa's low degree of residential savings and household investments, greater FDI inflows are crucial to spike growth. The South African government has boarded on borrowing externally for the primary reason of financing the expanded extent of fiscal exercises for economic growth. Azeez, Oladapo and Aluko (2015) contend that external debt and FDI encapsulate foreign capital inflows which are probably going to expand the pace of capital arrangement that is central in driving economic growth. In any case, numerous questions persist about the critical effect of FDI and foreign debt on economic growth of South Africa.

Irrespective of the existence of contrasts in econometric approaches, various scholars have endeavoured to gauge if an increment in FDI, domestic investment, and foreign debt prompts economic growth. This connection has anyway triggered some discussion among authorities and the discussion across philosophies on the nexus has not been fittingly established at this point. Previous studies have scrutinized the causes of FDI streams and FDI-growth ties into South Africa yet the outcomes on empirical confirmations are blended relying upon the timespans, variables utilised, and applied procedure. Table 1.2 shows a synopsis of selected empirical studies on South Africa.

Table 1.2. Summary of South African studies.

Author(s)	Periods	Methodology	Variables	Keys Findings
Sunde (2017)	1990-2014	ARDL bounds testing and the VECM Granger causality approach	GDP, FDI and Exports	FDI and exports stimulate economic growth.
Megbowon, Ngarava, and Mushunje (2016)	1980-2014	Multivariate models, co-integration and causality	FDI, employment and gross capital formation	Long-run association among variables, except gross capital formation. No causality was found between variables.
Strauss (2015)	1994-2013	Vector Error Correction Model	FDI, absorptive capacity and GDP	Ambiguity outcomes as no long-term effects between the variables are found.
Khobai, Hamman, Mkhombo, Mhaka, Mavikela and Phiri (2017)	1970-2016	Quantile regressions	FDI, domestic investment and per capita GDP growth	Negative influence on welfare at very low quantiles Domestic investment on welfare is certain and noteworthy at all levels.
Akoto (2016)	1960-2009	Granger causality	FDI, exports and GDP	Bi-directional causality between GDP and exports, with unidirectional causality from FDI to exports and FDI to GDP.

This study diverges from prior studies that concentrated on the FDI- growth connection into South Africa. Firstly, it investigates the effect of domestic investment, foreign debt, real exchange rate and FDI in advancing growth in South Africa. Secondly, it investigates the effect of domestic investment, foreign debt and real exchange rate and economic growth in drawing in FDI inflows into South Africa. Thirdly, it sub-partitions domestic investment into (i) credit to the domestic private sector, (ii) public investment by public corporations and (iii) government investment expenditure. In conclusion, utilising three segments of domestic investment will assist with finding out if there are any substitution or reciprocal relations among FDI and domestic investment segments. Most of the studies in South Africa, in general, focus on bidirectional causality instead

of multiple causalities. The question that goes to the fore is what is the effect of domestic investment, foreign debt, real exchange rate and economic growth on FDI inflows into South Africa throughout the years? Do domestic investment, foreign debt and real exchange rate and FDI inflows rouse economic growth in South Africa?

The discussion on the nexus among these variables of interest has not received incredible courtesy in South Africa. Whereas a deterioration of South Africa's currency may bring down the overall expense of investment, and in this way, advances FDI inflows, then again, a declining currency will make the expense of servicing foreign debt increasingly costly. FDI, domestic investment and foreign debt are a crucial wellspring of public and private financing in South Africa and convey the possibility to assume a key role in advancing economic growth. This also exhibits the need of this study, as it tries to give new empirical discoveries that will essentially enhance the accessible literature on economic growth, domestic investment, foreign debt and exchange rate.

Then again, South Africa's economic magnitude is very nearly constriction and this study is in the process of discovering the portion of the indirect nexuses of FDI and economic growth. Accordingly, this study is an enrichment to the available FDI and Gross domestic product literature and will endeavour to fill in the information gaps. Moreover, the government will be in a superior situation to decide if to seek after strategies intended to attract FDI or domestic investment.

1.6 Scope and delimitation of Study

The study utilises total FDI inflows and domestic investment from 1980 to 2016 to analyse FDI and domestic investment data applied in the model. The use of aggregate data does not distinguish the impact of each sectors' contribution to economic growth in South Africa. This has an implication on executing policies aimed to promote and attract the specific type of FDI or domestic investment that South Africa desires.

1.7 Outline of the Study

Succeeding this introductory chapter is the rest of the study arranged into five more chapters. Chapter 2 presents an overview of FDI inflow trends and economic growth in South Africa. This is followed by a third chapter conferring the theoretical review of the endogenous growth theories, motives of FDI and foreign direct investment theories, before presenting the new empirical

evaluation of the indirect linkages among FDI and economic growth. Chapter 4 discusses the econometric methods applied for analysis in the study. This chapter also defines and explains data and variable selection. This is followed by Chapter 5, which offers a report and interpretation of empirical results. Finally, Chapter 6 presents a summary of the key results, conclusions and policy recommendations.

CHAPTER TWO

AN OVERVIEW OF FDI INFLOW AND ECONOMIC GROWTH IN SOUTH AFRICA

2.1 Introduction

This chapter reviews FDI and economic growth trends in South Africa post-1994. This chapter is separated into ten parts. The first part of this chapter presents the general background of FDI in South Africa. This is followed by a part providing historical trends on Global FDI in emerging economies (BRICS), Africa and South Africa. Part three features the sectors attracting FDI in South Africa. This is followed by a section discussing the key sources of FDI inflows in South Africa. The sixth part confers the determinants of FDI in South Africa while the seventh part presents and discusses the South African government's economic strategy. The eighth part deliberates an overview of economic growth. Factors affecting economic growth in South Africa are discussed in the ninth part. The last part summarises and concludes the chapter.

2.2 Historical Background of FDI inflows into South Africa

FDI inflow into South Africa cannot be separated from the nation's authentic scenery of isolation prior 1994. Wood (2014) contends that the advancement of FDI was recognised as a government need as South Africa emerged from apartheid in the mid-1990s. Kransdorff (2010) further argues that FDI has been distinguished as one of the key segments required to animate economic growth a great deal more in a nation like South Africa with inadequate reserve funds. Kransdorff (2010) expresses that South Africa's investment approach intends to both develop and diversify the economy, with an accentuation on the advancement of the manufacturing sector. Vickers (2002) underlined that efficiency-seeking investment in South Africa's export-oriented manufacturing industry has been low. Vickers (2002) further contends that regardless of sound macroeconomic rudiments, South Africa is performing inadequately in drawing in FDI compared to other emerging economies. Since South Africa's evolution to a democracy in 1994, inward FDI flows have been unable to arrive at the degrees of similar economies in Asia and Latin America, averaging under 1.5 percent of GDP between 1994-2002 and 1.4 percent of GDP in 2011 contrasted with 4.3 percent in Malaysia, and 7 percent in Chile (Wocke and Sing, 2013). Similar discoveries were made by UNCTAD (2017) report, that FDI inflows to South Africa have stayed at low extents compared to other emerging economies. OECD (2015); Wocke and Sing (2013) distinctive this

low degree of FDI to what has been partially due to South Africa's "dual economy" of advanced financial markets and industrial progress in certain industries however with steady joblessness, neediness and policy vulnerability. Nonetheless, UNCTAD (2019) contend that South Africa stays as one of the dominant beneficiaries of FDI in Sub-Saharan-Africa even though it is unpredictable.

In another study, South Africa's FDI inflows are appeared to have been generally reigned by the natural resources sector, especially mining, trailed by manufacturing and services (Wentworth, Schoeman and Langalanga, 2015). As of late, a large portion of the FDI inflows into South Africa are market and efficiency seeking, as they emerge largely in financial services, manufacturing, telecommunication and food and beverages sectors, (Olatunji, and Shahid, 2015; UNCTAD, 2017). The solid growth of FDI in the manufacturing industry has been the repercussion of well-structured and well-managed government strategies, precisely in the automotive sector. Incentives accessible to the automotive sector have upheld reported investments of more than R20 billion (National Treasury, 2016). FDI into the manufacturing segment, compared to other industries, has great potential to create jobs, ease destitution, lift economic growth and bolster industrial diversification. In 2018, the South African government approved the South African Automotive Masterplan. The plan intended at (i) fuelling growth in the industry (ii) to double employment in the sector to 224 000 jobs by 2035 (DTI, 2018b).

2.3 Overview of FDI flows

2.3.1 Global Trends of FDI

Global FDI streams fell by 13 percent in 2018 to \$1.3 trillion from \$1.47 trillion out of 2017 (Figure 2.1). As per the World Investment Report (WIR) (2019), the third sharp serial decrease in FDI in 2018 was because of huge repatriations of held profit by the United States of America multinational firms. In 2017, the decrease in FDI streams compared to the earlier year was in stark contrast to other macroeconomic variables, for example, trade and GDP (WIR, 2018). While the 2016 weakening was due to weak economic growth and significant policy risks, as perceived by multinational enterprises (MNEs) (WIR, 2017). In 2015, the global FDI streams improved by 38 percent to \$1.76 trillion, their pinnacle level since the global economic and financial tragedy of 2008 and 2009 (WIR, 2016). Nonetheless, the WIR (2016) contend this growth did not convert into an equivalent growth in productive capacity in all nations.

FDI streams to *developed economies* declined by 27 percent in 2018 arriving at the most minimal levels since 2014. Earlier 2018, FDI in these economies fell by one third to \$712 billion in 2017 after an expansion of 5 percent to \$1 trillion in 2016, likened to their second most elevated level, at \$962 billion in 2015 (WIR, 2018).

As indicated by WIR (2019), FDI inflows into *transition economies* weakened for a second progressive year by 28 percent in 2018, to about \$34 billion. The WIR (2017) report demonstrated that FDI streams to these economies almost multiplied in 2016 to \$68 billion, succeeding two years of sharp exacerbating decline, reflecting tremendous privatisation contracts and improved interest in mining exploration exercises. In 2015, FDI streams to these economies fell further by 38 percent to \$35 billion (WIR, 2016).

Be that as it may, FDI to *developing economies* saw an expansion of 2 percent to \$694 billion in 2018 (UNCTAD, 2019). In 2017, inward FDI stayed steady at \$671 billion and in 2016 FDI inflows to these economies fell 14 by percent to a projected \$646 billion after inner FDI arrived at another high of \$765 billion in 2015. The WIR (2019) shows that the FDI streams to developing Asia were up 4 percent while FDI streams in Latin American and the Caribbean was 6 percent low in 2018 In 2016, FDI streams to developing Asia economies shrunk by 15 percent to \$443 billion even though in 2017 stayed consistent, at \$476 billion (WIR, 2018). This first debilitating in 5 years was broad, with twofold digit drops in most sub-regions aside from South Asia. Moreover, the sliding pattern in FDI streams to Latin America and the Caribbean upgraded, with inflows dropping by 14 percent in 2016 to \$142 billion, because of unyielding economic downturn, weak commodity costs and weights on exports (WIR, 2017). Be that as it may, in 2017 FDI to Latin America and the Caribbean nations rose by 8 percent to reach \$151 billion, upgraded by the locale's economic recuperation. FDI streams to the African area are conferred in segment 2.3.2.

The WIR (2017) uncovered that FDI streams to the *least developed economies* fell by 13 percent in 2016 to \$38 billion and fell pointedly by 17 percent, to \$20 billion in 2017 (WIR, 2018). However, in 2018 FDI flow to these economies recouped from their 2017 fall, back to \$24 billion. Figure 2.1 presents global FDI streams and by a group of economies from the year 2005 to 2018.

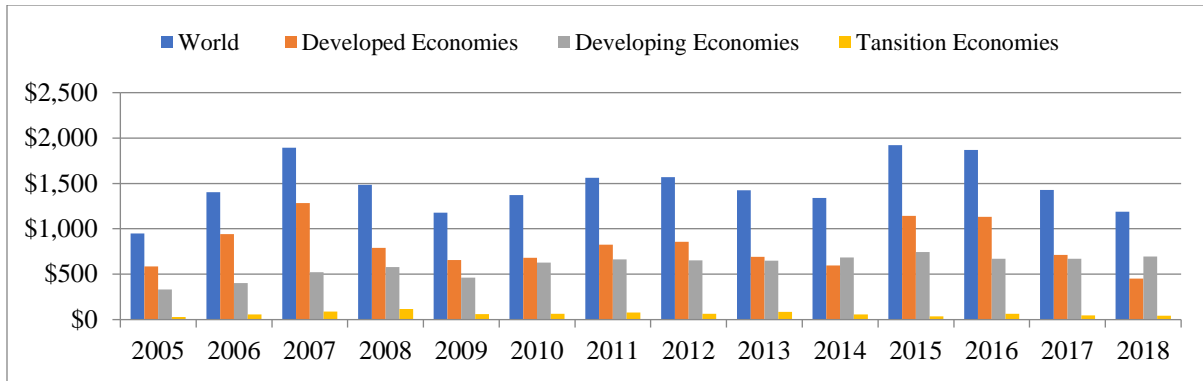


Figure 2.1. Global FDI inflows by a group of Source:

Author’s illustration using the UNCTAD (2019) data. economies, (billions of US\$), 2005 – 2018.

2.3.2 FDI in Africa

FDI streams to Africa drooped to \$38 billion in 2017, a 21 percent decrease from 2016, while in 2018, Africa enlisted 11 percent expansion in FDI inflows to \$46 billion (WIR, 2019). Then again, WIR (2016) also demonstrated FDI streams to Africa tumbled to \$54 billion in 2015, a lessening of 7 percent over the earlier year. In 2016 FDI streams enrolled a further decay of 3 percent to \$59 billion (WIR, 2017). The report indicated that the low degree of commodity costs remains to impact resource-seeking FDI.

As per the WIR (2019) Egypt was the greatest beneficiary of FDI in Africa in 2018, with a decrease of 8 percent to \$6.8 billion. South Africa which had seen a lofty fall in FDI inflows since 2014, enlisted a powerful recuperation in 2018 with FDI inflows adding up to \$5.3 billion in 2018 from \$1.5 billion out of 2017. The ascent in South Africa pushed up streams toward the Southern African locale in 2018. North Africa FDI streams climbed by 7 percent to \$14 billion. West Africa saw a decay of 15 percent to \$9.6 billion in 2018, because of Nigeria where FDI streams bounced by 43 percent to \$2 billion (WIR, 2019). East Africa held a stable FDI stream at \$9 billion. The report shows that East Africa is the quickest growing district of the landmass as far as FDI streams. Central Africa experienced 6 percent diminishes compared to the earlier year. Figure 2.2 shows Africa's FDI inflows for the period from 2005 to 2018.

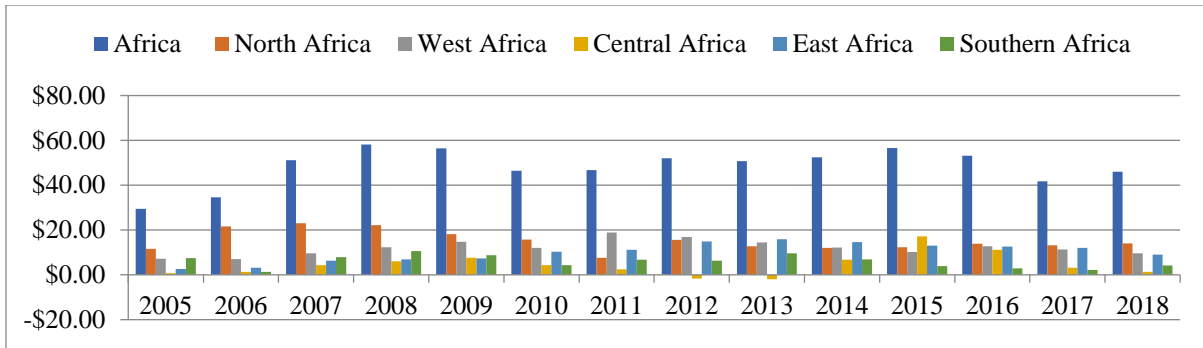


Figure 2.2. Africa FDI inflows, (*billions of US\$*), 2005 – 2018.

Source: Author’s illustration using the UNCTAD (2019) data.

2.3.3 FDI in Emerging Economies (BRICS)

FDI in BRICS is extremely focused on China alone getting in excess of 50 percent of the gathering's total FDI inflows in 2015 (UNCTAD, 2016). Besides, UNCTAD (2019) data uncovered that China kept up its dominance among BRICS nations in drawing in FDI inflows for the indicated years 2005-2018. At the contrary shaft, South Africa recorded the littlest FDI inflows compared to the BRICS gathering of nations all through the period considered as appeared in Figure 2.3. South Africa pulled in \$5.3 billion FDI in 2018 contrasted with and \$1.5 billion in 2017. The UNCTAD (2016) report also shows that the portion of intra-BRICS investment in total FDI flows to the group was under 1 percent in 2010 and 2014, and intra-BRICS cross-border merger and acquisition (M&A) deals have also stayed low, averaging \$2 billion in 2014–2015. This demonstrates BRICS individuals are not dynamic investors in one another's economies. To put the BRICS FDI inflows data in context, Figure 2.3 shows the FDI inflows from the year 2005 to 2018.

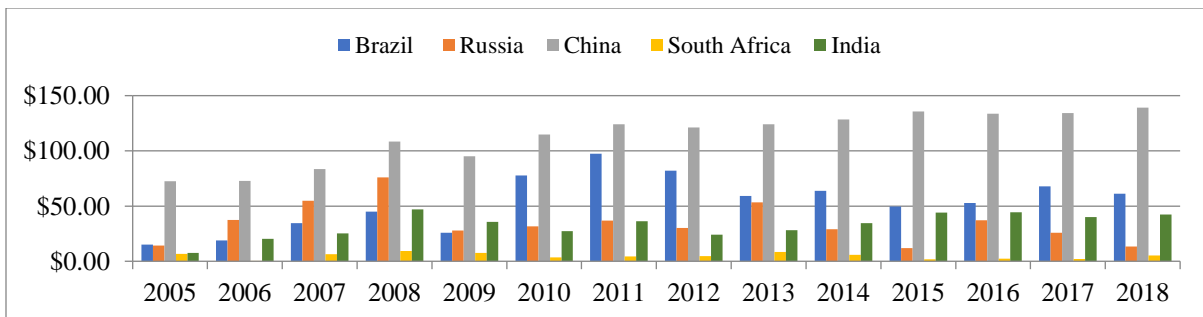


Figure 2.3. BRICS FDI inflows (*billions of US\$*), 2005-2018.

Source: Author’s illustration using the UNCTAD (2019) data.

2.3.4 FDI Trends in South Africa

UNCTAD (2017) contend that previously, South Africa pulled in noteworthy FDI as global firms considered the country as an entryway to African markets, and a key region for commodity export. This pattern has kaput because of political and economic steadiness in numerous African nations and FDI into South Africa dropped as of late (UNCTAD, 2017). Between 2002 and 2014, total FDI in South Africa rose three-crease, easing back just quickly around the time of the global financial crisis. FDI data from the UNCTAD show that FDI streams to South Africa arrived at a record level of \$8.3 billion in 2013 was still high at \$5.77 billion in 2014, except FDI streams tumbled to \$1.8 billion in 2015. FDI streams tend to be flighty, however, the 2015 level is the most minimal level in ostensible terms since 2006. UNCTAD credited the South African tumble to a lacklustre economic execution, low commodity costs and higher power costs. In 2016 FDI inflow to South Africa expanded by 38 percent compared to 2015 arriving at the unassuming degree of \$2.4 billion (UNCTAD, 2017). In addition, the UNCTAD (2017) report shows that the sectors pulling in the most FDI are energy, telecommunication and services. FDI streams into South Africa developed from \$1.5 billion in 2017 to \$5.3 billion in 2018, (WIR, 2019). This FDI growth was because of President Ramaphosa's investment drive. Figure 2.5 presents South Africa FDI inflows from the year 1994 to 2018

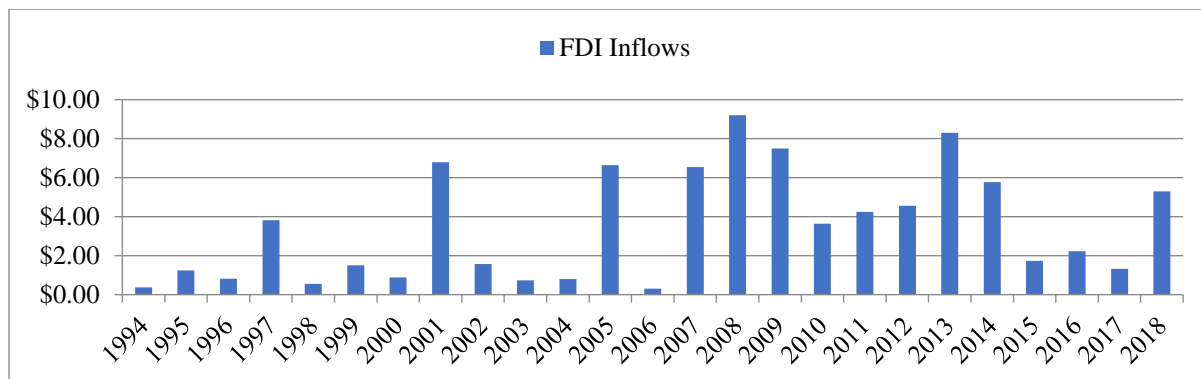


Figure 2.5. South Africa, inward FDI flows (*billions of US\$*), 1994-2018.

Source: Author's illustration using the UNCTAD (2019) data.

As for the influence of FDI inflows to a nation's GDP, FDI data from the World Bank displays that South Africa's FDI net stream as a ratio of GDP arrived at a low record level of 0.5 percent in 2015 (Figure 2.6) and this was the most reduced net inflows ratio of GDP since 2006. The most elevated level of net streams as a ratio of GDP rate was recorded in 2001. In 2017, FDI net streams as the

ratio of GDP declined by 0.59 percent compared to 0.75 percent in 2016. Be that as it may, in 2018 FDI as a ratio of the GDP recuperated by 1.5 percent. Figure 2.6 presents South Africa's FDI net inflow as a ratio of GDP from the year 1994 to 2018.

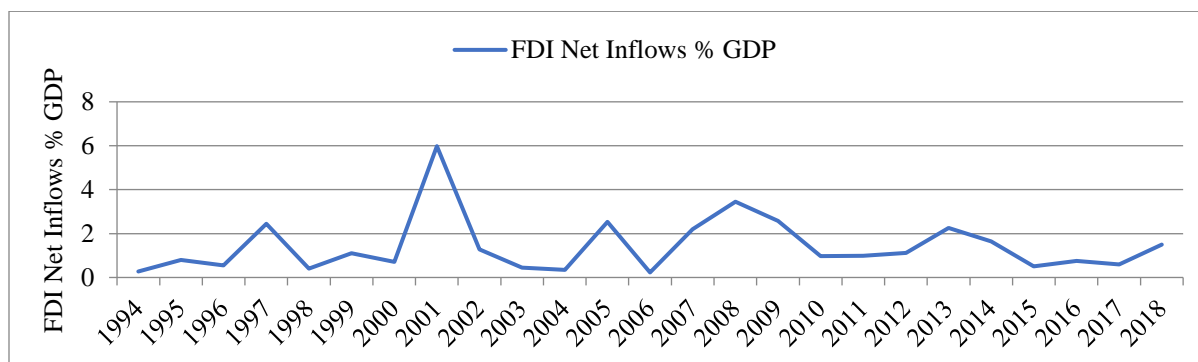


Figure 2.6. South Africa FDI net inflows (% of GDP), 1994-2018.

Source: Author's illustration using World Bank (2019) data.

2.4 Sectors Attracting FDI in South Africa

South Africa's FDI inflows have moved from its reigned conventional sectors (mining, trailed by manufacturing) to financial related services, which are the primary supporters of the GDP. Woods (2014) contends that market-seeking investment, which commands in South Africa, is bound to support the acquisition of local firms. Finally, the South African market is concentrated, portrayed by enormous competitive oligopolies in industries, for example, retail trade, banking and telecommunications. Ingress by foreign investors into such markets without a resident partner would be too costly. Acknowledgment of this empowers the acquisition of existing businesses as opposed to the development of new amenities. The top five sectoral distribution of inward FDI stock is presented in table 2.1.

Table 2.1. FDI Inflows by Industry

Main Invested Sectors	2015, (%)	2016, (%)	2017, (%)
Financial & insurance services, real estate and business services	40.7	42.1	44.6
Manufacturing	28.9	20.8	15.9
Mining	15.9	20.5	21.2
Transport, storage and communication	10.0	10.4	10.2
Trade, catering and accommodation	4.0	4.5	6.5

Source: South African Reserve Bank, Quarterly Bulletin June 2019c: s-102-s103.

2.5 Main Sources of FDI inflows in South Africa

United Kingdom (UK) remained the main wellspring of FDI inflows into South Africa as indicated by the SARB (2019a) report. The FDI inflows held by UK firms in South Africa were 27.0 percent of the total FDI inflows into South Africa in 2017, a decrease of 11.4 percent from 38.4 inflows in 2016. Then again, firms from the Netherlands held 18.0 percent FDI inflows in 2016, a 3.4 percent decay. The United States and Germany stayed at third and fourth positions in 2016 respectively. In 2017, Belgium surpassed the United States for the third position. Table 2.2 presents South Africa's FDI flow by country.

Table 2.2 FDI inflows by country.

Main Investment Countries	2016, (%)	Main Investment Countries	2017, (%)
United Kingdom	38.4	United Kingdom	27.0
The Netherlands	21.4	The Netherlands	18.0
United States	6.8	Belgium	14.8
Germany	5	United States	6.7
China	4.2	Germany	4.9

South African Reserve Bank, Quarterly Bulletin June 2019a: s-94-s101.

The UK's withdrawal from the European Union (EU) delivers extra equivocality. Its effect is and will stay to be passed on through a few channels, including investment and trade flows. The South African economy stands to be influenced also, largely if economic conditions in the UK debilitate fundamentally, given that it is a noteworthy trading partner, the biggest foreign investor in the country and a key wellspring of vacationers (IDC, 2017b).

2.6 Determinants of FDI in South Africa

2.6.1 Domestic Investment

Alfaro, Chanda, Kalemli-Ozcan and Sayek, (2004) contend that the positive spillovers of FDI on economic growth work through expanding domestic investment in the host economy. Domestic capital (investment), which incorporates both private and public investment, is an imperative component of entire investment for most economies, especially industrialized nations (Olise, Anigbogu and Okoli, 2013). At the point when the household reserve funds fall short relative to the potential investment, FDI is seen as a choice to fill-up that gap. The evidence proposes a solid linkage between FDI and local investment. Ndikumana and Verick, (2007) contend that the link runs the two different ways, and the effect of private residential investment on FDI is more

grounded and gradually vigorous. This suggests that colossal local private investment is an indicator of immense earnings to capital, which draws in foreign capital. The general investment in an economy is cumulatively the sum of both local and foreign investment.

The public sector (i.e. government and public companies) has been the key riding force at the back of fixed investment activity in the South African economy in the remaining few years. Table 2.3 shows the share change at seasonally adjusted annualised rates of gross fixed capital formation from the year 2014 to 2018.

Table 2.3. Gross Fixed Capital Formation, 2014-2018.

Sectors	2014	2015	2016	2017	Q1'18	Q2'18	Q3'18	Q4'18	2018
General Government	8.7	13.4	1.1	0.2	-14.1	-4.3	-9.0	-4.1	-4.4
Public corporations	-0.6	2.8	-1.6	-11.7	-15.5	-13.8	-7.9	-5.6	-12.5
Private sector	0.8	-0.5	-6.0	5.0	-6.7	-1.3	2.9	-1.4	2.1

Source: Author's table adapted from the SARB, 2019b.

The annual growth in fixed capital investment by *general government* shrunk by 4.4 percent in 2018 following a little increment of 0.2 percent in 2017 (SARB, 2019b). This was because of deferrals in the unveiling and completion of enormous infrastructure projects in 2018. However, in 2016, growth in investment spending measured only 1.1 percent, likened to 13.4 percent in 2015 and 8.7 percent in 2014.

Capital spending by *public corporations* also proceeded feeble and shrunk by 5.6 percent in the fourth quarter of 2018 after having declined by 7.9 percent in the third quarter. In any case, the pace of decay eased back to 12.5 percent in 2018 from 11.9 percent in 2017 because of governance challenges at these institutions (SARB, 2019b). Capital spending by public corporations dropped by 1.6 percent in 2016 compared to 2.8 percent expansion in 2015 from a 0.6 percent shrinkage in 2014, with moderate interest, among other factors, adding to the rescheduling or withdrawal of a portion of their investment plans.

Capital spending by the *private sector* contracted by 1.4 percent in the final quarter of 2018 after a bounce-back of 2.9 percent in the third quarter. For the year 2018, capital expenditure by the private sector expanded by 2.1 percent following an expansion of 5.0 percent in 2017. This was due to weak demand and a general absence of certainty reduced expenditure on hardware and gear in 2018 (SARB, 2019b). Capital spending by the *private sector* stayed frail in 2016. As per SARB

(2017), the 6 percent drop in private sector fixed investment mirrors the low degrees of business trust in South Africa, surplus production capacity, rising operational costs and controlled demand.

2.6.2 Real Exchange Rate

Exchange rate solidness has an immediate effect on FDI inflows. Thus, frequent fluctuations in the value of the domestic currency upset the market situations and repatriation of assets by foreign investors will endure large losses (Shrivastava, 2018). This can create a weak market position for the host nation in the universal competitive ground. While minor fluxes in the exchange rate are manageable, huge variances can create hefty losses for investors. Figure 2.7 shows, that the Rand, which is one of the most exchanged currencies in the world, has been deteriorating since mid-1990s. It has also endured three main currency stuns, in early 1996, mid 1998 and late 2001. There was a substantial deterioration of the Rand’s real effective exchange rate from 104.75 percent in 1995 to 69.45 percent in 2002. In 2002, the real effective exchange rate arrived at its least rate since the dawn of democracy in 1994. Aspects that include low global commodity prices and speculative attacks on the currency prompted a severe degrading in the currency (MacDonald and Ricci, 2004). A devaluation of the Rand’s real effective exchange rate from 100 percent in 2010 to 87.17 percent in 2018 can be noted. Figure 2.7 shows the movements of South Africa’s real effective exchange rate from 1995 to 2018.

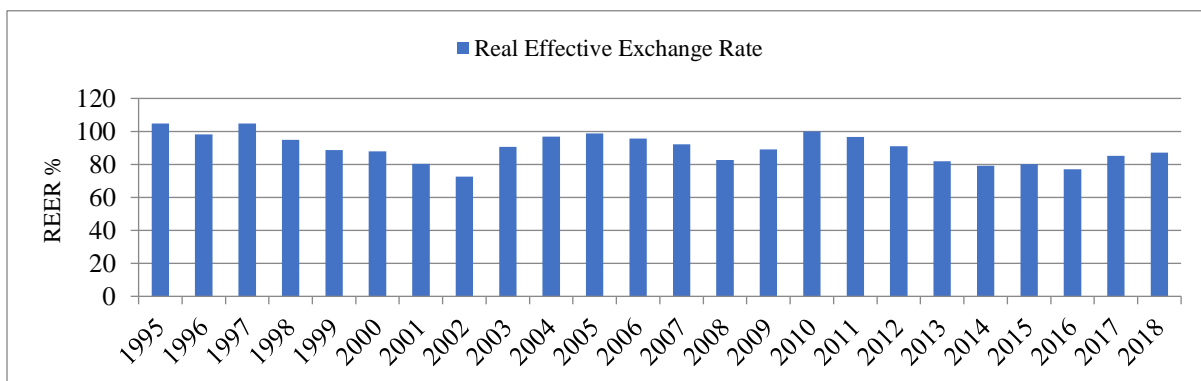


Figure 2.7. South Africa’s Real Effective Exchange Rate, 1995-2018.

Source: Author’s illustration using World Bank (2019) data.

Aliber (1971) contends that more fragile currencies have a greater FDI-fascination ability and are better armed to exploit contrasts in the market capitalisation rate compared to more grounded nation currencies. Considering Aliber's (1971) sights, this study aims to explore the impact of real exchange rate on FDI inflows and economic growth in South Africa.

2.6.3 Foreign Debt

Foreign debt and FDI are foreign capital that can possibly invigorate the economic growth of South Africa. These capital inflows are probably going to expand the degree of capital gathering which is central to drive economic growth (Azeez *et al.* 2015). The foreign debt shape of South Africa has been on the hike and has established a premise of worry about the future debt shape of the nation. Of late, the government has boarded on borrowing externally for the focal drive of financing a greater share of fiscal exercises for economic growth. As per SARB (2019a) data, South Africa's remarkable foreign debt rose from 21.2 percent in 1994 to 28.7 percent in 1999. In 2000 and 2001 foreign debt tumbled to 27.1 percent and 25.1 percent respectively before rising again in 2002 to 29.4 percent. In 2005 the foreign debt of South Africa arrived at its most reduced level at 18.9 percent. Since that point forward the foreign debt has been continually expanding until it arrived at its highest level of 49.6 percent in 2017. Higher foreign debt brings about rising debt servicing costs, which have been the quickest emergent expenditure item as of late. This endless increment in foreign debt is not workable for the nation's long-run growth. Figure 2.8 presents South Africa's foreign debt as a percentage of GDP from the year 1994 to 2018.

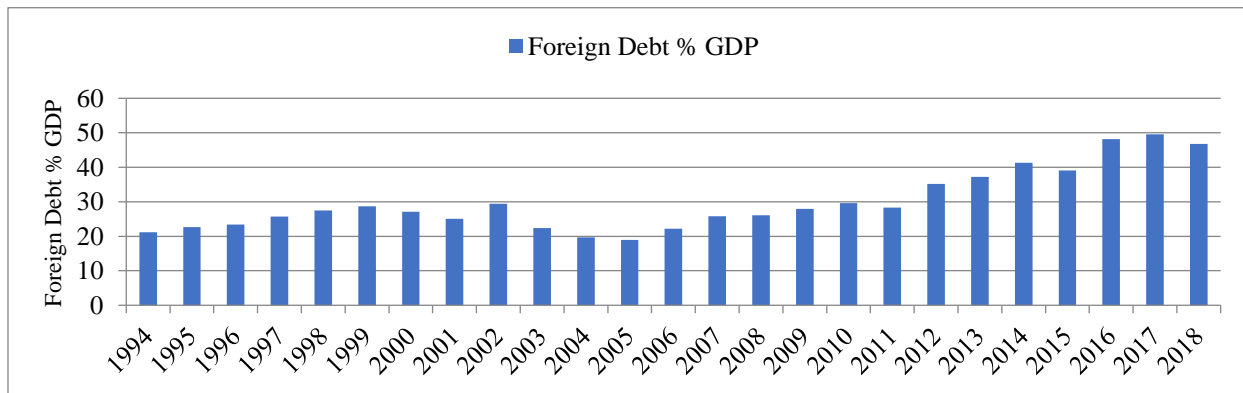


Figure 2.8. South Africa's Foreign Debt (% of GDP), 1994-2018.

Source: Author's illustration using SARB (2019) data.

The nexus between foreign debt, FDI inflows and economic growth is at the core of this study, given South Africa's low degrees of FDI inflows and economic growth. As per Ouhibi's (2017) views, low economic growth causes an expansion of the foreign debt rate and lower FDI inflows. In this way, this study looks to establish the impact of foreign debt on FDI inflows and economic growth in South Africa.

2.6.4 Inflation Rate

Leitao and Rasekhi (2013) argue that inflation is the other element that prompts uncertainty about the upcoming investment tasks and hence lessens the degree of investment and growth. Also, inflation may decrease the global intensity of the nation by causing exports to be more generally costly. Moreover, low inflation as a tenacity index diminishes methodical hazard and supports investment, trade and economic growth. Then again, a high inflation rate makes macroeconomic vulnerability which reduces economic effectiveness and later constrains growth. South Africa's inflation rate declined to 4.5 percent in 2018 from 5.2 percent in 2017. The decrease was the second back to back year's fall in inflation, after a firm hike in 2016 to an average of 6.59 percent for the year contrasted with 4.99 percent in 2015 (World Bank, 2019). Higher oil cost and nourishment costs due to extreme drought conditions supported this rising pattern. In 2002, the inflation rate arrived at its most elevated since the dawn of democracy, at 12.24 percent. A consistent decline of the inflation rate was noted between 2008 and 2015. In 2018, the inflation rate arrived at its most reduced level of 4.5 percent. Figure 2.9 presents South Africa's swelling inflation rate from 1994 to 2018.

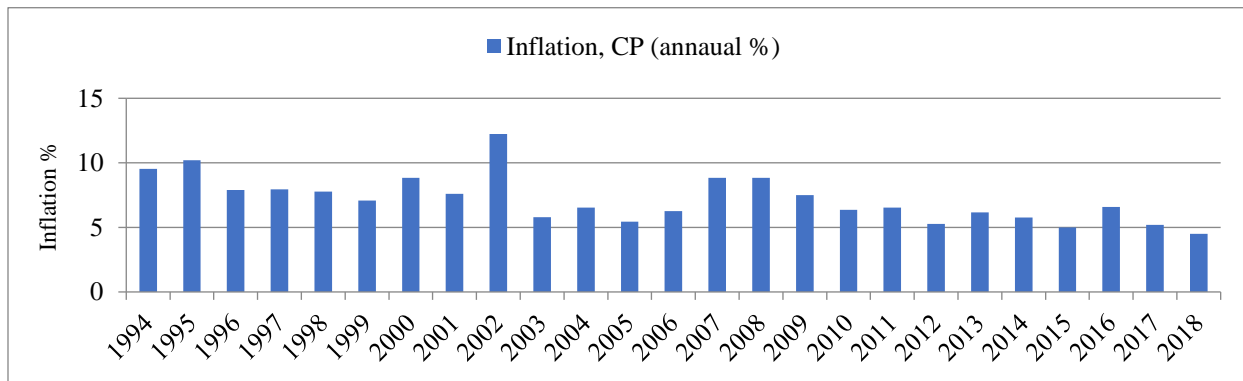


Figure 2.9. South Africa's Inflation Rate, 1994-2018.

Source: Author's illustration using the World Bank (2019) data.

Nnadi and Soobaroyen (2015) contend that a higher inflation rate could chase away forthcoming and already existing foreign investors. An expansion in the inflation rate in the host nation diminishes FDI as it disintegrates the worth of the benefits made by foreign multinationals (Sayek, 2009). Despite what might be expected (Obiamaka, Onwumere and Okpara, 2011) strikingly bring up that inflation in a host nation can positively affect FDI inflows on condition that it does not outperform a specific edge level.

2.6.5 Political Stability and Risk

Political and risk stability are swaying the decision whether to invest or not in an area (Dunning 1993; Moosa 2002). Political risk includes any politically-related activities that intrude upon the execution of business and economic activities. They include, political uprisings, government takeovers of private property, labour uprisings among others (Daniels, Radebaugh and Sullivan, 2002). Political stability is central to foreign and resident investor confidence. South Africa has numerous significant post-apartheid foundations, for example, its sovereign constitutional court, the public protector's office and a free media. Cilliers and Aucoin (2016) contend that under former President Jacob Zuma, the uprightness and proficiency of these formations was heavily compromised by unfit leaders that are parachuted in as a feature of the African National Congress' (ANC) strategy of cadre placement, and more recently, as a result of individual loyalty to the president. As per OECD, (2016) the main momentary risk for South Africa is a sovereign downgrade by rating agencies. In this kind of scenario, a downgrade would prompt a transitory spike in interest rates and a further debilitation of the Rand (OECD, 2016). In an additionally stressful situation, it could cause a sharp inversion of capital flows and a recession. In Haasbroek (2020) states that Moody's rating agency has reacted to South Africa's debt and deficiency risks and cautioned that, fiscal shortages will hover between 6 and 7 percent of GDP in the next few years and this will expand the government's debt burden. The main external risks are connected to Brexit which could have contrary effects on investment flows and the stability of the Rand.

2.6.6 Fiscal Incentives

Lim (2001) contends that fiscal impetuses increase a host nation's location advantages. Fiscal impetuses are the most suitable approach to pull in FDI inflows as they have no immediate drain on public possessions (Shah, 2003). Fiscal stimuli could be in the form of tax allowance incentives or foreign investment grants.

2.6.6.1 Tax allowance incentives

The connection between tax motivating forces of FDI is a continuous discussion that has existed for quite a while in public finance and macroeconomics. As indicated by Botha (2010:39) tax, even though not by any means the only force with regards to investment incentivisation, has been gradually significant relative to other motivating forces. One of the key territories where South

Africa was able to secure massive FDI inflows was where noteworthy tax motivators were made accessible to such investments. For example, the Motor Industry Development Plan (MIDP) is widely seen as an essential success factor behind South Africa's trade and manufacturing strategies. This worked through an export refunds programme that allowed vehicle producers to defuse import obligations and cut the *ad valorem duty* on presentation of import rebate credit certificates (IRCC), (Wood, 2014). As per the World Bank's (2017) report, South Africa needs to offer better tax impetuses to precise industries of its economy to spark growth and job creation. The report shows that the trade, agricultural, manufacturing and construction sectors react certainly to tax impetuses by growing employment.

2.6.6.2 Foreign Investment Grant (FIG)

Financial impetuses, for example, grants and endowments are essential to the degree that they lower investment costs and thus decrease initial project hazard. The point of FIG is to repay qualifying foreign investors for costs gained in moving qualifying new hardware and gear and setting up industrial ventures in South Africa. A cash grant is determined as the littler of 15 percent of the value of qualifying imported apparatus and gear to a limit of R10 million.

2.6.7 Financial Markets

Financial markets influence economic growth considerably if the host economy has a sufficiently evolved local financial market (Alfaro *et al.*,2004). Similarly, Charles, Joshua, Kofi and Nyavor-Foli, (2012) further expressed that FDI is increasingly gainful in the presence of well-effective resident financial markets. Subsequently, African governments must focus on growing further domestic financial markets to guarantee full economic advantages of FDI inflows. Wocke and Sing (2013) contend that South Africa has a well-developed and financial market. Whereas, Strauss (2015) argues that although South Africa is having the most elevated level of improvement in physical and financial set-up, just as human capital aggregation in the African landmass, apparently there is a small existing impact of FDI on economic growth over the long run. Most financial associations in South Africa are privately-owned. South African regulatory authorities are comprehensive and extensively regarded, the national payments system is modern, the court framework is helpful for opportune and impartial settlement of disputes and foreign banks can enter and operate relative ease.

2.6.8 Quality and Quantity of Infrastructure

A well-established and quality infrastructure is a significant factor in FDI inflows. Thus, a positive connection between FDI and infrastructure is anticipated (Sichei and Kinyondo, 2012). As per Wheeler and Mody (1992), infrastructure supports FDI's commitments by plunging their working expenses and growing the proficiency of investments. In other words, the growth impact of FDI is not programmed yet attached to specific degrees of infrastructure and economic execution. Fedderke and Romm (2006) reveal more grounded empirical evidence that infrastructure investment may prompt efficiency growth in South Africa. The accessibility of core infrastructure decreases costs confronting private sector investors. South Africa has modern and profoundly extreme media telecommunications, innovation, transport (roads, rail and ports) and energy provision infrastructure. The government has, therefore, dedicated critical assets for infrastructure, to improve the quality and maintainability of capital activities and improve the general effectiveness, intensity and growth of the economy (National Development Plan, 2012).

2.7 The South African government's economic strategy

The Reconstruction and Development Program (RDP) propelled by the South African government in 1994 concentrated on the issues of housing shortages, a failing educational system, unemployment and a healthcare framework. The GEAR macroeconomic strategy was embraced by the Finance division in 1996. It was a five-year plan aimed at firming economic improvement, the extension of employment, and migration of income and pro-poor socio-economic opportunities. Most as of late, the former President Zuma Administration's New Growth Path, from which the National Development Plan: Vision for 2030 stems, sets out the government's plan to expand employment and to develop an increasingly equivalent society. The shaft of this plan is around colossal investment in substructure and aptitudes advancement, and better harmonization with the private industry and an extremely solid union movement. Not surprisingly, the intriguing part is that the detail and the execution of this strategy is yet to be figured out. Ultimately, the government has set-up a heap of motivating forces to encourage the improvement of little and local organizations, to advance work, engage quality and lift FDI.

2.8 An overview of the economic performance in South Africa

Prior to the dawn of democracy in 1994, South Africa experienced falling investments and economic growth. This was because of political seclusion and economic sanctions from the residue of the world (Nowak, 2005). South Africa has seen a theatrical stoppage in key goods-producing industries as of late, to a greater extent agriculture, fishing and forestry and in the manufacturing and mining sectors. A miserable exhibition in the mining segment in the first three quarters of 2018 caused a decay of 1.4 percent compared to a similar period in 2017, bringing down generally GDP growth by 0.1 rate points (SARB, 2019b). The report also uncovered that the agriculture, forestry and fishing sector kept on being contrarily influenced by the most exceedingly awful drought. The by and large, agricultural yield fell strongly in 2016 because of serious dry season conditions, with the maize crop tumbling to the most reduced level in nine years (Stats SA, 2017). In the first three quarters of 2018, real value added in the sector shrunk by 3.2 percent compared to a similar period in 2017 (Stats SA, 2019b).

The manufacturing sector increased by 0.9 percent in the first three quarters of 2018 compared to the same period in 2017. SARB (2019b) contends that an expansion during the third quarter was driven by food and beverages, and motor vehicles and parts. In any case, the manufacturing sector declined by 3.1 percent in the fourth quarter, which followed a 3.3 percent contraction in the third quarter of 2016, (IDC, 2017b). Activity in the manufacturing sector performed unsteadily in the second half of 2016 and the sector continued to struggle in the face of subdued domestic and external demand (SARB, 2017).

Furthermore, growth in the finance, insurance, real estate and business services industry rose to 2.2 percent in the initial three quarters of 2018 compared to by 1.8 percent in a similar period of 2017 (SARB, 2019b). The construction sector declined by 1.2 percent in the first three quarters of 2018 compared to a similar period in 2017. Expansion in the transport services tumbled from 1.4 percent over the initial three quarters of 2017 to 0.9 percent in the comparative time of 2018.

South Africa's economy fell into a technical recession in the first portion of 2018, in the wake of two sequential quarters of negative economic growth. The economy shrunk by 2.7 percent in the first quarter and by a further 0.5 percent in the subsequent quarter. The economy recuperated in the third quarter to 2.6 percent as the nation recovered from the downturn. This has since been

updated to 1.4 percent in the final quarter. Due to the more regrettable than anticipated outcome, South Africa's economy grew simply 1.3 percent in 2017 and 0.8 percent in 2018, which spoke to the most fragile pace of growth in eight years, (Stats SA, 2019b). The stoppage in 2018 to a great extent mirrored a shrinkage in economic activity in the primary division, (SARB, 2019b).

Gross domestic product data from the World Bank shows that the GDP in South Africa arrived at a most noteworthy record level of \$416.4 billion in 2011 (Figure 2.10) and it was the most noteworthy since post-apartheid. In 2018, the nation's GDP marginally improved to \$366 billion likened to \$349 billion in 2017. Besides, the World Bank data, demonstrated that South Africa's GDP arrived at its least degree of \$115.5 billion in 2002. Figure 2.10 presents South Africa's GDP (as per US\$) from the year 1994 to 2018.

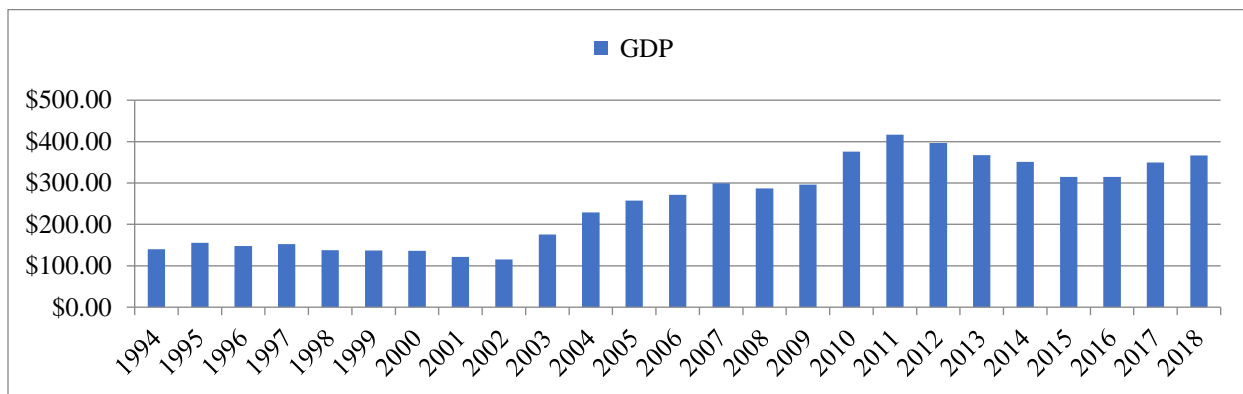


Figure 2.10. South Africa GDP (US\$), 1994 -2018.

Source: Author's illustration based on World Bank, (2019) data.

As for South Africa's GDP growth rate, after the end of apartheid in 1994, the economy recouped rapidly with GDP growth pinnacles of 4.3 percent in 1996 and 5.6 percent in 2006 as indicated by the World Bank data as appeared in Figure 2.11. This mirrored the fast progression of the market, the opening of the economy and rising product costs. After the beginning of the global financial crisis, the economy shrunk by 1.5 percent in 2009. Growth has been level from that point forward and was 1.5 percent in 2014.

Numerous issues confined economic growth to 1.5 percent in 2014 including strikes, power deficiencies and discouraged interest for commodities from an unhurried-growth global economy (UNCTAD, 2015). Economic performance stayed testing in 2016, with a GDP growth rate of 0.3 percent and the least rate of growth since 2009, (Stats SA, 2017). As indicated by the Stats SA

(2017) report, this moderate growth was basically due to discouraged commodity requests from China, low global commodity prices, low investment, conflicting capital flows and low purchaser and business certainty. The South African economy advanced by 0.8 percent for the whole 2018 from 1.3 percent growth rate in 2017 (Stats SA, 2019a). Figure 2.11 presents South Africa's GDP growth rate from 1994 to 2018.

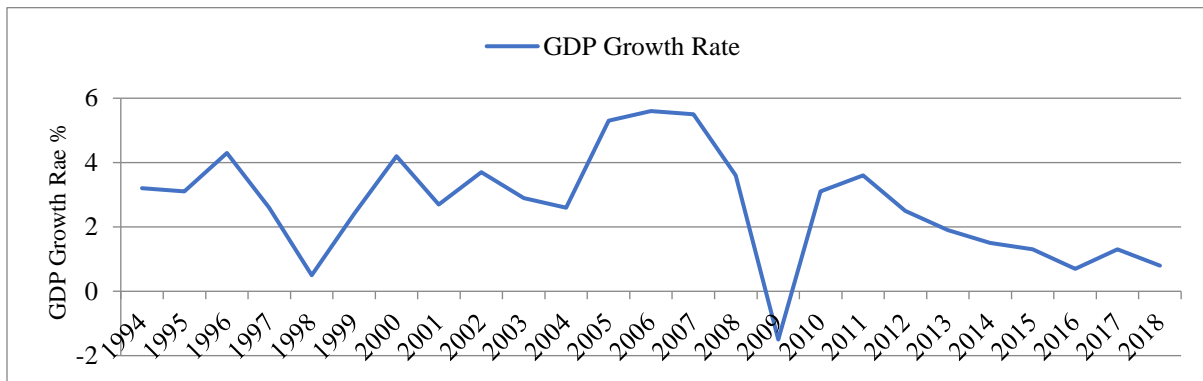


Figure 2.11. South African's Annual GDP Growth Rate, 1994-2018.

Source: Author's illustration based on World Bank, (2019) data.

2.9 Factors affecting Economic Growth in South Africa

2.9.1 Unemployment Rate

One of the reasons why governments are invigorating investment is that it supports job creation. Selma (2013) contends that the effects of FDI on employment are both immediate and indirect. In nations where capital is rare, yet labour is abundant, the creation of job prospects, either directly or in a roundabout way, has been one of the most conspicuous effects of FDI. The direct impact emerges when a foreign MNE employs some host nation residents. While the backhanded impact emerges when occupations are made in local suppliers due to the investment and when extra employments are made as a result of expanded nearby consumption by employees of the MNE. One of the most upsetting highlights in the South African economy is joblessness. Kinda (2010) and Masipa (2014) contend that the effect of significant levels of joblessness has harmful effects on the South African economy as far as economic well-being, neediness, crime and social unsteadiness. South Africa's joblessness rate has been on a rising pattern and estimated by 27.1 percent in 2018, a small decline from 27.5 percent in the previous year (SARB, 2019a). Figure 2.12 presents the unemployment rate of South Africa from the year 1994 to 2018.

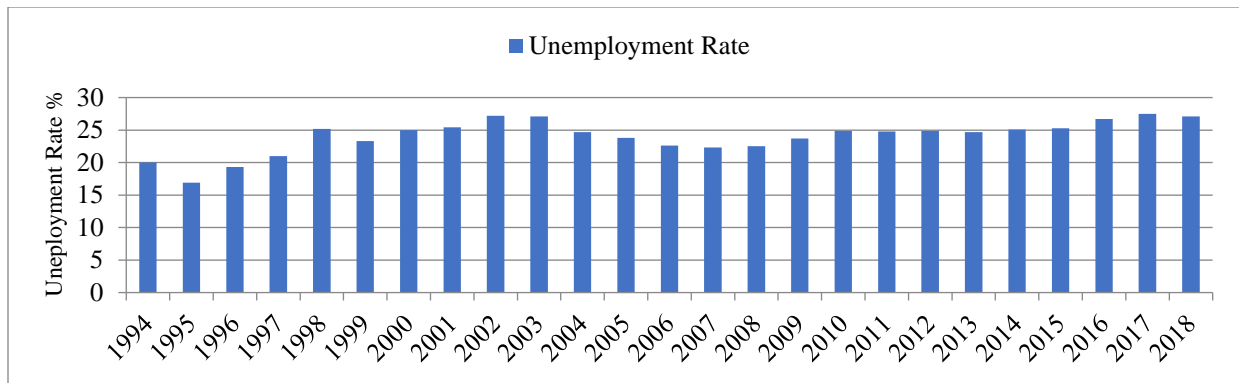


Figure 2.12. South Africa Unemployment Rate (%), 1994-2018.

Source: Author's illustration using SARB (2019) data.

Calvin and Coetzee (2010) observed that the joblessness experienced in many sectors of the South African economy is of structural nature. They, in any case, perceived that not all the divisions of the economy are encountering this. In their view, structural redundancy is of a more suffering nature and must be settled as time goes on. Due to the long-run nature of this kind of joblessness, numerous people become disheartened and give up searching for work (Calvin and Coetzee, 2010).

2.9.2 Balance of Payments (BOP)

BOP is a tabulation of the credit and debit transactions of a nation with different nations and worldwide institutions. It is separated into current account (trade and services) and financial account (capital flows). South Africa's current account in 2001 and 2002 was in surplus at 0.3 and 0.9 percent respectively, the first surplus since 1994. South Africa's current account deficiency has usually been low, essentially because of the competitiveness impact of trade liberalisation, the country's inclusion in free trade agreements and the devaluation of the Rand. South Africa's balance of payments is triggering stress for the authorities and businesses alike. As indicated by a UNCTAD (2016) report, in January 2015, the trade deficiency hit a record high of \$2.1 billion, when the market had estimated a shortfall of under \$1 billion. The wide gap was a result of a 23.1 percent fall in trade. The report further, states that the decay was seen no matter how you look at it, and was a result of falls in each classification, from assets to produced products. This proportion crumbled from 2.5 percent in 2017 to 3.5 percent in 2018. The current account has been negative since 2003 and has exacerbated since 2013 at 5.8 percent. Figure 2.13 presents the balance of payment (% of GDP) from the year 1994 to 2018.

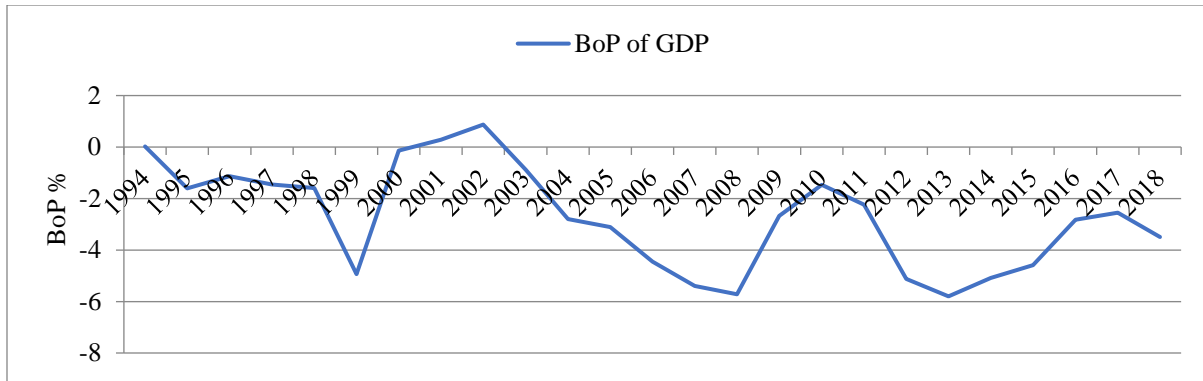


Figure 2.13. South Africa BOP, (% of GDP), 1994-2018.

Source: Author's illustration based on SARB (2019) data.

2.10 Summary and Conclusion

The goal of this chapter was to review FDI inflows and economic growth in South Africa post-1994. The discussion indicated that the South African economy of today is totally not quite the same as the economy preceding 1994. Even though the advancement of FDI was recognised as a government necessity as South Africa emerged from universal confinement in the mid-1990s, FDI inflows to South Africa have stayed at low extents compared to other emerging nations, for example from the BRICS (UNCTAD, 2017). Nonetheless, while FDI streams to Africa declined by 11 percent to \$46 billion in 2018, South Africa saw an expansion in FDI inflows from \$1.3 billion in 2017 to \$5.3 billion in 2018 (WIR, 2019). In 2016, they stayed at a generally low degree of \$2.4 billion, after FDI into South Africa dropped by 69 percent to \$1.8 billion in 2015, and it was the most reduced level in 10 years as per the UNCTAD (2016).

With insufficient assets to back sustainable (industrial and economic) improvement in South Africa, a frail economic growth, degraded neediness, inequality and rising joblessness rates, pulling in FDI is critical. Of late, the vast majority of the FDI inflows into South Africa have been market and efficiency-seeking, as they happen for the most part in the manufacturing, services, financial services, telecommunication and food and beverages sectors (Olatunji and Shahid, 2015; UNCTAD, 2017).

With respect to domestic investment, South Africa saw a reduction of 4.4 percent in fixed investment by the government sector in 2018 after a little increment of 0.2 percent in 2017 (SARB, 2019b). This was because of delays in the initiation and consummation of gigantic infrastructure

schemes brought down growth in 2018. Capital expenditure by the private sector stayed feeble at 1.4 percent in the final quarter of 2018 after a bounce-back of 2.9 percent in the third quarter. Nonetheless, in 2018, capital expenditure by the private sector expanded by 2.1 percent following an expansion of 5.0 percent in 2017(SARB, 2019b). In 2016, Capital spending by the private sector stayed frail. The decay mirrored a decrease in investment spending in the manufacturing and mining sectors (SARB, 2017).

Capital spending by public corporations proceeded with feeble and the pace of decay eased back to 12.5 percent in 2018 percent from 11.9 percent in 2017 because of administration challenges at these institutions (SARB, 2019b). Given South Africa's low degrees of household saving and investment, greater FDI inflows are vital to inspire economic growth and progress. Investment, especially residential public and private investment is also vital to growth and advancement. Ullah, *et al.*, (2014) contend that the expansion in private investment flags exceptional yield on interest in the household economy while public investment displays the upgrading in infrastructure and along these lines decrease in cost of doing business. These roles of residential capital inspire the foreign investors to gain the advantages of exceptional yield.

The South Africa's debt shape is also consistently expanding. As per SARB (2019a) data, South Africa's remarkable foreign debt rose from 21.2 percent of GDP in 1994 to 46.8 percent of GDP in 2018. This nonstop increment in foreign debt, is not reasonable for the nation's long run growth.

The Rand, which is one of the most exchanged currencies in the world, has been deteriorating since mid-1990s. It has also endured three significant currency stuns, in mid-1996, mid-1998 and late 2001. There was, in any case, a huge deterioration of the Rand's real effective exchange rate from 115.91 percent in 1994 to 69.45 percent in 2002 (World Bank, 2019). In 2002, we saw the real effective exchange rate arrive at its most reduced rate since post-1994. We also saw a further devaluation of real effective exchange rate from 100 percent in 2010 to 87.17 percent in 2018 (World Bank (2019).

The study also settled other indirect linkages of FDI that investors should consider before putting resources into foreign nations. Key external risks are identified with Brexit that could have adverse effects on capital flows and the unpredictability of the rand (IDC, 2017b). Inflation is the other determinant factor that prompts vulnerability about future investment projects and thus diminishes

the degree of investment and the growth. We also locate that fiscal motivators increment the host nation's location points of interest. Besides, FDI is progressively gainful within the sight of well-functioning domestic financial markets. The study contends that South Africa has a mature and sophisticated financial market (Strauss, 2015). An entrenched and quality infrastructure is a notable aspect of FDI inflows, the discussion also uncovered that South Africa has modern infrastructure (Wocke and Sing, 2013). The cost of labour is critical in location debates especially when investment is export-oriented.

Economic conditions stayed exceptionally testing all through 2018, especially for the products producing sectors of the South African economy. As per National Treasury (2019), the mining sector remained influenced by weak interests. In 2018, South Africa saw an improved performance by the manufacturing sector. Agriculture, forestry and fishing sectors kept on remained adversely influenced by the drought. The South African economy grew by 0.8 percent in 2018 from 1.3 growth rate in 2017 (Stats SA, 2019a). Joblessness remains one of the most stressful factors of the South African economy. South Africa's current account deficit has as a typically been low, mostly because of intensity impacts of trade liberalisation, South Africa's participation in free trade agreements and the deterioration in the Rand (National Treasury, 2019). The next chapter gives an overview of authentic FDI patterns and economic growth in South Africa post-1994.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

The goal of this chapter is to review literature on the linkage between economic growth and FDI inflows. This chapter segregates the literature into two sections, the theoretical and empirical literature respectively. The first section of the chapter discusses the endogenous growth theoretical structure. Early support for investments by MNEs can largely be credited to the neoclassical and the new growth theories. For example, the endogenous growth theory and FDI theories will, in general, be connected through research and development (R&D), learning of new skills, capital amassing, specialised diffusion and different information spillover impacts (see, Romer, 1986; Jones, 2002). Henceforth, the endogenous growth theory was picked for this study. This is followed by a theoretical literature review of microeconomic theories of foreign direct investment. The second section of the chapter reviews the empirical literature on both industrialised and emerging nations' perspectives.

3.2 The Endogenous Growth Theory

The endogenous growth model was progressed as a reaction to slips and inadequacies in the Solow Swan neoclassical growth model. Howitt (2008) suggests that the endogenous growth theory looks to clarify the long-term growth throughout features/exercises that are inside the economy. The neoclassical growth theory of Solow (1956) and Swan (1956) postulate the degree of innovative improvement to be found out by a logical procedure that is isolated from, and sovereign of economic powers. Neoclassical theory hence advocates that economies can take the long-run growth rate as expected exogenously from outside the economic framework. The key scolds of this model rest upon the way that it neglects to clarify the genuine wellspring of innovative change just as various residuals between countries that have arrived at practically identical degrees of technological advancement. Endogenous growth model challenges this neoclassical idea by proposing appropriate strategies through which the pace of innovative improvement, and henceforth the long run degree of economic growth, can be convinced by economic impacts. It initiates from the view that technological improvement happens through creativities and

advancements, in the sort of new items, methodology and markets, most of which are the repercussions of economic happenings.

The new growth hypothesis does not just reprimand the neoclassical growth hypothesis. Rather, it broadens the latter by offering endogenous specialised progression in growth models. Though there are various variations of endogenous growth hypothesis, they all fuse the idea that there are "information spillovers" related to capital investment. The term information spillover insinuates the spread of know-how about innovation or markets starting with one enterprise then onto the next (Bernat, 1999). For instance, suppose a firm builds up an improved technique for creating an item. A know-how spillover emerges when different firms discover out about the new approach and practice it to upgrade their manufacturing processes.

After the mid-1980s, the study on economic growth has recovered dynamism through studies of Romer (1986) and Lucas (1988). Both the studies applied the work of Arrow (1962) as an underlying point, by shaping and refining the economic growth models. In this section, we attempt to recognise the new growth models. Two branches have created, spearheaded by Romer (1986; 1990) and Lucas (1988). We quickly study their fundamental highlights and appraisals.

3.2.1 The Romer Model

Romer (1986) in his first study on endogenous growth offered a gradually broad model focusing on the role of "information" as a "result of research know-how". Romer's (1986) scrutiny resembles crafted by Arrow (1962) on learning-by-doing. By joining the nearness of accumulating returns in the formation of output, diminishing returns in the formation of new information (which means multiplying the research exertion will not twofold the amount of new information formed) and the presence of externalities (since information cannot be totally licensed, the formation of new information by one firm will emphatically influence the formation possibilities of different firms). Even though investment in research shows lessening returns, the formation of products from expanded information uncovers growing returns (Loayza and Soto, 2002).

Romer (1986) assumes the formation of information as a side result of investment. He recommends that information is an irrefutable factor in the production function as appeared in equation 3.1:

$$Y = A(R) F (R_i, K_i, L_i) \quad (3.1)$$

Where Y means the total yield; A connotes the public stock of information from R&D R ; R_i speaks to the stock of results from spending on R&D by firm i ; and K_i and L_i imply the capital stock and labour stock of company i respectively. Romer suggests that the function F is homogeneous of degree one in the entirety of its inputs R_i , K_i , and L_i , and extravagances R as a contending good.

Romer expressed that if R_i was nonrival, the impersonation contention would have proposed that the enterprise confronted expanding returns in the R_i , K_i , and L_i that is controlled, on the grounds that yield would double simply by copying K_i , and L_i .

As such, Romer's model makes this exact by representing the innovation through a stock of designs for producer durables that are utilised in the creation procedure. Research is fundamental to make a design for another kind of durable. After a design is finished, the design can be created with a production function that is homogeneous of degree one. The design is nonrival on the grounds that it tends to be utilised to make the same number of copies of the great as envisioned. Romer contend that a firm that owns a design and trades as new durable charges a cost for the good that is higher than the steady expense of creating the good. This shows how the firm recovers the investment in the exploration important to create the design.

Romer (1986; 1994) emphasised three basic components in his model, explicitly externalities, total returns in the creation of yield and decreasing returns in the making of new information. In Romer's view, it is spillover from research efforts by a company that led to the creation of new information by other companies. As it were, new research know-how by a solitary company spillover the entire economy.

In his model, new skill is a definitive reason for long-run growth which is influenced and dictated by investment in research (information) innovation. As such, endogenously persuaded and decided innovative advancement is the engine of economic growth. In this model, research innovation shows diminishing returns which implies that investment in research innovation will not double information. Moreover, the firm putting resources into examine know-how will not be the sole recipient of the ascent in information. Different companies over the whole sector will use the new information because of the absence of patent protection and grow their output. Therefore, the creation of goods from improved information shows expanding returns and competitive steadiness

is consistent with expanding total returns because of externalities. Consequently, Romer sees investment in research information (know-how) as an endogenous component as far as securing of new information by pragmatic profit maximisation companies.

Firms in South Africa that participate in innovative work (R&D) cannot protect the advantages to themselves but to society everywhere because of spillover impacts over the whole economy. Information is a public good within a corporation, thus it tends to be used in various corporate divisions at no extra expense and is easy to move from nation to nation. Thus, these spillover impacts have caused an expansion in the transfer of expertise in the South African motor industry. The Motor Industry Development Program (MIDP) is one such initiative among different initiatives started by the South African government to boost automobile manufacturers. Wood (2014) suggested that the MIDP was broadly valued a noteworthy achievement of South African industrial approach. The automotive segment has developed in scale under high degrees of security and competitiveness. It has similarly made additional advantages to other related industries and has contributed enormously to job creation. Barnes and Black (2013) argue that the FDI inflows into South African were robust during the tenure of the MIDP and that has been some development in investment in the component segment, while FDI has assumed an inexorably significant role.

3.2.2 The Lucas Model

Lucas (1988) presented the two-segment endogenous growth model. The model consists of two capital merchandise that are physical capital and human capital. Lucas accepts that investment in education and training led to the creation of human capital which is the conclusive factor in the growth procedure. The Lucas model is constructed under the notion that the mainstay of growth is human capital gathering. Lucas (1988) further accepted that a worker can commit a small amount of his non-recreation time to current creation and the exceptional division to human capital growth (for instance, education and training). He makes a qualification between two human capital aggregation impacts. To start with, there is an "internal impact" one might say that by committing a bit of his non-recreation time to human capital development, a worker will rise his own efficiency and, in this manner, advance the economic growth rate. In other words, the individual worker undergoing training turns out to be increasingly productive. Secondly, there is an "external impact" since the normal degree of human capital in the economy would decidedly influence the yield of

all elements of creation. As such, a higher normal degree of skilled workers will add to a higher economic growth rate.

It is investment in human capital rather than physical capital that has spillover impacts that expand the degree of innovation. Thus, the output for firm i takes the form;

$$Y_i = A(K_i).(H_i).H^e \quad (3.2)$$

Where A represents the technical coefficient, K_i and H_i signify the contributions of physical and human capital utilised by a firm to create goods Y_i . The variable H signifies the economy's normal degree of human capital. The parameter ' e ' means the solid-purpose of the external impacts from human capital to every enterprise's yield.

In the Lucas model, every enterprise faces steady returns to scale, though there are aggregate returns for the whole economy. Further, learning by doing or on-the-job training and spillover impacts comprise human capital. Every company gains from the average degree of human capital in the economy, rather than from the aggregate of human capital. Therefore, it is not the accrued information (knowledge) or experience of other companies but the average level of skills and knowledge in the economy that are critical for economic growth. In the model, innovation is endogenously intentional as a symptom of investment decisions by enterprises. Innovation is moderated as a public good from the perspective of its users. Afterward, companies can be treated as price takers and there can be resoluteness with a few firms as under perfect competition.

These endogenous growth models dependent on physical and human capital were trailed by a second wave of endogenous growth hypothesis, perceived as 'innovation-based' growth hypothesis (Howitt, 2008). As per this technique, advancement is the premise of yield growth and in this manner the premise of economic growth.

By human capital we imply cultured traits that make employees progressively prolific. Since education and training contain the scatter of information, it may seem like human capital is the comparable as the information capital. However, there is a basic contrast. Information capital is speculatively a public good albeit human capital is not. An unobtrusive method for recognising the two is to consider the two primary characters that most specialists/mentors play in a firm. You see mentor most extreme routinely in the firm, where they are conferring existing information to

labourers. This expands the labourers' human capital however does not deliver new information for the firm. At the point when specialists/mentors are not training workers, they are probably going to be involved with research. If adequate, this exploration prompts new information capital that everybody can use on a nonrival basis. Consequently, merely put, public information capital is everything that is freely known by any firm in the entire economy, in other words, each firm advantages from the normal degree of information capital.

With regards to South Africa, the spillover impacts which increment the degree of skill should come from investment in human capital progress instead of in physical capital (Fedderke, 2006). The Lucas (1988) model accentuations on general abilities and those which cannot be isolated from the employee who has learnt them. Every individual collects her human capital through instruction or job training, and this adds to the complete degree of human capital in the public arena. South African firms should understand that information grows with the time contributed to instruction and the capability with which this time is converted into human capital. This capability relates to various aspects restrictive on whether instruction is comprehended and seen as schooling or as learning by doing in South Africa. Concerning schooling, effectiveness ascends with the value of schooling which, in turn, progresses with expanded basic information. In any case, as Fedderke (2001) contend that South Africa dedicates undeniably more than equivalent emerging economies as a proportion of GDP on schooling, however with slight attention on building up quality education framework. There is a plentiful stock of low and ordinary trained workers however very scarcely any high equipped workers in the country. In addition, there is a misalliance of aptitudes between what firms need and the current abilities profiles; labour market inflexibilities and regulatory features; wage cost rises versus yield growth and so forth. At an individual level, propelled abilities degrees mean better occupation possibilities and higher income. Lucas (1988) has protracted brought up the centrality of human capital accrual as one of the primary drivers of long-term growth.

3.2.3 Romer's Model of Technological Change

Romer (1990) sketched out one of the main models inside this development-based system. In his paper, Romer attested that “innovative change lies at the core of economic growth” and that innovative change emerges to some extent as a result of purposeful activities taken by individuals

(Romer, 1990). As it were, Romer is stating that the growth proportion of an economy basically depends on the operators' choices and in this manner, it is endogenous to the economy.

Romer's model of endogenous specialised (technical) change recognizes an exploration (research) sector represent considerable authority in the creation of thoughts. This sector summons human capital sideways with the current stock of information to generate thoughts or new information. Romer saw thoughts as more important than natural resources. He cites the instance of Japan which has extremely rare natural resources, however, it was presented to new western thoughts and ability.

In his article, new information enters the formation procedure in three different ways. Firstly, a new design is utilised in the intermediate goods sector for the production of a new intermediate input. Secondly, in the final sector, labour, human capital and available producer durables produce the final product. Thirdly, a new design expands the entire stock of information (knowledge) and therefore builds the proficiency of human capital employed in the research sector. Basically, the proprietor of a design has property rights over the formation of the actual capital item, however, not over the utilisation of the created design in the research sector. Notice that in this model innovation causes yield growth by producing new, however not certainly better-quality varieties of growth (Howitt, 2008). Romer's model can be depicted in terms of the subsequent technological production function.

The model;

$$\Delta A = F(KA, HA, A) \quad (3.3)$$

Where ΔA means the growing innovation, KA represents to the totality of capital devoted in making the new design (or innovation), HA connotes the measure of human capital (labour) procured in innovative work of the new design, A captures the existing innovation of designs, and F symbolizes the production function for innovation.

The production function assumes that innovation is endogenous once extra human capital is employed for R&D of new designs, at that point innovation ascends by a bigger amount, i.e., A is greater. In other words, it suggests that giving added labour to R&D prompts a higher growth portion of A . Besides, if extra capital is given to research labs and gear to start the new design, at

that point innovation also increases by a more prominent volume i.e., ΔA is more. This means the bigger the absolute stock of ΔA , the higher the marginal physical profitability of a researcher. Moreover, the current innovation, A , also prompts the creation of new innovation, ΔA . As such, the output of design is straight to A .

Then again, it is assumed that innovation is a non-rival commitment and mostly excludable. There are positive spillover impacts of innovation which can be exploited by different companies. In this way, the formation of new innovation (information or thought) can be broadened utilising physical capital, human capital and existing innovation.

Romer's endogenous growth concept transformed information into economic and technical reliability within the framework to economic growth. The theory suggests that policy measures can influence the long-run growth extent of an economy. For instance, if the South African government could animate long-run economic growth by subsidizing information accrual (R&D), this can bring about the ascent in new information or new thoughts. Romer's endogenous growth theory interfaces the growth extent of the stock of information or improvement of new thoughts to the number of people contracted in the information sector (R&D). Hence, policies such as subsidies to R&D predicts that a growth in the South Africa population or an increase in the share of people working in the information (knowledge) sector will expand the growth rate of the stock of knowledge and the economic growth of the nation. In Aghion and Howitt's (1998) model, economic growth is supported at a positive degree over the long run as a result of investment in R&D activities and the accumulation of information.

3.2.4 General Assessment of Endogenous growth theory

In the first section, the Romer and Lucas models of the endogenous growth theory were briefly introduced. In this section, a detailed analysis of these is given. Taking Fine (2000) as a state of take-off, endogenous growth theory draws upon three key ideas: micro-foundations; market imperfections; and technical progress

In the first place, endogenous growth theory is micro-founded in a rationale that singular choices are explained and not taken as given. The most well-known occasion concerns the choice of saving. In economic growth theory this choice is a result of the individual upgrading conduct while in the neoclassic growth theory the total of savings is an exogenous impediment to the model (Fine,

2000). Also, endogenous growth theory brings into a hypothetical system one of the basic realities of growth: the nearness of market imperfections (Romer, 1994). These market imperfections relate to firms' market forces and externalities. For instance, in Romer's (1986) model, the externalities related to the creation of information permit the economy to achieve an endogenous growth rate; in Lucas' (1988) model, there are two types of externalities related to human capital accrual. Then, in Romer's (1990) model, a firm that makes "new design" will acquire monopoly rents for a specific period. Finally, endogenous growth theory presents technical advancement as the base of economic growth, which permits to endogenously clarifying the economic growth rate.

A typical component in both Romer's and Lucas' endogenous growth theories with human capital is the idea that the individual produces on investment in human capital is more when the total stock of human capital in the economy is bigger. Accordingly, these models clarify why a South African architect with an important and uncommon skill in this country will earn more if he relocates to Canada or Australia where his abilities are abundant.

3.3 FDI Motives

Dunning (1993) characterises four key classifications of FDI dependent on the reason behind the investment from the perspective of the investing firm: (i) market-seeking, (ii) resource-seeking, (iii) efficiency-seeking and (iv) strategic asset-seeking.

3.3.1 Market-seeking (Horizontal) FDI

FDI happens when multinationals have practically identical creation strategy in the home and foreign nation, where each plant delivers and offers products for its household market (Markusen, 1992). Similarly, Lim (2001) points out that market seeking FDI is otherwise called horizontal FDI since it commonly includes building equal plants in a foreign location to supply that market. Therefore, it involves the replication of assembling enhancements in the host nation. Export-substituting FDI is a form of this kind of foreign direct investment. This type of FDI is to serve a local market, consequently, market size, per capita income and market development of the host economy assume a focal role. Obstructions to accessing to residential markets, for example, duties and transport costs, additionally animate this type of FDI. Olatunji, and Shahid, (2015) show that FDI into South Africa have been market-seeking and amassing in the manufacturing division, financial services, telecommunications, and food and beverages. Germany automobile firms

manufacturing in South Africa for domestic consumption are an example of market-seeking motivation.

3.3.2 Resource-seeking (Vertical) FDI

FDI rises when multinationals split the assembling procedure into parts, with a plant in the foreign and home nation (Helpman and Krugman, 1985). Loots (2000:12) suggests that a firm contributes abroad to achieve assets that are not available in the local nation, for example, natural resources, crude resources, or minimal-cost of labour and quality of physical infrastructure. Generally, in the industrial sector, when MNCs legitimately put resources into request to export, factor-cost considerations become progressively critical. Surely, FDI in the resource area, for example, oil and mining are assimilated to nations with abundant natural endowments. Given the abundance of mineral assets in South Africa, a greater volume of FDI would be foreseen to be in the primary sector. For instance, in 2018 FDI inflows into South Africa were basically sharp in mining, petroleum, refinery and food processing (WIR, 2019).

4.3.3 Efficiency-seeking FDI

Efficiency-seeking FDI is attracted by chances to raise beneficial proficiency through insignificant production costs related to lower compensation, less expensive production inputs or geographic vicinity. Nunnenkamp and Spatz (2003) bring up that efficiency-seeking FDI is required to prompt economic growth inferable from the spillover impacts of innovation and expertise. Geographically specific focus benefits also pull in this sort of FDI. Efficiency-seeking FDI is unique in relation to resource-seeking FDI in that the investors are not soon after the resources to be later utilised in the creation of different items; rather the investors utilise the host economy to extend or move the productive activities. Hawkins and Lockwood (2001) argue that this rationale appears to be in nations with well-endowed human capital and great specialised and physical set-up.

4.3.4 Strategic-asset-seeking FDI

Franco, Rentocchini, and Marzetti (2008) suggest that strategic-asset-seeking FDI might be considered as distinct because the drive of the investment is that of achieving another technical base as opposed to exploiting the current resources. Strategic-asset-seeking FDI is propelled by benefits related to R&D and other market or creation connected advantages (Campos and Kinoshita, 2006). These motives behind FDI are huge since they offer a method for assessing the

future potential impacts of FDI. For instance, Mergers and Acquisitions (M&As), which do not require new jobs, may prompt new jobs later if the investors mean to grow activities and export to neighbouring markets for whatever reason (Kariga, Ngobeni, and Ngobese, 2012). Franco *et al*, (2008) contend that the principle thought to underline about this last kind is that it does not fit well with the OLI model that Dunning (1977) introduced, since here the inspirations of the firm contributing abroad are that of obtaining access to information or aptitudes that are not inside the firm. Hedin (2007) contend that information-based firms along these lines secure themselves utilising licenses, copyrights, etc. For firms, one method for accessing information is to obtain different firms.

3.4 FDI Theories

3.4.1 Industrial Organization Theory

Hymer (1976) built up the market imperfections theory which planned for portraying the conduct of firms in non-imperfect competitive milieus, that is, oligopolistic or monopolistic milieu, which the household firms appreciated over foreign firms. As per this theory for firms to expect FDI they require some incomparable favourable position, for example, information to challenge abroad with local firms who as of now have locations explicit preferences (Dicken, 2003). For example, the presence of foreign banks in South Africa do not appear to have an upper hand in the retail market because of South African's modern banking sector and the predominance of Standard Bank, First National Bank (FNB), Amalgamated Bank of South Africa (ABSA), Nedbank and Capitec. As indicated by the SARB's (2019a) Prudential Authority annual report for the year 2018/19, local divisions of foreign banks represented 5.6 percent of banking sector resources at the end of March 2019. Foreign banks working in South Africa are concentrating on offshore loaning (where these foreign banks have an upper hand over South Africa banks on account of their low overhead and their ability to expand capitals at sensibly favourable rates), just as capital exercises for business customers and government. Foreign banks by and large service the corporate sector as they flopped in infiltrating the retail sector. This affirms Hymer's (1976) idea that is established on the belief that local companies have an advantage over foreign companies, they have better recognition of the local market. Be that as it may, Pietrus (2015) features that the appearance of foreign banks in South Africa added to the advancement of the South African banking sector and to the inception

of inventive productions and practices. Along these lines, these inventive products and practices can be viewed as a special preferred position that foreign banks have.

3.4.2 Eclectic theory

The eclectic theory attempts to clarify why a company would want to invest or produce in a foreign location as an option of exporting or going into a licensing arrangement with a residential firm (Lim 2001:10). Dunning (1979) features that a company takes an interest in FDI if three settings are fulfilled and these are ownership, internalisation and location advantage.

Moosa (2002) brings up that *ownership advantage* includes specialised advantages, size and better access to assets or crude resources as well as comparative advantage over different companies mounting from the ownership for intangible assets, for example, licenses, reputation, brand name, know-how, and so on. At the point when a corporation has explicit ownership advantages, the company can defeat costs while connecting abroad. Having ownership advantages is essential for companies taking part in a foreign nation. FDI upsurges the market space from which the MNE can arrange, endeavour, and utilise its fundamental capacity created at home.

Dunning (1993:82) characterises the *location advantages* as “the ‘where’ of creation”. The question is where to begin creation abroad? Dunning (1993) alludes to the location theories by the location advantages. In general, location advantages imply that some areas are more appropriate to apply activities than others. Location advantage applies where expanding by a company is best proficient either at home or in a foreign nation. Nations may have favourable circumstances, for example, size of the household market, attainable quality of resources, government incentives and other location factors. These perspectives are key in enticing FDI inflows into South Africa. The automotive industry in South Africa is the beneficiary of location advantages. Dark and Mitchell (2002) contend that tariffs were diminished, and the local material necessity was either relaxed or abrogated. The export of vehicles has increased, and component exports have kept on emerging.

Focusing on *internalisation advantages* conglomerates settle on accomplishing progress inside or likely offering the rights to approaches for expansion to different companies (Moosa, 2002). Here a company seeks after additional benefits to disguise its advantages as opposed to trading them through permitting, alliances or different agreements.

3.5 Spillover Effects of FDI

Theoretically, FDI can offer new know-how, training for workforce and managers, and technical support to domestic contractors and so forth. Kokko (1994) pointed out that this is helpful as it advances the capability and attractiveness of domestic companies, forcing these companies to function professionally by converting the knowledge learnt into real-world and profitable uses that cannot be adopted by the foreign companies. Thus, this indirect influence is known as ‘spillover’ effect (Fan and Warr, 2000). Zhang, Li, Li and Zhou (2010) describe “spillovers” as a positive externality on domestic firms resulting from the existence of MNEs that result in an enhancement of the domestic firms’ production. These spillovers and externalities are likely to emerge through various channels.

3.5.1 Labour Mobility

From the start, spillovers in South Africa may emerge by means of the movement of workforces when exceptionally talented specialists of foreign companies start their own corporations or take work in locally possessed firms. At that point these profoundly talented workforces will convey with them specialised and authoritative abilities and information that guide to spread out spillover impacts. In any case, Nguyen, Vu, Tran and Nguyen (2006) recommend that it is difficult to gauge spillover impacts related to work versatility. For instance, household firms that acquire work mobility might be unable or reluctant to offer proper working conditions for those workers, in this way their aptitudes are incapable to be completely exploited.

3.5.2 Demonstration Effects

The existence of MNEs in South Africa may prompt the spread of material on new information and creation approaches also known as "the demonstration effect". Liu (2008) and Jude (2016) contend that FDI serves as a route for information transfer, adding to general innovative advancement and productivity spillover in host economies. The demonstration impacts may move for two thought processes. Firstly, Jenkins, (1990) suggests that global companies can attest to the plausibility of specific knowledge in the host nation. Second, through inverse engineering or casual interaction, residential companies can recreate the MNEs' expertise (Mansfield and Romeo, 1980). How much spillover impacts may rise relies principally upon the unpredictability of new products or services and on the attainable quality of foreign products and services to household rivals. The

complexity or the degree of simulation prospect is routinely estimated by the innovation gap between foreign companies and local companies. Enormous innovative gaps will give domestic companies the likelihood to exploit the accessible foreign innovation and knowledge which in totality expands positive spillover (Findlay, 1978). Kojima (1973) argues that the expansion effect of foreign investment in emerging economies is more in labour concentrated sectors than in technology concentrated sectors. While, Perez (1997) contends that with a huge innovation gap among foreign and residential companies, it is far-fetched that spillover will appear. While, Nunnenkamp and Spatz (2004) argue that local companies can benefit hugely from spillovers through replication and adjustment when foreign innovation and savoir-faire are very much coordinated with the host nation's degree of progress. For example, Twizza Soft Drinks Company of South Africa is an example of emulating and adjusting to new foreign innovation from companies, for example, Coca Cola South Africa. The firm was started in 2003 and presently has plants in Queenstown, Middleburg and Cape Town.

3.5.3 Linkage Effects

Through linkage with domestic enterprises, foreign firms may improve the output effectiveness of the host nation (see Rodriguez-Clare, 1996). Regardless of whether by means for retrograde linkages as provider, forward linkages as purchasers or as a contender, spillovers and externalities are increasingly foreseen to climb when there is a connection between South African corporations and foreign companies. Blomstrom and Kokko (1998) contend that household companies with foreign resources have more prominent yield, pushing up profitability gauges in other competitive residential firms. These thoughts were firstly presented by Hirschman (1958:98-104) to explain the interdependency among sectors and how it prompts improvement. Javorcik (2004) stressed the centrality of upstream and downstream linkages as potential instruments for FDI to have significant effects on domestic companies. Kokko (1994) contends that spillovers should not be projected when corporations work in "reserves" since it gives minor prospects to the domestic economy to pick up. This contention narrates to export-platform and resource-seeking FDI focused on economic adequacy and assets in a host nation. Most emerging economies like South Africa have focused on building up special economic zones (SEZs) and special export processing zones destinations for vertical and export-platform FDI, for example, Atlantis SEZ, Richards Bay SEZ, Coega SEZ and so on. Mindfulness benefits make these zones exceptionally engaging for foreign

investors seeking cost-effectiveness. For instance, in 2018 Coega SEZ opened US\$840 million Beijing Automotive Industry Holding Company vehicle plant from one of the greatest Chinese investments in South Africa. It is doubtful that foreign corporations in these economic and export zones are not absolutely inspired by profound established linkages with local companies. Rather multinationals are habitually unwilling to liaise with local allies in order not to risk the international production circle because of vital contribution to the international production process. In any case, Moran (2001) has stressed that the parent-companies affiliations become increasingly merged, mainly within export leaning corporations. Other than simply searching for low-cost assembly locations, associates in emerging economies are consistently safeguarded as a unique part of the supply network. Contrary, Kokko, Zejan and Tansini (2001) claimed that market-seeking FDI is locally focused and relied enormously on domestic contributions for their production and can be viewed as increasingly consolidated and of similar significance for the host nation. Lall (1980) underlined that the knowledge transfer and spillover increase once foreign associates are more rooted in the host nation through the better possibilities of contact between foreign corporations and domestic companies.

3.5.4 Competition Effects

Foreign corporations empower industry intensity which is regularly advantageous for domestic corporations, hence have a "crowding-in" effect. This means the presence of foreign companies in South Africa may upsurge and rouse rivalry and subsequently influence domestic companies to be increasingly imaginative and innovative, "the competition effect". Markusen and Venables (1999) suggest that the appearance of MNEs in the domestic market may strengthen advancement and investment by established domestic firms, which should make these companies progressively productive and competitive. Thus, massive rivalry prompts a decrease in X-wastefulness which is the reason for the essential advantage in output (Görg and Greenway, 2001). In any case, if the competition effects rule, the impacts of FDI on domestic enterprises could be irrelevant. A worry for this thought of irrelevant spillover stems especially from foreign corporations fabricating for the local markets (see horizontal FDI) and basically when foreign firms infiltrate in industries where local companies are already settled.

Foreign investment in these industries may take away opportunities and resources for local entrepreneurship and most plausible will prompt a drop in domestic investments. Aitken and

Harrison (1999) contend that the existence of foreign investment in a host nation undermines the market steadiness driving local corporations to produce less output since fixed expenses may be spread distinctly over a lesser production and cut their market dividends. Some scholars claim that FDI imposes costs for the host countries, for example, enormous rivalry burden on the local firms, crowding-out impact on residential investments and the reduction of the balance of payment because of profit repatriations (Kholdy, 1995; Mutafoglu, 2012). Also, the industrial organisation theory delivered by Hymer (1960) has detailed that FDI is an antagonistic global methodology by MNEs to convince monopoly power well beyond local corporations of the domestic economy. Dunning (1981) further contend that the upsides of MNEs, (for example, advance know-how and other elusive advantages) could be changed into monopoly power, which could be additionally wired by the other two advantages of MNCs: the market internalization advantage and the location-specific advantage. For instance, foreign firms could rheostat arrangements of contributions in a sector in the host nation and gain the advantages of tax incentives offered by the host government. This may fortify the upper hands of foreign companies over domestic companies. At last, domestic firms will be pushed to leave the market. Mencinger (2003) pointed out that FDI does not consequently always build rivalry in host countries as a large portion of the sectors that get FDI are monopolistic or oligopolistic. South Africa in this regard is not an exception, a heft of FDIs into South Africa has invested in financial services, telecommunications, and food and beverages, (Olatunji, and Shahid, 2015). South Africa has competitive firms in key performing sectors, for example, banking, telecommunication and food retail industry to name the few. For example, in the banking sector, the empirical discoveries indicated that the sector is monopolistically competitive, (Simbanegavi, Greenberg and Gwatidzo, 2015; Simatele, 2015). The country's banking sector is tremendously purposeful with five domestic significant banks which are; Standard Bank, FNB, ABSA, Nedbank and Capitec in the retail market. The presence of foreign banks in South Africa does not appear to have an upper hand over the local banks since a major piece of FDI streams are represented by mergers and acquisitions.

3.5.5 Real Exchange Rate Effects

There are various channels through which real exchange rates may affect FDI streams into South Africa. Theories about FDI-exchange rate linkages were shaped during the 1970s and 1980s (see Kohlhagen 1977; Cushman 1985). In any case, the two theories that have been endlessly driving

are Blonigen (1997) and Froot and Stein (1991). Froot and Stein (1991) argue that the exchange rates may impact foreign direct investment through an imperfect capital markets channel. The imperfect capital markets expect that a real decline of South Africa's exchange rate raises the assets of foreign investors comparative with that of South African entrepreneurs and in this way expands FDI. This theory suggests that the real decline of the South African Rand (currency) may move FDI inflows into South Africa. Hence, it positively builds the assets of foreign investors, letting them make greater offers for resources. Considering this viewpoint, the question that goes to the fore is what has been the impact of real exchange rate on FDI inflows into South Africa throughout the years? This question contains an assessment of the empirical indirect linkage between real exchange rate and FDI in South Africa. The discussion on the linkage among the two variables has not gotten incredible consideration in South Africa. This investigation offers new empirical evidence that reveals insight into the impact of real exchange rate on FDI.

The imperfect capital markets channel for real exchange rate impacts may also be progressively relevant in mergers and acquisitions (Ms&As). Blonigen (1997) features on acquisitions FDI; a unique case for exchange rate impacts as the acquisition of a foreign target enterprise can give enterprise explicit resources. This channel assumes good market segmentation and suggests that foreign and domestic companies have a comparable possibility to buy, unlike possibilities to make returns on assets in foreign markets. The achievement of all branches of an MNE might be expanded after the acquisition of a foreign firm. For this intention, currency developments may influence relative resource valuations, and a downgrading of the host's currency raises FDI inflows. Historically, most FDI into the South Africa market has come in the sort of M&As, where the local corporation is to a great extent furnished to obey with M&A prerequisites. For instance, in 2005 and 2007, South Africa saw a tremendous investment in the banking sector, especially Barclay's 62 percent acquisition of a controlling portion of ABSA bank and the Industrial and Commercial Bank of China's 20 percent minority share obtaining of Standard Bank. In any case, Barclay has reduced its holding in 2017 to 15 percent through offering shares to huge investors, including South Africa's Public Investment Corporation.

Foreign firms may pick up or lose from a worsening of South Africa's exchange rate. For example, a devaluing exchange rate may expand exports and offer gains from resource-seeking FDI (Dhakal, Nag, Pradhan and Upadhyaya, 2010). Dhakal *et al.*, (2010) further claim that foreign investors

may lose as companies must incur costs to avoid transaction and translation misfortunes when currencies devalue. This suggests that, if foreign investors accept that the decline of the South African currency will proceed after they enter the domestic market, they may presume that the costs will be too high to justify their investments.

3.5.6 External/Foreign Debt Effects

Benedict, Bhattacharya and Nguyen (2003) argue that an immense foreign debt can affect growth through the crowding-out impact or by influencing the arrangement of private investment in a country. Correspondingly, a substantial debt burden decreases FDI through both crowding-out impact and the debt overhang (Iyoha, 1997). Myers (1977) suggests that debt overhang can prompt disinvestment. Additionally, Osuji and Ozurumba (2013) claim that debt overhang is the primary and significant factor liable for hindering investment. The authors further suggest that the debt overhang model is based on the idea that if foreign debt will outperform the nation's settlement ability with some possibility later, the foreseen debt service is probably going to be a developing function of the nation's production extent. The foreign debt state of South Africa has been on the upsurge and has established a reason for being alert about the future. As indicated by SARB (2019) data, South Africa's foreign debt-to-GDP proportion is remaining at 46.8 percent in 2018 as compared to 21.2 percent in 1994, and intrigue instalments keep on developing quickly. Osuji and Ozurumba (2013) suggest that debt servicing and intrigue instalments may likewise be a real linkage from an indebted nation. Considering the discussion, the question that goes to the fore is what has been the impact of foreign debt on FDI inflows into South Africa throughout the years? Does foreign debt crowd in FDI or crowd out FDI inflows into South Africa? This study conveys new evidence that reveals insight into the effect of foreign debt on FDI inflows into South Africa.

3.5.7 Export Effects

Export impacts allude to the networks in which MNEs may serve to export to worldwide markets, henceforth propelling the networking distribution and connecting domestic companies to foreign procurers (Aitken, Hanson and Harrison, 1997). Görg and Greenway, (2001) suggest that this offers passage to regulatory procedure and other foreign information that domestic companies would not obtain without the FDI entry. Consequently, exports may strengthen proficiency inferable from the economies of scale, the disclosure to other new creation approaches and practices. Then again, Kutan and Vuksic (2007) contend that FDI could substitute exports

attributable to their supply capacity-aggregate impacts or by their exact impacts. Right now, FDI inflows into the host nation build the creation volume which later prompts an ascent in exports.

3.4 Empirical Literature

The second section will discuss the general empirical literature. The current literature points out the effects of FDI on the economic growth of a host country. The existing literature also sheds light on the channels by which FDI contributes significantly to a country's economic growth. This section also contributes to the discussion by presenting further empirical evidence on the indirect linkages between FDI and economic growth in developing economies. A growing body of literature has exposed a great series of indirect linkages between FDI and economic growth in developing countries in general.

3.4.1 International Studies

How do FDI inflows influence economic growth?

There is a massive theoretical and empirical literature dealing with FDI-growth link in host economies. Applying various data and methods, the empirical findings are varied. From one lateral, some studies uncovered that FDI could inspire economic growth while other studies exposed a negative association between FDI and economic growth.

For example, Uremadu, Umezurike, and Odili (2016) interestingly considered the influence of FDI on the economy of Nigeria utilising annual time series data for the period of 1981-2013. The study also scrutinized the impact of the exchange rate and openness of the economy on economic growth. The ordinary least squares (OLS) method and VECM were employed in assessing the long-term impact and the parsimonious short-term dynamics of the parameter projected. The findings uncovered that FDI has a positive and noteworthy effect on growth in Nigeria in the long and short run. The study also demonstrated that the exchange rate has an adverse effect on growth in Nigeria while openness of the economy positively impacts economic growth.

Similarly, employing time series data from 2001 to 2014, Tahiri (2017) explored the effect of FDI on the gross domestic product (GDP) of Afghanistan. The study utilised the ordinary least square (OLS) approach through simple regression. The outcomes presented that there is a positive and substantial connection between foreign direct investment and GDP in Afghanistan.

Be that as it may, the OLS model is one of the most basic and most ordinarily utilised prediction methods among analysts. The goal of OLS model is to intently "fit" a function with the data. The method gauges the affiliation by limiting the entirety of squared errors from the data.

Sothan (2017) strikingly scrutinized the causal association among FDI and GDP over the period 1980–2014, applying the Granger causality test built on the VECM. The empirical discoveries uncovered vigorous proof of the causal influence of FDI on Cambodia's economic growth (GDP). Nonetheless, the study does not bolster causality running from Gross domestic product to FDI. In this manner, the study infers that the growth impact of FDI is enough bolstered in Cambodia.

Unlike Sothan (2017), this study will investigate multiple indirect nexus among FDI and growth instead of bidirectional causality by stressing the significance of the different channels through which this nexus is uncovered. The result of the examination will furnish us with an unmistakable understanding of whether the South African government should seek after more approaches intended to supplement domestic investment and foreign direct investment.

Utilising correlation and multiple regression analysis approaches for examination of data, Ali and Hussain (2017) evaluated the influence of FDI on the economic growth of Pakistan applying time series over the period of 1991-2015. The study utilised FDI, inflation rate, exchange rate and interest rates variables. The outcomes of the study expose that FDI, inflation rate and exchange rate positively affect the economic growth of Pakistan. A unit increment in FDI will prompt 3.088 units ascend in GDP while a unit increment in inflation rate and exchange rate will bring about 4.445 and 1.085 units increment in GDP, respectively. Then again, interest rate has a negative connection with GDP. This suggests a unit increment in interest rate will prompt 6.755 units decrease in GDP.

Correlation is a statistical measure that is utilised to test the quality of a relationship between two quantitative factors while multiple regression is utilised to break down the relationship between two or more autonomous variables and a dependent variable. In other words, regression answers whether there is an affiliation among variables and correlation answers how solid the linear association is. The essential objective of regression is to develop a linear nexus between a reaction variable and illustrative variables for the reasons for estimation, assumes that a functional linear affiliation exists.

A comparable study in Pakistan, Jawaid (2016) employed the Autoregressive Distributed Lag-Error Correction Model (ARDL-ECM) procedure to explore the association between FDI and economic growth of Pakistan over the period 1966-2014. The author utilised real GDP per capita, population, gross capital formation (GCF), the inflation and trade. He uncovered that FDI, inflation and population have a critical impact on the economic growth of Pakistan both within the short run and long run. Finally, GCF and trade have no momentous part in the growth process of Pakistan.

Similarly, to Jawaid (2016), this study will moreover utilise the ARDL-ECM approach to examine the short and the long run affiliation between the variables of interest. The selection of this test method is built on the following deliberations. To begin with, the approach is appropriate for a small sample size study. Lastly, the bound test does not force prohibitive presumption that all the variables must be coordinates of the same arrange, (Pesaran, Shin and Smith, 2001).

Contrasting both Pakistan's studies by Ali and Hussain (2017) and Jawaid (2016), there are numerous motives that make the ARDL model applied by Ali and Hussain (2017) more helpful than multiple regression analysis approaches in Jawaid's (2016) study. Firstly, it very well may be utilised whether or not the series are $I(0)$ or $I(1)$. Meanwhile, different techniques to cointegration tests, for example, Engle and Granger (1987) and Johansen and Juselius (1990) need the variables of a similar order to be incorporated (Nguyen, 2017). Mostly notable the two models uncovered the positive effect of FDI on economic growth.

Utilising cointegration and Causality investigation, Agrawal (2015) surveyed the association between foreign direct investment and economic growth in the BRICS economies over the period 1989-2012. The outcomes display that foreign direct investment and economic growth are cointegrated at the panel level, inferring the occurrence of a long-run steadiness link among the variables. Discoveries from causality tests indicate that there is long-run connection running from FDI to economic growth in these economies.

Concentrating on African economies, Zekarias (2016) study has scrutinised the effect of FDI on economic growth in 14 Eastern Africa economies by exploiting 34 years (1980-2013) panel data, using dynamic Generalized Methods of Moments (GMM) estimators after confirming for autocorrelation and model specification tests. These economies include six landlocked economies,

two island economies and six coastal economies. This study involved numerous descriptive variables and regional dummies. The growth of real GDP per capita represents the dependent variable, whereas the illustrative variables comprise initial real GDP per capita, FDI and other variables such as political risk, good governance, financial crisis, exchange rate were not comprised due to absence of data. The discoveries affirm that FDI has a positive and marginally effect on economic growth.

Rjoub (2017) deliberately investigated the influence of FDI inflows on the economic growth of landlocked countries (LLDCs) in Sub-Saharan Africa for the period 1995-2013 employing panel data analysis. With a total of 234 panel observations made from a sample of 13 economies out of 16 landlocked Sub-Saharan Africa economies barring Zimbabwe, Niger and South Sudan because of an absence of data over the period of January 1995 to December 2013. The findings of the study revealed that while controlling host countries' features (trade openness, inflation rate, government spending, natural resources endowment, and human capital.), FDI positively and meaningfully influences present economic growth in landlocked countries of SSA.

Africa has 15 landlocked nations. As per the World Bank (2008), LLDCs are paying more in transport costs than coastal nations and have low trade capacities. WIR (2018) report additionally affirmed the discoveries of Rjoub (2017) study, that FDI flows into landlocked developing nations rose by 3 percent to \$23 billion of every 2018.

Applying time-series and cointegration tests from 1981 to 2013, Mahadika, Kalayci, and Altun (2017) inspected the long run connections between FDI, GDP and export of Indonesia. The authors desired to look at which variable gives further impact on the GDP of Indonesia, whether it is the FDI or the export volume. They discovered that export volume and FDI have a momentous impact on the economic growth of Indonesia. Moreover, the Johansen cointegration test confirmed a long-run association between all variables (FDI, GDP and export volume).

Foreign investment loses its appeal as a vehicle of growth if the adverse balance of payments outcomes of the resulting profit repatriation is also considered (Ahmad and Hamdini, 2003). Johnston and Ramirez (2015) researched the effect of FDI inflows on economic growth in Cote D'Ivoire over the time span 1975-2011, utilising cointegration analysis. The outcomes from the ECM affirmed a constructive result between gross fixed capital formation (GFCF) and economic

growth in the short run while FDI negatively affects economic growth because of the extensive repatriation of profits and dividends the nation has seen as of late. The authors suggested that the dividend repatriation share appears to ascend with country risk.

Adil and Akalpler (2017) explored the influence of FDI on the economic growth of Singapore. The research utilised a VECM for the period between 1980 and 2014. The outcomes from the study display robust evidence of the nonexistence and negative affiliation of a long-run association or causality that runs from FDI to GDP in Singapore. It was detected that FDI and GDP do not Granger cause each other in the long-run.

Even though several studies affirmed the idea that FDI inflows have a constructive influence on the growth of a host nation, some studies contend that the influence among FDI and economic growth is unclear or negative. For example, Ramirez (2015) pointed out that Cote D'Ivoire's FDI has a harmful effect on economic growth due to the substantial repatriation of benefits. Similarly, Adil and Akalpler (2017) confirmed a long run adverse association between FDI and GDP in Singapore. It was also recognised that the variables of interest do not Granger cause each other in the long-run. Jawaid and Saleen (2017) exposed comparable outcomes i.e. that FDI has a noteworthy and adverse impact on Pakistan's economic growth. Although there is no universal agreement on the impacts of FDI on the economic growth of the host nation, the extent of reviewed studies showing constructive impacts of FDI is ample greater than those which stress on the adverse impacts. In this study, the linkage between FDI and economic growth is scrutinised. The study endeavours to gauge whether FDI influences economic growth, and vice versa. As assumed in theory, FDI is one of the primary drivers of growth. In any case, as uncovered by the empirical studies the connection between FDI and economic growth is equivocal.

How does FDI and domestic investment influence economic growth?

In this section emphasis is put on the connection between domestic investment, FDI and economic growth. A robust private investment is relied upon to act as a sign of exceptional yields to capital while suitable public infrastructure (through massive public investment) diminishes the expense of doing business, which increases the marginal return to FDI. Ullah *et al.* (2014) point out that the effect of FDI on domestic investment is unclear, consequently, it is exceptionally attractive to test whether FDI crowds in or crowds out domestic investment. This section tries to furnish

empirical evidence on these linkages to reveal insight into methodologies that may assist the South African economy with increasing private capital inflows.

Employing Johansen cointegration and the Granger Causality test, Shawa and Amoro (2014) researched the causal connection between FDI, GDP growth, domestic investment and export in Kenya during the period of 1980 to 2013. The Johansen co-integration test findings show that there is a long-run association between the four variables (FDI, GDP growth, domestic investment, and exports). The Granger causality test outcomes affirmed that the causal unidirectional connections exist between export and domestic investment with the direction running from export to domestic investment, implying that export is a forecaster of domestic investment in Kenya. The outcomes also found a bidirectional link between export and FDI, suggesting that there is a reaction linkage of predicting each other, signifying the existence of export-led FDI and FDI led export growth. Lastly, other findings also presented that domestic investment and FDI have a unidirectional relationship with a direction of linkage running from direct investment to FDI, which infers that domestic investment is significant in forecasting FDI inflows into Kenyan economy and not vice versa.

Ameer and Xu (2017) analysed the connection between inward FDI and domestic investment in the Chinese economy over the time span 1990-2014. This investigation utilised cointegration and Granger causality analysis (including multivariate Granger causality models) by considering the affiliation between FDI, trade openness, gross capital formation as a proxy for domestic investment (DI), GDP deflator, gross domestic savings and formal institutions. This study employed economic freedom data from Fraser institute as a proxy for formal institutions. The multivariate model results revealed a positive unidirectional causality between FDI and DI in the long run. This infers that DI does not cause FDI, although FDI causes DI in the long run. In the short run, there is no signal to support the presence of short-run Granger causality running from inward FDI to DI.

Utilising unit root tests, cointegration technique and Granger causality test in VECM over the period 1976–2014, Dutta, Haider and Das (2017) discovered the causal association between FDI, domestic investment, trade openness and economic growth in Bangladesh. The discoveries from the Granger causality test suggest a unidirectional causality between FDI and growth, domestic investment and trade openness, growth and trade openness whereas there is a bidirectional

causality running from domestic investment to growth and from FDI to domestic investment. This recommends that both domestic investment and FDI influence each other.

A study on the relation between FDI, domestic capital and growth in Nigeria was investigated by Gungor and Ringim (2017). Utilising annual time series data for the period of 1980-2015, the study applies Johansen multivariate cointegration test and VECM as assessment techniques. The cointegration outcome uncovers that FDI, domestic investment and economic growth have a long-run steadiness association. In addition, the Granger causality test displays uni-directional causality between FDI and economic growth, that is, FDI is an important forecaster of economic growth. This goes to approve the FDI led growth proposition for Nigeria.

Tabassum and Ahmed (2014) inspected the connection between FDI and economic growth of Bangladesh during the period 1972–2011. This study employed multiple regression techniques by considering the connection between RGDP, foreign direct investment, domestic investment and trade openness. The outcomes specify that domestic investment applies a constructive effect on economic growth while FDI and trade openness are less significant.

Abu and Karim (2016) analysed the affiliation between FDI, domestic savings, domestic investment, and economic growth in 16 Sub-Saharan African (SSA) economies from 1981 to 2011. The findings of Vector Auto Regression (VAR) estimation and Granger causality tests uncover that there is a unidirectional causality running from FDI to growth and domestic investment, savings to growth. This means that growth does not influence FDI, domestic investment and domestic saving. The study also discovered a bidirectional causality among growth and domestic investment. This implies that both growth and domestic investment impact each other. The outcomes bolster the investment complementarities in 16 Sub-Saharan African (SSA) nations.

Even though domestic savings is not our variable of enthusiasm for this study, it is stressed that an expansion in the domestic savings level of the nation prompts an expansion in the domestic capital level and it adds to growth (Bairamli and Kostoglou 2010). Hence, stable economic expansion cannot be accomplished without domestic savings and domestic capitals (Bairamli and Kostoglou, 2010).

Using time series data between 1975-2014 periods and employing the VECM method, Aboye (2017) scrutinised the connection between foreign direct investment and domestic investment as

estimated by public investment and private investment in Ethiopia. The findings suggest that FDI crowds in public investment and crowds out private domestic investment in the long run. Be that as it may, in the short run it has no impact on the two investments.

The reviewed studies into the idea of the connection between domestic investment and FDI on economic growth uncover mixed outcomes. A range of empirical evidence suggests a solid positive connection between FDI and domestic investment, Shawa and Amoro (2014); Dutta *et al.* (2017); Gungor and Ringim (2017) and Tabassum and Ahmed (2014). Few have established questions with respect to the spillover effects of FDI on domestic investment. Aboye (2017) study failed to discover spillovers from FDI to private domestic investment. Aboye (2017) contend that FDI crowds out private domestic investment whereas FDI crowds in public investment in the long run. In any case, in the short run it has no impact on the two investments. The idea of this study is to explore the connection between domestic investment, FDI and economic growth. FDI conveys a threat of crowding-out for domestic investment. Right now, the connection between FDI and domestic investment in South Africa is investigated utilising the ARDL approach.

How does trade/export and FDI influence economic growth?

Were (2015) contended that trade openness offers access to innovative advances thus enabling technological transfer and spillovers. Similarly, FDI propels employment, managerial expertise, and export markets. Uncovering this connection is increasingly extensive for emerging economies such as South Africa, as they lament more from drowsy economic growth.

Hussain and Haque (2016) affirmed a connection between foreign direct investment, trade openness and growth rate of per capita GDP in Bangladesh employing annual time series data from 1973 to 2014. The VECM investigation uncovers that there is a long-run association between FDI, trade openness, and growth rate of per capita GDP. The study also presented that trade openness and foreign investment variables have a significant impact on the growth rate of GDP per capita.

Interestingly, trade openness showed up as one of the intense contentions among researchers and policymakers in clarifying the growth phenomena in emerging economies (Dawson, 2006). It is largely recorded that trade openness has a beneficial outcome towards economic growth. Serge and Yaoping (2010) contend that the positive commitment of trade towards growth originated from

the thought that advancement builds specialisation and division of the labour force in this manner improving profitability and export ability just as economic execution.

Modou and Liu (2017) utilised Fully Modified Ordinary Least Squares (FMOLS) to look at the effect of Asian FDI and economic growth on 13 West African nations for the period 1980-2015. The findings from the weighted FMOLS uncover that both FDI and trade openness significantly added to growth. The study additionally demonstrated that a unidirectional causality runs between FDI and economic growth suggesting FDI drove growth concept while a bidirectional connection was seen among trade and economic growth affirming the input impact. The authors contend that expanding FDI inflows could likewise advance trade by opening and growing market prospects.

Employing annual time series data for the period 1986 -2015 by using ARDL and ECM, Nguyen (2017) explored the short run and long-run dynamics of FDI inflows and exports on the economic growth of Vietnam. The study used three variables, for example, FDI, GDP and export for the analysis. The outcomes show that over the long-run FDI positively affects Vietnam economic growth while the influence of export is adverse. In any case, export and FDI do not have any noteworthy impact on economic growth in the short run.

There is an accord that trade decidedly adds to growth. The proof ranges from both the immense empirical studies on trade and growth, just as the growth scenes observed in various pieces of the world. A study by Hussain and Haque (2016) utilised a VECM and discovered that the trade and FDI variables significantly affect the growth rate of GDP per capita. FDI and trade are two significant mechanisms of economic growth in Bangladesh, it is imperative to outline approaches that advance growth and diminish the boundaries for capital movements. Additionally, Modou and Liu (2017) applied FMOLS in their investigation and the outcomes demonstrated that both FDI and trade meaningfully add to economic growth in 13 West African nations. Nguyen (2017) utilised ARDL and ECM in her investigation and suggested a long-run positive effect among FDI and growth in Vietnam while the effect of export is negative. All the above studies exploited various procedures and the outcomes uncovered a positive connection between trade, FDI and economic growth except for export and economic growth.

How does the quality of institutions influence FDI and economic growth?

Existing literature on the influence of institutional quality has depicted various manners by which institutions impact FDI. Recent studies have attentive strongly on the effect of institutional quality on FDI and economic growth.

Employing generalised method-of-moment (GMM) method, Malikane and Chitambara (2017) analysed the association between FDI, democracy and economic growth on a panel of 8 Southern African economies over the period of 1980-2014. Empirical findings suggest that FDI has a constructive effect on growth and that robust democratic establishments are a huge driver of economic growth in the eight Southern African nations. The impact of FDI inflows on economic growth is subject to the degree of democracy in the host nations. This implies that nations with vigorous democratic establishments are better ready to assimilate the positive spillovers from FDI inflows. In policy terms, eight Southern African nations must continue with the institutional change policy agenda as of now in place to gain more from the noteworthy inflows of FDI.

The study estimated democracy in terms of the Freedom House index that is extensively utilised in the political theory studies. This measure is gathered from two indices: the political rights index which signifies how impartial and free elections are carried out. Besides, the civil liberties index which comprises a set of significant rights and freedoms mainly freedom of expression and structural rights, rule of law and individual rights.

Similarly, Jude and Levieuge (2017) inspected the impact of FDI on economic growth provisional on the institutional quality of host nations employing a panel smooth regression model on a sample of 94 emerging countries over the period 1984-2009. These findings have noteworthy consequences for policy sequencing in emerging nations. To profit from FDI-led growth, the advance of the institutional framework should lead FDI fascination strategies. Though a few distinctive attributes of institutional quality have a prompt impact on the promotion of FDI-led growth, others need a steady build-up of efforts, thus challenging the efficacy of institutional restructurings in emerging countries.

To measure the institutional quality, the authors developed numerous hypothetical arguments to suggest that institutional quality modulates the two key channels of FDI-led growth, namely knowledge spillovers and human capital accrual. The authors suggested that sound institutional

quality is required to support innovation and efficiency spillovers to local firms while inspiring crowding-in impacts on domestic investment.

Even though numerous studies examined the influence of FDI on economic growth, they do not contemplate the pretended by institutional quality in shaping investment effectiveness and growth (Eliboashi, 2015). Jude and Leveigue (2017) contend that positively affects growth only beyond past a specific limit of institutional quality. To profit from FDI-led growth, institutional reformations should thus go before FDI attraction approaches. Also, Malikane and Chitambara's (2017) suggested that nations with solid democratic institutions are better ready to retain the positive spillovers from FDI. Subsequently, the connection between FDI and economic growth may rely upon the nature of the beneficiary nation's institutions and economic approaches. Our investigation likewise does not reflect the pretended by institutional quality in shaping investment efficacy and growth in South Africa. Along these lines, the motivation behind our investigation is to offer an empirical comprehension of the linkages between (i) domestic investment, foreign debt, exchange rate and FDI in promoting economic growth and (ii) domestic investment, foreign debt, exchange rate and economic growth in pulling in FDI. Hence, FDI, domestic investment and foreign debt exemplify capital gathering which is probably going to build the pace of investment which is basic to drive economic growth.

How does external debt influence FDI inflows and economic growth?

Going to debt issues, external debt is a crucial wellspring of public capital in emerging economies such as South Africa and conveys the possibility to assume a key role in advancing economic growth. There are a few empirical takes a shot at the impact of external debt in developed and developing economies. Some authors have uncovered that extremal debt and economic growth variables are profoundly essential to a nation's economic growth while others uncovered a negative association.

For example, using ARDL model and the Bounds test as backed by Pesaran *et al.* (2001) to test for the long-run steadiness association. Jilenga, Xu and Gondge-Dacka (2016) researched the effect of external debt and FDI on economic growth in Tanzania utilising time series data from 1971 to 2011. The exact outcomes show that debt supports growth in the long run. The coefficients results show that a 10 percent expansion in external debt leads to 24 percent increment in economic

growth in the long run. Nonetheless, this change is statistically inconsequential at 0.14 p -value which is bigger than 10 percent. Be that as it may, FDI exposes a negative impact on economic growth. In the short-run, the findings show that there is no directional causality running from external debt to economic growth and from FDI to RGDP.

Kida (2017) explored the impact of FDI, external debt and infrastructure on GDP growth in Kosovo throughout the period 2007-2016 employing a simple OLS technique. The outcomes demonstrate that FDI positively affects GDP growth, but it displays no statistical significance. Also, the empirical outcomes suggest a negative effect between external debt and economic growth even though the coefficient is relatively low, the proof demonstrates that the external debt is rising, and this has noteworthy implications for the economy and public strategies in Kosovo. The author suggests that the government should provide reformulated and positive approaches such as a lawful framework and appropriate strategy for external companies to enter decisively in Kosovo.

Using time series data from 1976 to 2015, Jawaid and Saleen (2017) researched the association of foreign capital inflows, precisely FDI, workers' remittances, and external debt with the economic growth of Pakistan. Cointegration findings show that foreign capital inflows have a noteworthy association with economic growth in the long run. Ordinary least square (OLS) outcomes display that FDI has a noteworthy and negative effect on economic growth, while external debt has a critical influence on economic growth. Remittances and external debts indicated a constructive outcome on economic growth.

Comes, Bunduchi, Vasile and Stefan (2018) contend that labourer remittances speak to a huge progression of finance- related assets, and the role of this financial stream in economic advancement is a noteworthy issue. The authors further contend that emerging economies are profiting more from FDI and, worker remittances that exude for the most part from developed economies to emerging economies.

Chaudhry, Iffat and Farooq (2017) scrutinised the connection between FDI, external debt and economic growth. The examination depended on a sample of 25 district astute picked emerging economies. Utilising data from 1990 to 2014, outcomes of FMOLS technique uncover that the key variables, FDI and external debt, labour, government consumption expenditure, and gross

domestic saving have a huge positive connection with economic growth. While gross capital formation uncovered a negative impact on economic growth.

Several research works have been done inspecting the impact of external debt on the economy. The impact of external debt on investment and economic growth of a nation has stayed dubious for policymakers and academics alike (Nwannebuike, 2016). A study by Jilenga *et al.* (2016) shows that long-run debt advances economic growth in Tanzania. Essentially, Chaudhry *et al.* (2017) affirmed a positive connection between external debt, FDI and economic growth in chosen developing nations. Interestingly, Kida (2017); Jawaid and Saleen (2017) suggested that external debt negatively affects economic growth. External debt may be utilised to animate the economy but whenever a country collects significant debt, a sensible extent of public consumption and foreign exchange profit will be consumed by debt servicing and reimbursement with weighty opportunity costs (Nwannebuike, 2016). This study aims at estimating the impact of external/foreign debt on FDI and economic growth in South Africa. The subject of interest is whether the external/foreign debt crowd in or crowd out FDI and economic growth in the country. South Africa is a developing country which lacks adequate resources to develop the country. In this manner, slow economic growth has set huge weight on the government to borrow externally for formative purposes.

How does the exchange rate influence FDI inflows and economic growth?

The yield impact of exchange rate variances has for quite some time been perceived in the literature but nonetheless, the impacts and connection between the exchange rate and FDI are yet uncertain. The empirical confirmations of the connection between the exchange rate and FDI streams are mixed, with certain researches supporting the noteworthy relationship while others dismissing it.

Ditta and Hassan (2017) explore the effect of economic misery, exchange rates and interest rates on FDI in Pakistan over the period of 1972- 2013. This examination employed the ADF and PP unit root tests for stationarity of the variables and the ARDL is applied for cointegration among the variables of the model. The outcomes demonstrate that there is a negative and insignificant effect of economic misery and political instability on FDI in Pakistan. The exchange rate has positive and noteworthy relationship with FDI over the chosen period. Exports have a negative and inconsequential influence on FDI. Interest rate and GDP have a positive and critical affiliation

with FDI in the case of Pakistan. The weakness of this of this study is that it does not express how economic misery was estimated.

Normally, economic misery a uses misery index as an economic indicator created by economist Arthur Okun in the mid-1970s, to gauge the economic prosperity of the nation, which is determined by including the seasonally adjusted unemployment rate to the annual inflation rate.

A financial perspective on FDI is temporary on some method of insufficiencies or data asymmetry in global financial markets (Lily *et al.*, 2014) where the exchange rate is one of the most critical financial variables that influence the virtual preferred position of an MNE in contrast with a household firm (Choi and Jeon, 2007). Right now, the reduction of the host nation exchange rate is probably going to pull in FDI inflows for the accompanying reasons. Initially, Moosa (2002) contends that an MNE has an advantage over a household firm because of its capacity to acquire financing in global capital markets at a sensible expense because of its reputation. In conclusion, the currency devaluation cuts creation costs in the host nation, along these lines making it appealing for FDI looking for production adequacy and returns (Blonigen, 1997).

Bianco and Loan (2017) researched the effect of price and real exchange rate instability on FDI inflows in a panel of ten Latin American and Caribbean economies, observed between 1990 and 2012. Both price and exchange rate volatility series are evaluated through the Generalized Autoregressive Conditional Heteroscedasticity model (GARCH). The outcomes uncovered, utilising the Fixed Effects estimator, affirm the statistically critical negative impact of exchange rate volatility on FDI. Price instability, rather, ends up being positive but inconsequential.

The GARCH model is the extension of the Autoregressive Conditional Heteroscedasticity (ARCH) model. Stock and Watson, (2012) state that the ARCH and GARCH should be volatility-gathering models and are extremely employed to gauge and estimate the time-changing instability of high rate financial data like regular stock or stock index returns. In contrast to the linear structural models, these models are entirely reasonable in clarifying the most formalised confirmations about index returns, for example, volatility bunching and uneven or leverage impact (Islam, 2014).

There is an immense assemblage of literature that analyses the effect of exchange rate on FDI and economic growth. For example, some empirical studies show that the exchange rate instability can influence growth results. Other schools of thought are of the view that no noteworthy affiliation

exists between the exchange rate and economic growth, here probably the most significant studies are selected as literature review. Uremadu *et al.* (2016) contend that the exchange rate negatively affects economic growth in Nigeria. Similarly, Bianco and Loan (2017) affirmed a negative impact of exchange rate instability on FDI in 10 Latin American and Caribbean nations. Conversely, a study by Ditta and Hassan (2017) uncovered that the exchange rate has a positive and critical affiliation with FDI in Pakistan over the chosen period. This study centres around the effect of exchange rate on FDI and economic growth in South Africa. The exchange rate is one of the economic indicators that indirectly influences investment. As such, its role in the general economic targets of a nation cannot be belittled.

3.4.2 Studies on South Africa

The literature on the FDI-growth connection is immense for South Africa. Most studies tend to concentrate on bidirectional causality instead of multiple causalities. A remarkable element of this study is (i) the accentuation on the effect of domestic investment, foreign debt, exchange rate and economic growth in attracting FDI inflows into South Africa, (ii) the effect of domestic investment, foreign debt, and exchange rate and FDI in encouraging economic growth in South Africa. Domestic investment and foreign debt can have indirect impacts on FDI inflow through what Kose *et al.* (2006:4) call “collateral benefits” to inspire growth, whereas the exchange rate variations can likewise indirectly affect FDI and economic growth in South Africa. Some empirical studies that have examined the connection between FDI and the economic growth in South Africa are discussed below.

How do FDI inflows influence economic growth in South Africa?

Owolusi, Adeyeye and Pelser (2017) explored the impact of FDI on growth in chosen African economies (South Africa, Nigeria, Egypt, Kenya, and the Central African Republic) from 1980 to 2014, utilising an adjusted growth model by Agrawal and Khan (2011). The paper inspects how nation-specific elements can clarify varieties in the growth advantages of FDI. OLS and dynamic panel estimation were applied as the estimation methods. This investigation saw that a 1% expansion in FDI would bring about a 0.12% increment in GDP for South Africa, a 0.05% increment in Egypt, a 0.03% expansion in Nigeria, a 0.02% increment in Kenya, and a 1% expansion in GDP in the Central African Republic. The paper hence finds that government

strategies on FDI assume noteworthy roles in encouraging improved economic growth in African nations during the study time frame.

Sunde (2017) explored economic growth as an element of FDI and exports in South Africa. The study employed the ARDL bounds testing technique to cointegration for the long run connection between economic growth, FDI and exports. The ECM was utilised to look at the short-run elements and the VECM Granger causality approach was employed to affirm the direction of causality. The outcomes affirmed cointegration between economic growth, FDI and exports. The investigation shows that both FDI and exports spike economic growth.

The uniqueness of our examination contrasted with Sunde (2017), is the aberration from prior FDI-growth nexus by considering the affiliation between FDI and domestic investment, foreign debt and exchange rate. FDI, domestic investment and foreign debt are an indispensable wellspring of public and private backing in South Africa and speak to capital streams which are probably going to build the pace of capital arrangement which is important to push economic growth.

Megbowon *et al.* (2016) utilised time series analysis to explore the impact of FDI inflow on employment and gross capital formation for the period 1980-2014. Then, two multivariate models were evaluated, and two econometric analyses, namely, cointegration and causality were carried out. The discoveries from the study suggest that although there is a long-run affiliation among variables in the employment models, it was not the case in the gross capital formation model. The impact of FDI inflow on employment in the employment model was positive but inconsequential. No type of causality running from FDI inflow to employment and from FDI inflow to gross capital formation.

Strauss (2015) primarily measured existing theory on the nexus between FDI, absorptive capacity and economic growth in South Africa during the period 1994-2013 utilising the VECM. The estimated discoveries uncover significant uncertainty on long-run impacts among the variables, whereas economic growth is just influenced by FDI in the short run.

The Strauss (2015) study is imperative to this investigation as it seeks to build up the indirect linkages between FDI and economic growth in South Africa. Strauss's scrutiny featured the equivocalness nexus between the absorptive capacity and economic growth as reasons why FDI inflows have stayed at low levels compared to other emerging economies. Mohamad and Bani

(2017) contend that FDI inflows may profit a nation through its spillover impact, for example, innovation simulation which is affected by absorptive capacity. The suitable absorptive capacity of the nation encourages the nation to adventure the spillover impact proficiently. It is concurred among researchers that that domestic sceneries (absorptive capacities) are noteworthy factors adding to the impact of FDI on economic growth (Omoregie, 2015).

Masipa (2014) assessed the effect of FDI on economic growth and employment in South Africa for a period of 24 years from 1990 to 2013. The study utilised the unit root test to test for stationarity of the time series, the Johansen Cointegration test to test for the presence of long run affiliation among the variables and lastly, Granger causality test to build up the causal connection between the variables. Employment and GDP were stationary at first-order difference, while FDI was stationary at level form. The cointegration test affirmed the presence of a long-run connection between the variables. The Granger Causality test results stated the direction of causality which runs between FDI and GDP and FDI and employment. From the outcomes, there is solid proof that from 1990 to 2013 there was a positive long-run connection between FDI, GDP and employment in South Africa. Like, Masipa (2014), this study will utilise the unit root test to test for stationarity and the Granger Causality test to check causality between variables.

Khobai *et al.*, (2017) researched the impacts of FDI on per capita GDP growth for South Africa utilising time series data gathered between 1970 and 2016 employing quantile regressions that explored the impacts of FDI on economic growth at various distributional quantiles. The dataset comprised of the per capita GDP growth rate, the portion of FDI in GDP, the portion of gross fixed capital accumulation in GDP, CPI inflation rate, population growth and terms of trade. The outcomes suggest that FDI affects welfare at incredibly low quantiles though at different levels this impact turns inconsequential. Opposite, the impacts of domestic investment on welfare is certain and noteworthy at all levels.

Khobai *et al.* (2017) diverged from the traditional OLS technique and other linear estimation methods by applying quantile regressions. However, their study utilised comparable variables to this study, for instance, per capita GDP growth rate, FDI (as measured by the share of FDI to GDP) and domestic investment (as measured by capital accrual in GDP) to examine the impact of FDI on economic growth. Then again, this study gauges two models. In the first model RGDP (as estimated by real GDP per capita) is regressed on FDI, domestic investment (as estimated by credit

to the private sector, public investment and government expenditure), real exchange rate and foreign debt. In the second model, FDI is regressed on RGDP, domestic investment, real exchange rate and foreign debt. Along these lines, this study departs from Khobai *et al.* (2017) by concentrating on multiple causalities instead of bidirectional causality association among variables. We try to build up whether independent variables have a positive (crowd in) or negative (crowd out) effect on dependent variables in both models. Given the fact that FDI inflows, domestic investment and foreign debt are the fundamental wellspring of public and private financing in South Africa and convey the possibility to assume a key job in advancing economic growth.

Akoto (2016) inspected the Granger causal connections between FDI, exports and GDP just as the responsiveness of exports to FDI stuns in South Africa, over the period 1970-2014. The discoveries demonstrate that over the long run, FDI significantly affects exports. In the short run, there is bi-directional Granger causality among GDP and exports, with uni-directional causality between FDI and exports and FDI and GDP. In any case, variance decomposition analyses show that exports are not extremely receptive to changes in FDI inflow.

Like Akoto (2016), this study will utilise the Granger causality test to look at causality among two variables in a time series for instance, to test if there is a bi-directional causality or unidirectional causality among variables.

Nchoe (2016) researched the impact of FDI on sectoral growth over the period 1970–2014. The study utilised econometric analysis methods to test the influence of FDI inflows on the agriculture, industry and services sectors. The Johansen cointegration test exposed that there is a long-run cointegration association among variables. VECM findings uncovered that FDI positively affects the industry and services sector but negatively affects the agricultural sector. This could be because of low degrees of FDI into the agriculture sector.

Empirical literature on the indirect linkages between FDI inflows, domestic investment, foreign debt, exchange rate and economic growth in South Africa is rare. Be that as it may, the literature regularly focuses on the significance of absorptive capacity when shaping a country's capacity to profit from FDI inflow. As it were, it is suggested that FDI causes “growth effects” only when the investment condition/ atmosphere is reasonable. For instance, if the host economy is not endowed

with satisfactory human capital, public infrastructure, financial institutions, legal milieu, spillover that may conceivably emerge from FDI are basically not realized. Strauss (2015) contend that South Africa must be able to absorb new innovations related to FDI to profit by the FDI. Strauss (2015) additionally discovered noteworthy vagueness, as there were no long-run impacts between FDI, absorptive capacity and economic growth in South Africa. Owolusi *et al.* (2017) featured that the growth is decidedly influenced by FDI in South Africa, Nigeria, Egypt, Kenya and the Central African Republic. Megbowon *et al.* (2016) uncovered that FDI inflow on employment was positive yet inconsequential. No type of causality was found between FDI inflows and employment and between FDI inflows and gross capital formation. Conversely, Masipa (2014) displays a positive long-run connection between FDI, GDP and employment in South Africa. Late study by Akoto (2016); Sunde (2017) show that both foreign direct investment and exports spike economic growth. Finally, Nchoe (2016) uncovered that FDI significantly affects the services and industry area yet negatively affects the agricultural segment. All the reviewed empirical literature above are summarised from Table 3.1 to Table 3.7 below.

Table 3.1. Summary of Selected Empirical Literature of FDI Effects on Economic Growth.

Author(s)	Country(s)	Periods	Methodology	Variables	Keys Findings
Uremadu <i>et al.</i> (2016)	Nigeria	1981-2013	Ordinary Least Square (OLS) and Vector Error Correction Model	GDP, FDI, exchange rate and openness	FDI has positive and significant influence on GDP. Exchange rate has negative effect on GDP.
Tahiri (2017)	Afghanistan	2001-2014	Ordinary Least Square (OLS) method through simple Regression	FDI and GDP	Positive significant affiliation between FDI and GDP.
Sothan (2017)	Cambodia	1980-2014	Granger causality test, vector error correction model	GDP and FDI	Positive influence of FDI on GDP.
Ali and Hussain (2017)	Pakistan	1991-2015	Multiple regression analysis techniques	FDI and GDP	FDI has a positive influence on the economic growth.
Jawaid (2016)	Pakistan	1966-2014	Autoregressive Distributed Lag- Error Correction Model (ARDL-ECM) technique	FDI and GDP	FDI has a significant effect on the economic growth.
Agrawal (2015)	BRICS economies	1989-2012	Cointegration and Causality	FDI and GDP	Positive long run causality running from FDI to GDP.
Zekarias (2016)	14 Eastern Africa countries	1980-2013	GMM estimators	FDI and GDP	FDI has positive and marginally significant effect on GDP.

Rjoub <i>et al.</i> (2017)	landlocked countries in Sub-Saharan Africa	1995-2013	Panel data analysis	Trade openness, inflation rate, government expenditure, natural resources endowment, and human capital	FDI positively and significantly affects to GDP.
Mahadika <i>et al.</i> (2017),	Indonesia	1981-2013	Johansen cointegration test	FDI, GDP and export	Long-run connection between GDP, FDI and export.
Johnston and Ramirez (2015)	Cote D'Ivoire	1975-2011	Error Correction Model (ECM)	Gross fixed capital formation (GFCF), FDI and GDP	FDI has negative effect on GDP
Adil and Akalpler (2017)	Singapore	1980-2014	Vector Error Correction Model	FDI and GDP	Negative long-run connection between FDI and GDP

Table 3.2. Summary of selected empirical literature on how FDI and domestic investment influence economic growth.

Author(s)	Country(s)	Periods	Methodology	Variables	Keys Findings
Shawa and Amoro (2014)	Kenya	1980 – 2013	Co-integration and the Granger Causality test	FDI, GDP growth, domestic investment, and exports	Long-term relationship between the four variables.
Ameer and Xu (2017)	China	1990-2014.	Co-integration and Granger causality analysis (Including multivariate Granger causality models).	DI and FDI	Positive unidirectional causality running from FDI to DI.

Dutta <i>et al.</i> (2017)	Bangladesh	1976–2014	Granger causality tests in VECM framework	FDI, domestic investment, trade openness, and GDP	Domestic investment and FDI cause each other.
Gungor and Ringim (2017)	Nigeria	1980-2015	Johansen multivariate cointegration test and VECM	FDI, DI and economic growth (GDP)	Long-run equilibrium relationship between variables.
Tabassum and Ahmed (2014)	Bangladesh	1972–2011	Multiple regression method	RGDP, FDI, domestic investment and openness	Domestic investments exert a positive influence on RGDP.
Abu and Karim (2016)	16 Sub-Saharan African (SSA) countries	1981 – 2011	VAR estimation and Granger causality tests	GDP, FDI, Saving, domestic investment	Growth and domestic investment cause each other.
Aboye (2017)	Ethiopia	1975-2014	Vector Error Correction Model (VECM) approach	FDI and domestic investment	FDI crowds out private domestic investment.

Table 3.3. Summary of selected empirical literature on how trade/export and FDI influence economic growth.

Author(s)	Country(s)	Periods	Methodology	Variables	Keys Findings
Hussain and Haque (2016)	Bangladesh	1973-2014	Vector Error Correction Model (VECM) analysis	FDI, trade, and growth rate per capita of GDP.	Trade and FDI have a significant impact on the growth rate of GDP per capita.

Modou and Liu (2017)	13 West Africa countries	1980-2015	Weighted Fully Modified Ordinary Least Squares (FMOLS)	GDP, FDI and trade	Positive relationship among the variables.
Nguyen (2017)	Vietnam	1986-2015	ARDL and error correction model	FDI, exports and GDP	Significant positive relationship between variables.

Table 3.4. Summary of selected empirical literature of how the quality of institutions influence FDI and economic growth.

Author(s)	Country(s)	Periods	Methodology	Variables	Keys Findings
Malikane and Chitambara (2017)	Eight Southern African countries	1980-2014	Generalized method-of-moment (GMM)	FDI, democracy and economic growth	Positive relationship between FDI, democracy and economic growth.
Jude and Levieuge (2017)	sample of developing countries	1984-2009	Panel smooth regression model	FDI, GDP and institutional quality	Positive relationship among the variables.

Table 3.5. Summary of selected empirical literature of how external debt influence FDI inflows and economic growth.

Author(s)	Country(s)	Periods	Methodology	Variables	Keys Findings
Jilenga <i>et al.</i> (2016)	Tanzania	1971-2011	ARDL model and the Bounds test approach	External debt, FDI and RGDP	Long-run debt promotes economic growth.
Kida (2017)	Kosovo	2007-2016	OLS technique	FDI, external debt and GDP	FDI has a positive effect on GDP, and External debt has a negative effect on GDP.

Jawaid and Saleen (2017)	Pakistan	1976-2015	Cointegration, Ordinary least square	FDI, GDP workers' remittances, and external debt	FDI has a significant and negative effect on GDP, and Remittances and external debt have positive effect on GDP.
Chaudhry <i>et al.</i> (2017)	Selected developing countries.	1990-2014	FMOLS	FDI, external debt and economic growth	FDI and external debt have significant and positive relationships with economic growth.

Table 3.6. Summary of selected empirical literature on how exchange rate influence FDI inflows and economic growth.

Author(s)	Country(s)	Periods	Methodology	Variables	Keys Findings
Ditta and Hassan (2017)	Pakistan	1972- 2013	ARDL model	Exchange rate, interest rate and FDI	Exchange rate has a positive relationship with FDI.
Bianco and Loan (2017)	10 Latin American and Caribbean countries	1990 – 2012	The Generalized Autoregressive Conditional Heteroscedasticity model (GARCH).	FDI, price and real exchange rate volatility	Negative effect of exchange rate volatility on FDI.

Table 3.7. Summary of Selected Empirical Literature on how do FDI inflows influences economic growth in South Africa.

Author(s)	Country(s)	Periods	Methodology	Variables	Keys Findings
Owolusi <i>et al.</i> (2017)	5 African economies	1980-2014	Ordinary least squares (OLS) and dynamic panel	FDI and GDP	Positive effect of FDI on GDP.

Sunde (2017)	South Africa	1990-2014	ARDL bounds testing and the VECM Granger causality approach	GDP, FDI and Exports	FDI and exports spur economic growth.
Megbowon <i>et al.</i> (2016)	South Africa	1980-2014	Multivariate models, co-integration and causality	FDI, employment and capital formation	Long-run relationship among variables, except gross capital formation. No causality was found between variables.
Strauss (2015)	South Africa	1994-2013	Vector Error Correction Model	FDI, absorptive capacity and GDP	Ambiguity results as no long-term effects between the variables are found.
Masipa (2014)	South Africa	1990-2013	Johansen Cointegration test	FDI, GDP and employment	Positive long-run relationship between FDI, GDP and employment.
Khobai <i>et al.</i> (2017)	South Africa	1970-2016	Quantile regressions	FDI domestic investment and per capita GDP growth	Negative influence on welfare at extremely low quantiles. Domestic investment on welfare is positive and significant at all levels.
Akoto (2016)	South Africa	1960-2009	Granger causality	FDI, exports and GDP	Bi-directional causality between GDP and exports, with unidirectional causality from FDI to exports and FDI to GDP.
Nchoe (2016)	South Africa	1970-2014	Vector error correction model (VECM)	The agriculture, industry and services sectors	FDI has a significant effect on the services and industry sector but has a negative effect on the agricultural sector.

3.5 Conceptual Framework and research model

This study diverges from prior studies in South Africa that have concentrated significantly on FDI-growth nexus and will endeavour to fill in the knowledge gaps by understanding the indirect linkages between FDI and economic growth in South Africa. We gauge two models, in the first model, economic growth (RGDP) is regressed on FDI, domestic investment, foreign debt and real exchange rate, and the second model FDI is regressed on RGDP, domestic investment, foreign debt and real exchange rate.

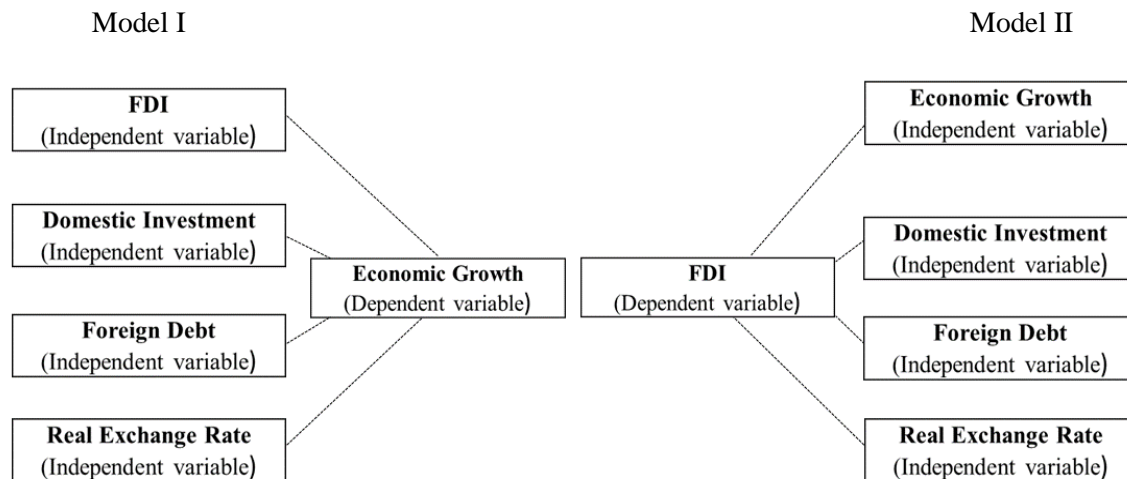


Figure 3.1. The models showing the conceptual framework for the analysis of FDI and growth within a country.

Source: Author

In model I, RGDP is a dependent variable and a function of the remaining four variables. FDI spillover impacts can go about as a crucial reason for economic growth over the long run. Most of the reviewed studies indicated that FDI has a positive connection with the economic growth in a host nation. The empirical studies in South Africa also affirmed a positive linkage among FDI and economic growth, (see, Masipa, 2014; Owolusi *et al.*, 2017; Sunde, 2017). Thus, we anticipate practically identical outcomes.

The theories of endogenous growth have emphasised the role of domestic capital in economic growth, (see, Romer, 1986; Lucas, 1988). Domestic investment is proposed to be the most momentous wellspring of economic growth and a genuine device in job creation in an economy (Lean and Tan, 2011). In any case, recent empirical studies relating to domestic investment and

economic growth are scarce in South Africa. Given the low degrees of local investment in South Africa, there is a necessity for a precise study that distinguishes the impact of domestic investment in a short and long-run economic growth context. The reviewed literature on the idea of the connection of domestic investment on economic growth is mixed. Be that as it may, an assemblage of empirical studies uncovered a solid connection between domestic investment and economic growth (see, Abu and Karim, 2016; Gungor and Ringim, 2017). Along these lines, the current study should anticipate tantamount outcomes.

Ali (2014) contends that exact economic growth emerges when various schemes are supported and executed utilising borrowed capitals. Then again, Gana, (2002) underlined that external borrowing is helpful and essential to expand the pace of economic growth on the off chance that they are diverted to support the economic output. The foreign debt context of South Africa has been on the ascent and has founded a reason for worry about the future. The subject of interest is whether foreign debt stimulates economic growth in South Africa or not. In light of the reviewed studies, the connection between economic growth and external/foreign debt is mixed. In any case, most of the studies uncovered that external debt negatively affects economic growth, (see, Kida, 2017; Jawid and Saleen, 2017). Accordingly, the current study should anticipate some comparative outcomes.

The linkage between the exchange rate and the macroeconomic performance has gotten impressive consideration in past studies. In view of the empirical studies, the impacts of the exchange rate on economic growth yielded mixed outcomes. Some studies affirmed a negative connection between the exchange rate and economic growth (see, Uremadu *et al.*, 2017; Bainco and Loan, 2017). However, Ditta and Hassan (2017) uncovered a positive connection between these variables. This present study anticipates comparable discoveries to Uremadu *et al.*, (2017); Bainco and Loan, (2017), as we try to dissect the reasons for real exchange rate volatility and its impact on economic growth in South Africa.

Similarly, to Model I, in model II, FDI is a dependent variable a function of the remaining four variables. As we cited in model I, theoretically the connection between FDI and economic growth is relied upon to be certain because of spillover impacts. Be that as it may, model II looks to establish whether there is a positive or negative connection between FDI (as dependent variable) and economic growth.

Endogenous growth theory assumes that foreign direct investment is more fruitful than domestic investment as it incorporates new advances in the production function (see, Romer, 1990; 1994). The theory also expects that FDI connected technical spillovers offset the impacts of debilitating returns to investment and preserve the economy on a long-run growth route (Kotrajaras, 2010). The impacts domestic investment on FDI has been certain in most dissected empirical studies (see, Shawa and Amoro, 2014; Dutta *et al.*, 2017; Gungor and Ringim, 2017). In any case, Aboye (2017) failed to find a spillover impact from domestic investment to FDI. The relations between domestic investment and FDI is of most extreme significance and both can affect each other emphatically or contrarily on the South African economy. Ullah *et al.* (2014) contend that the ascent in private investment flags exceptional yield on investment in the domestic economy while public investment demonstrates the upgrading in infrastructure and in this way a decrease in the cost of doing business. These two roles of domestic investment inspire foreign investors to pick up the advantages of exceptional yield. In any case, the impact of domestic investment on FDI in South Africa is uncertain; that is, domestic investment may have crowding-out (negative impact) or crowding-in (beneficial outcome) sway on FDI. Crowding-out impact of domestic investment implies it is inconsequential in South Africa yet crowding-in as a result of domestic investment on FDI is gainful for South Africa.

FDI and foreign debt are foreign capital that can possibly impact the economic growth of South Africa. Azeez *et al.* (2015) contend this is on the grounds that the two of them imply capital inflows which are probably going to expand the pace of capital arrangement which is fundamental to drive economic growth. The account of South Africa regarding foreign debt keeps on creating questions concerning the commitment to the economy, its substance and a sensible amount to be overseen. However, Halkos and Paizanos (2016) contend that more borrowing by the government can crowd out private investment by increasing the interest rate. Ostadi and Ashaja (2014) contend that an expansion in foreign debt forms negative outlooks from the economic future and in this way, decreases the level of investment in the host nation. Although considerable FDI inflow into South Africa has been recorded in past years, this is far less compared to other emerging nations like BRICS. As of late, the South Africa government has boarded on borrowing externally for the primary reason of financing the expanded extent of economic exercises for economic growth. The inalienable issues in South Africa, for example, capital flight, macroeconomic vulnerability, currency (Rand) devaluation, and frail export base among others make the impacts of foreign debt

and FDI request empirical answers. The impact of foreign debt on FDI in South Africa is uncertain. The linkage between FDI and foreign debt brings up an issue: does foreign debt crowd in or crowd out FDI in South Africa? This study looks to contribute country-specific information on the dynamic connections between FDI and foreign debt in South Africa.

The inflows of FDI can also influence the appreciation or deterioration of the local exchange rate through the increased interest for South African currency. Along these lines, the subject of the importance and course of the connection between the exchange rate and FDI are still emphatically applicable up to this point. The question that strikes a chord is whether exchange rate variations influence FDI inflows into South Africa? If FDI is influenced by exchange rate changes, at that point maintainability of FDI is a beneficial advancement and the best approach to accomplish this is by looking at the variable liable for these contacts with the end goal of assuring its development and improvement. As far as I know, there is no study in South Africa that has established the connection between the exchange rate and FDI (as dependent variable). Prior studies have investigated just the noteworthiness of FDI or the exchange rate on economic growth and the channels through which it might be profiting the economy.

3.6 Synthesis of the reviewed studies

It is evident from the empirical review that various aspects are important in attracting FDI by host nations but with different degrees of significance. In the period (2014-2017) it is observed that most of the papers focus on the impact and link between FDI on economic growth in the host nation. However, there is a mounting number of studies employing numerous variables such as exchange rates, domestic investment and export as some causal features on FDI attraction. Also, we encounter that democratic institutions, quality of institutions of a host nation has an effect on FDI attraction. This implies that countries with robust democratic institutions are better able to absorb the positive spillovers from FDI. Moreover, some recent empirical papers focus on the social implications of FDI.

It is observed that in most of the studies Johansen Cointegration and VECM is selected and employed as a statistical technique. We also encountered other statistical approaches such as Granger causality tests, ECM and ARDL, and OLS technique model utilised in some other studies.

Finally, it is observed that most of the papers comprise a greater sample of nations most of them focus on the Asian and African FDI inflows.

A key body of literature has affirmed the positive impact or linkage between FDI and economic growth. Nonetheless, the findings have significant macroeconomic implications. Studies stress the solid links observed between the exchange rates, domestic investment, export, the level of democratic institutions, and quality of institutions of a host nation in attracting FDI and to inspire economic growth.

This study, therefore, presents an extensive empirical understanding of the causal link between four independent variables (FDI, domestic investment, foreign debt, real exchange rate) and dependent variable (economic growth) in Model I. Similarly, the study will determine a causal link between four independent variables (RGDP, domestic investment, foreign debt and real exchange rate) and dependent variable (FDI) in Model II. This study will analyse this critical linkage with the help of bound test analysis, and ADRL model.

3.7 Research Gap

Even though the study of the role of FDI, local investment, foreign debt and the exchange rate in economic performance has pulled more consideration in the literature, it has remained one of the debates on the world economy. Certainly, the literature shows that the impact domestic investment, exchange rate, foreign debt and FDI on economic growth varies starting with one nation then onto the next and starting with one-timespan then onto the next. This also reflects contrasts in sectors of investment underscored, approaches and source and nature of data. For example, some researchers and policymakers believe that FDI benefits a host nation through extra employment, new innovation and transfer of information. Some concern, nonetheless, that it has a crowding-out effect on residential investment and disposes of competition in the household markets. However, either kind of investment is a critical determinant of economic growth; subsequently, it is probably going to be a persuasive factor on economic growth.

The goal of this study is to determine the indirect linkages between foreign direct investment and economic growth. It is recognised that previous studies have made a significant commitment to perceive the significance of FDI in the economy. Since FDI was relied upon to be a significant wellspring of economic growth in emerging economies, for example, South Africa, the literature

survey, for the most part, was engaged with the investigation of the effect of GDP with FDI, GDP with FDI and Exports, FDI and employment in economic growth of South Africa through spillover. In view of the reviewed publications, academic and empirical studies have significantly focused on FDI-growth nexus. Subsequently the approach in this study is to diverge from the direct FDI-growth nexus and determine indirect linkages between FDI and economic growth to domestic investment, foreign debt and the exchange rate. To the best of my knowledge, there is no study in South Africa that has researched the impact of domestic investment, exchange rate, foreign debt and economic growth in attracting the FDI inflows into South Africa in the short and long run. The investigation of this linkage is increasingly significant keeping in view the growing influence of these variables in enticing FDI inflows into South Africa.

3.8 Summary and Conclusions

This chapter focused on analysing the available theory and empirical literature on the linkages between foreign direct investment and economic growth. Neither empirical literature nor theoretical literature has agreed about the linkages of FDI inflows and economic growth into economies. Romer (1994) contends that endogenous growth separates itself from neoclassical growth by underlining that economic growth is an endogenous effect of an economic system, not the result of powers that force from external.

Endogenous growth models undertake that endogenously determined information capital and information spillovers contribute hugely to growth. Moreover, unlike the traditional Solow-type models, endogenous growth theories take into consideration the probability of expanding returns. These theories submit that information, collected through R&D, learning by doing and investment in schooling creates externalities that bring about expanding returns at the total degree of the economy. R&D is anticipated to raise the yield of the firm steering the R&D just as different firms who decide to embrace the innovation.

The thought process behind market-seeking FDI is to exploit the new markets and expect to serve only the domestic market. A firm with the resource-seeking FDI invests in the foreign country order take benefit of resources that they are not accessible at home (such as natural resources or raw materials). Efficiency-seeking FDI is characterised by investments assumed in order to minimize creation costs. The last class, strategic asset seeking may be considered as different

because, in this case, the drive of the investment is that of achieving and supplement new technological base as opposed to exploiting the current resources.

Hymer (1976) recognised two significant kinds of motivating forces, that is, "monopolistic or oligopolistic advantages" that the local firms appreciate over foreign firms and termination of rivalry between the firms in various nations. The, eclectic theory by Dunning (1993) reveals that an MNE participates in foreign direct investment for three conditions, these being ownership, internalization and location. Foreign firms should have ownership advantages over other firms. Also, there is a possibility to get profits by internalization of advantages and finally, there are preferences the firm can appreciate from a foreign location.

It can be settled from the reviewed literature of FDI and economic growth that FDI has positive impacts on the economy of the investee nation. In rarer situations it can have an opposite effect or an immaterial effect. Most existing literature has given consistent outcomes with respect to the growth impacts of FDI. Researchers supporting the beneficial outcomes of FDI on economic growth assume that it could rouse specialised change through the embracing of foreign innovation and technological spillovers, thus modernising the host nation's economy. The rivals assume that FDI may bring about crowding-out impacts on household investment and destructive rivalry of foreign partners with residential enterprises and "market-stealing impact" on account of denied absorptive limit.

CHAPTER FOUR

RESEARCH METHODOLOGY AND MODEL.

4.1 Introduction

This chapter focuses on the method adopted by the researcher in gathering data and data analysis for this research work. This is aimed at investigating the indirect linkages between FDI and economic growth in the South African economy. The first section of the chapter identifies the econometric model and the how estimation of the model was employed. This is followed by the definition of variables used, expected results and specification of the data that was used. The third section of the chapter presents numerous tests for the model including stationarity, cointegration, ARDL model, Granger causality test and diagnostic testing. The last section concludes the chapter.

4.2 Econometric Model Specification

FDI inflows are desirable for lessening the capital gap and improving the income gap among developing and developed economies (Romer 1994; Zekarias, 2016; Amuka and Ezeudeka, 2017). FDI assumes a generous role in the growth procedure when there is an absence of local reserve funds, (Ali and Hussain, 2017). Foreign direct investment is not just seen as a wellspring of foreign capital inflows but also a primary driver of aptitudes and information transfers in the host nation. Ali and Hussain (2017) go further and suggest that innovation transfer can occur in the host nation through MNEs while spillovers could occur through the contact of MNEs with local companies, providers of merchandise and ventures, clients and workforce. Thus, foreign direct investment can positively affect income. To build up the model of this study we have followed the model of Akinlo (2003) with specific alterations. Under the endogenous growth notion, foreign direct investment impacts growth through refining the output of local and foreign assets (DeMello, 1997; Alege and Ogundipe, 2013; Sala and Trivin, 2014; Zekarias, 2016), in this way, the connection among FDI and economic growth can be confined from the augmented Cobb-Douglas production function as follows:

$$Y = f(K_d, K_f, L) \quad (4.1)$$

Where Y is output, K_d speaks to the domestic capital stock, while K_f signifies foreign possessed capital stock (or the stock of FDI) and L speaks to labour. The consideration of FDI or foreign possessed capital in the production function is because of FDI's function as capital and its normal

role as an innovation diffuser or expertise, which has both direct and indirect impacts on economic growth, as per the capital formation and technological spillovers theories. The disintegration of capital into foreign and domestic also permits the influence of FDI to be separated from that of local capital.

Assuming (4.1) follows a log-linear structure, we take the logarithms of the two sides:

$$\ln(Y) = \alpha \ln (K_d) + \beta \ln (K_f) + \gamma \ln (L) \quad (4.2)$$

where, α , β and γ are the output elasticities of domestic capital, foreign capital and labour. Output elasticity gauges the affectability of output to an adjustment in levels of either labour or capital (domestic or foreign investment) utilised in production. For example, if $\gamma = 0.15$, a 1 percent expansion in labour would prompt around a 0.15 percent increment in output. If $\gamma + \beta = 1$, the production function has steady returns to scale. That is, if L and K_f are each expanded by 30 percent, at that point Y increments by 30 percent. Subsequently, $\gamma + \beta > 1$ returns to scale are expanding. Be that as it may, if $\gamma + \beta < 1$, returns to scale are diminishing. Returns to scale alludes to a specialised (technical) property of production that scrutinises changes in output resulting to a comparative change in all inputs (where inputs increment by a consistent factor).

Taking first differences of (4.2), we acquire the resulting articulation for the growth rate of output:

$$\Delta \ln(Y) = \alpha \Delta \ln (K_d) + \beta \Delta \ln (K_f) + \gamma \Delta \ln (L) \quad (4.3)$$

Therefore, the growth rate of output is a function of the growth rates of the stocks of domestic capital, foreign capital, and the labour force. The empirical model of this study is underscored by the hypothetical outline talked about above. The indirect linkages of FDI and economic growth (RGDP) are tested utilizing two models.

In the first model, economic growth is the autonomous variable and proxied as real GDP per capita (RGDP). While, FDI, Domestic Investment (DI), Real Exchange Rate (EXR) and Foreign Debt (FD) are demonstrated as illustrative variables. In the subsequent model, FDI is the dependent variable, while RGDP, DI, EXR and FD are demonstrated as illustrative variables. The motivation behind having two models and testing two regressions is to determine a two-route causation between FDI and RGDP and how these two variables of interest are being influenced by each other and by DI, EXR and FD.

MODEL I

In model I, RGDP is a dependent variable and a function of the remaining four variables. The study hypothesizes that economic growth has a positive relation with FDI inflows, DI and a negative connection with EXR and FD.

Dutta *et al.* (2017) state that FDI can drive economic growth through spillover impact, for example, managerial and technical skill and capital gathering. Endogenous growth theory proves that through R&D, learning of new abilities, capital gathering, technical dissemination and various information spillover impacts can go about as a fundamental wellspring of economic growth over the long run (Romer, 1986). It is thus expected that the outcomes from this study will be in accordance with Dutta *et al.*'s (2017) study.

Endogenous growth theory has underlined the imperative role of domestic investment in economic growth (Bakari, 2017). Lean and Tan (2011) claim that domestic investment is the most noteworthy wellspring of economic growth. Along these lines, the current study should anticipate tantamount outcomes, precisely a positive connection between domestic investment and economic growth.

Theoretically, the direction and degree of exchange rate activities influences economic growth through numerous channels. Demir (2010) contends that exchange rate uncertainty has a negative outcome on some macroeconomic aggregates that may influence economic exercises, for example, investment, trade transparency and economic growth. A steady long-term economic growth needs consistent trade and currency markets to defend a reliable exchange rate framework and favourable terms of trade adding to suitable basic physical capital stock (Kogid, Asid, Jaratin, Mulok and Loganathan, 2012). It is consequently expected that the results of this study will be in accordance with Demir's (2010) study.

Benedict *et al.* (2003) and Jilenga *et al.* (2016) state that foreign debt can also influence economic growth through the crowding-out impact or by influencing the arrangement of private capital. Jilenga *et al.* (2016) express that an expansion in debt servicing may build the government's interest bill and, in this manner, cause the long-run interest to inflate, which makes the expense of borrowing for both investment and consumption increasingly costly, or simply crowd out credit available for private investment. Kharusi and Ada (2018) point out that, poor administration in

developing nations has driven debt to negatively affect economic growth. Along these lines, this present study should anticipate a negative impact of foreign debt on economic growth.

The model formulation is given below as:

$$\ln RGDP_t = \alpha_0 + \alpha_1 \ln FDI_t + \alpha_2 \ln DI_t + \alpha_3 \ln EXR_t + \alpha_4 \ln FD_t + \mu_t \quad (4.4)$$

Equation (4.4) is identical to equation (4.3). Where, α_0 , is the intercept, α_1 to α_4 are the slope coefficients of the independent variables to be determined while $\ln RGDP_t$ is the log of Real GDP per capita in year t, $\ln FDI_t$ is the log of Foreign Direct Investment in year t, $\ln DI_t$ is the log of Domestic Investment in year t, $\ln EXR_t$ is the log of Real Exchange Rate in year t, $\ln FD_t$ is the log of Foreign Debt in year t and μ_t = error term.

MODEL II.

In model II, FDI is a dependent variable and a function of FDI, DI, EXR and FD. The study hypothesizes that FDI has a positive connection with RGDP, DI and a negative connection with EXR and FD.

FDI is regularly focused on selling products openly to the country related to pulling in investment. Along these lines, the extent for economic growth will be indispensable for pulling in FDI. Iamsiraroj and Doucouliagos (2015) contend that a growing market can be alluring to FDI inflows due to the possibility that a greater market will empower an increasingly effective size of production through the acknowledgment of economies of scale. A positive relationship is expected between economic growth and FDI in South Africa.

Ndikumana (2007) asserts that the connection between economic growth and FDI runs the two different ways, yet the impact of residential capital on FDI is more grounded than the opposite connection. This proposes high local investment is a sign for significant yields to capital, which pulls in more FDI. Therefore, the current study should anticipate a positive connection between domestic investment and FDI.

Another channel through which the exchange rate may influence economic growth is investment. Cambazoglu and Gunes (2016) contend that an increase in unpredictability decays speculators' inspirational desires for the economy of the host nation. In other words, an ascent in instability

raises the hazard related to the normal rates of profitability (Cushman, 1985). Consequently, the present study should expect a negative connection between real exchange rate and FDI.

Ostadi and Ashaja (2014) contend that an ascent in foreign debt creates negative possibilities from the economic future and in this way, lessens the level of investments in a host nation. Additionally, broad debt troubles will in general slice investment through both debt overhang and the crowding-out impact (Iyoha, 1997). Thus, the current study should anticipate a negative connection between foreign debt and FDI.

The model formulation is given below as:

$$\ln FDI_t = \alpha_0 + \alpha_1 \ln RGDP_t + \alpha_2 \ln DI_t + \alpha_3 \ln EXR_t + \alpha_4 \ln FD_t + \mu_t \quad (4.5)$$

Where $\ln FDI_t$ is the log of Foreign Direct Investment in year t, $\ln RGDP_t$ is the log of Real GDP per capita in year t, $\ln DI_t$ is the log of Domestic Investment in year t, $\ln EXR_t$ is the log of Real Exchange Rate in year t, $\ln FD_t$ is the log of Foreign Debt in year t and μ_t = error term.

4.3 Definition of Variables

The real GDP per capita (**RGDP**) indicates economic growth and it is determined by dividing the real GDP by total populace. We utilise GDP per capita since it catches economic advancement and welfare impacts of the growing economy of South Africa from 1980 to 2016. The real GDP per capita offers a vastly improved assurance of living standards as related to real GDP and GDP growth rate. Besides, the real GDP per capita is a steady measure for deciding the economic condition of a nation from an individualistic viewpoint. This proxy has been utilised in past studies by Uzun, Karakoy, Kabadayi and Emsen (2012) and Nwaeze (2017).

Foreign Direct Investment (**FDI**) determines the foreign capital. Kariuki (2015) and Onyinyechi and Ekwe (2017) depict FDI as the net inflow of investment made to acquire an enduring premium (10% or more voting stock) in a firm other than that of the investor. FDI is normally estimated as a portion of nominal GDP (Ahmed, Arezki and Funke, 2005). FDI can also be estimated as a log of overall FDI inflows (Fedderke and Romm, 2006). The recommendation of Fedderke and Romm (2006) is applied. This gives a total impression of the monetary assets' foreigners invest in companies or their subsidiaries.

Domestic investment (**DI**) is proxied by credit to the domestic private sector (CPS), public investment (PI) and government investment expenditure (GOVIN). CPS alludes to financial assets offered to the private sector by financial institutions. PI is estimated by net fixed capital formation made by public firm investment and government investment expenditure alludes to the investment made by national government other than the public companies.

Real Exchange Rate (EXR) is used to gauge the impact of the exchange rate on economic growth (Fedderke and Romm, 2006). Theory proposes that exchange rate (EXR) precariousness can either rouse or plague FDI streams. The insecure foreign exchange market offers increment to economic uncertainty, which is a limit to FDI inflows.

Foreign Debt (FD) can be characterised as a condition where governments face budget shortfall because of the high spending and less income (Anning, Ofori and Affum, 2016). Foreign debt alludes to the general loan debt of national government (Moolman, Roos, Le Roux, and Du Toit, 2006). This is credited to the foreign vendible debt. The recommendation of Moolman, *et al.* (2006) is utilised. This shows a merger of short and long-run liabilities.

Table 4.1. Variables Description and the Expected Prior

Variable	Description of variable	Expected sign
<i>LnRGDP</i>	Log of RGDP	+ (positive)
<i>LnFDI</i>	Log of FDI	+ (positive)
<i>LnDI</i>	Log of domestic investment	+ (positive)
<i>LnEXR</i>	Log of real effective exchange rate	- (negative)
<i>LnFD</i>	Log of foreign debt	- (negative)

Source: Author

A priori expectation: FDI and DI are predicted to have a noteworthy positive impact on the growth of the host economy. This thought is bolstered by the outcomes of Agrawal (2015); Pegkas (2015); Pulstova (2016), who all demonstrated a positive impact of FDI on the local economy. A study by Ali and Hussain, (2017) shows that DI has a positive association and critical influence on FDI, therefore, expanding domestic investment will build GDP. It is along these lines foreseen that the discoveries from this study will be in accordance with results by Ali and Hussain (2017). Then again, the symbols for the coefficient of FD and EXR are relied upon to be negative. Ali and Hussain, (2017) found that there is a negative and significant connection between the exchange rate and FDI. In a similar vein, increment in FD may hinder the growth of GDP. This is in

accordance with the study by Ostadi and Ashja (2014); Chowdhury (2017) that extreme reliance on foreign debt is related to gigantic risks; it hinders economic growth and progress of the nation. Thus, the current study should anticipate equivalent outcomes.

4.4 Sources of Data

The study utilises quantitative research techniques. The annual time series data employed for empirical estimations covers the period from 1980 to 2016 and is obtained from the SARB. The data incorporates seven variables: Foreign Direct Investment (FDI), Domestic Investment (DI) as measured by (domestic credit to the private sector, government investment expenditure and public investment by public corporations), Real Exchange Rate (EXR), Foreign Debt (FD) and Economic Growth (RGDP).

4.5 Diagnostic Tests

The drive of diagnostic tests is to perceive whether autocorrelation and heteroscedasticity are a serious problem in the model. In this study, autocorrelation will be tested using the Lagrange Multiplier (LM) test, and heteroscedasticity using the Breusch-Pagan Godfrey's heteroscedasticity test and the Jarque-Bera test will be used to test for normality.

4.5.1 The Lagrangian Multiplier Test

The Breusch (1978) and Godfrey (1978) test is known as the Lagrange Multiplier (LM) test. Seddighi (2013) contends this is an enormous sample test and is dependable when an adequately huge number of observations are accessible. In addition, the bigger the number of observations, the more solid the results of this test will in general be. The null hypothesis of the Breusch-Godfrey LM test is that there is no serial correlation. If the null hypothesis is dismissed this basically implies the variable is stationary while the inability to dismiss the null hypothesis just implies that the variable has unit root therefore, non-stationary.

4.5.2 The Heteroscedasticity Test

One of the primary presumptions of the ordinary regression model (ORM) is that the errors have a similar variance all through the sample. If the error variance is not constant, the data should be heteroscedastic. Wooldridge (2009) contends that heteroscedasticity can also emerge in time series regression models, and the existence of heteroscedasticity, while not impelling inclination or

irregularity in the $\hat{\beta}_j$, nullifies the normal standard errors, t-statistics, and F-statistics. This is similarly to the cross-sectional case. In time series regression applications, heteroskedasticity much of the time gets little consideration, assuming any. The challenge of serially related errors is every now and again progressively persevering. In any case, it is significant to momentarily cover a portion of the issues that happen in applying tests and corrections for heteroskedasticity in time series regressions. The current study utilises the Breusch-Pagan Godfrey's heteroscedasticity test. The null hypothesis of the Breusch-Pagan Godfrey test depends on the instinct that there is no heteroscedasticity, therefore, the null hypothesis is homoscedasticity. The Breusch-Pagan Godfrey (1976) test whether the variance of the errors from a regression is dependent on the values of the autonomous variables. In that event, heteroscedasticity is existent.

Assume that we gauge the regression model:

$$y = \beta_0 + \beta_1 x + u,$$

As of this fitted model, we acquire a lot of values for \hat{u} , the residuals Ordinary least squares (OLS) compels these so their mean is proportionate to 0 thus, given the speculation that their variance does not depend on the autonomous variables, a prediction of this variance can be reached from the average of the squared estimations of the residuals. If the hypothesis is not exact, a simple model may be that the variance is directly connected to autonomous variables. Such a model can be seen by regressing the squared residuals on the autonomous variables, by means of an auxiliary regression equation of the form (Breusch and Pagan, 1979).

$$\hat{u}^2 = \gamma_0 + \gamma_1 x + v.$$

This is the foundation of the Breusch-Pagan test. It is a chi-squared test. The test is dispersed n_x^2 with k degrees of freedom. Assume that the test statistic has a p -value not exactly a fitting edge (e.g. p -value is under 0.05) at that point, it would propose that the null hypothesis of homoskedasticity is dismissed and therefore, heteroskedasticity is expected.

In any case, if the Breusch-Pagan test indicates that there is transitory heteroskedasticity, one may either use weighted least squares (given the premise of heteroscedasticity is known) or use heteroscedasticity-consistent standard errors (Cook and Weisberg, 1983).

4.5.3 The Jarque-Bera Normality Test

The normality tests will also be performed to analyse if the residuals are normally conveyed. This examination utilises the Jarque-Bera test for normality, which tests the sample data for skewness and kurtosis. As indicated by Jarque and Bera (1980) the null hypothesis is that the data tested is normally disseminated, and the alternative hypothesis is that the verified data is not normally distributed. Jarque-Bera test employs the property of a normally distributed random variable. The entire distribution is depicted by the underlying two moments of the mean and the variance.

The test statistic asymptotically follows a χ^2 under the null hypothesis that the distribution of the series is symmetric. Gujarati (2004:148) contends that the null hypothesis of normality is not accepted if the residuals on the model are either significantly skewed or leptokurtic.

4.5.4 Stability Test

The Cumulative sum (CUSUM) tests are employed to affirm the consistent quality of the variables in the short and long run. Cusum tests measure the steadiness of coefficients (β) in a multiple linear regression model. Bekhet and Matar (2013) point out that if the plot of CUSUM statistics stays inside the 5 percent range of the significance level, at that point all the coefficients in the ECM are foreseen to be consistent, yet on the off chance that the plot of CUSUM statistics overlapped the 5 percent range of the significance level, the coefficients in the ECM are viewed as unsteady.

4.6 Estimation Techniques

4.6.1 Unit root tests for stationarity

The study utilises the Augmented Dickey-Fuller (ADF) test and the Phillips-Peron test to confirm for the stationarity of the variables, just as to determine the order of integration of the variables. Brooks (2008) contends that these checks are pivotal as they give a superior comprehension into the structural breaks, trends and stationarity of the data.

4.6.1.1 The Augmented Dickey-Fuller Test

To test the stationarity properties of time series, the Augmented Dickey-Fuller test (ADF) (Dickey and Fuller, 1981) is utilised in the study. The test includes evaluating the regression

$$\Delta X_t = \alpha + \rho t + \beta X_{t-1} + \Delta X_{t-1} + \epsilon_t \quad (4.6)$$

Where, α is a constant while ρ is the coefficient of time trend. X is the variable getting looked at. On account of this examination, the variables comprise $\log(\text{RGPD})$, $\log(\text{FDI})$, $\log(\text{DI})$, $\log(\text{EXR})$ and $\log(\text{FD})$. Δ is the first-difference operator; t is a time trend; and ϵ is a stationary random error. Unit root is tried on the coefficient of X_{t-1} in the regression (equation 4.6). On the off chance that the coefficient, β , is uncovered to be significantly unlike from zero ($\beta \neq 0$), the null hypothesis that the variable X comprises a unit root problem is dismissed, signifying that the variable is stationary. The optimal lag length is additionally decided in the ADF regression and is chosen by means for the Schwarz Information Criteria.

4.6.1.2 Phillips-Perron Test

The Phillips-Perron (1988) test (PP test) will be applied to check if the outcomes are predictable with the ADF Test. The shortcoming of the Dickey-Fuller test contrasted with Phillips-Perron test is that it does not consider the probable autocorrelation in the error process, ϵ_t . On the off chance that ϵ_t is auto-correlated, at that point the OLS estimates of coefficients will be inefficient and t -ratios will be biased, henceforth the Phillips-Perron test is a progressively far-reaching model of unit for non-stationarity. The PP test employs non-parametric statistical frameworks to care for the serial correlation in the error terms without including lagged difference terms.

At the point when any time series is uncovered to be non-stationary, then unit root tests are to be utilised to decide if the first or second differences of the variables are stationary.

4.7 Optimal Lag Structure Selection

To choose the fitting model of the long run underlying equation, it is important to determine the optimum lag length (k) by utilising appropriate model order selection criteria, for example, the Final Prediction Error Criterion, Akaike Information Criterion (AIC), Schwarz Bayesian Criterion or Hannan-Quinn Criterion. Moreover, the choice of lag length ought to be exercised with carefulness, as unfitting lag length can prompt biased outcomes. Thus, to affirm that the lag length is picked suitably, we utilize the AIC to delineate the relative lag length. The AIC criterion gives strong outcomes and has excellent performance contrasted with the Schwarz Bayesian Criterion and Hannan-Quinn Criterion (Chandio, Jiang, and Rehman, 2019).

4.7.1 Final Prediction Error Criterion

The final prediction error criterion was the first of two tools proposed by Akaike for the purpose of model order selection (Niedzwiecki and Ciołek, 2017). Final prediction error criterion estimates the model-fitting error when you use the model to predict new outputs. After computing several different models, you can compare them using this criterion. According to Akaike's theory, the most accurate model has the smallest final prediction error criterion. If you use the same data set for both model estimation and validation, the fit always improves as you increase the model order and, therefore, the flexibility of the model structure

4.7.2 Akaike's Information Criterion

One of the most normally utilised information criteria is AIC. The Akaike's Information Criterion is a weighted estimation error dependent on the unexplained variation of a given time series with a penalty term when exceeding the optimal number of parameters to represent the system (Akaike, 1973). For the AIC, an optimal model is the one that minimizes the following condition:

$$AIC = V_n \left[1 + \frac{2P}{N-P} \right]$$

N is the number of data points, V_n is an index identified with the prediction error, or residual sum of squares, and p symbolizes the number of parameters in the model. A good model is the one that has minimum AIC among all the other models. Shittu and Asemota (2009) contend that, one benefit of AIC is that it is valuable for not only in sample data but also out of sample forecasting performance of a model. In sample forecasting basically reveals to us how the picked model fits the data in a given sample while the out of sample forecasting is concerned with determining how a fitted model forecasts future values of the regressed, given the values of the repressors.

4.7.3 Schwarz Bayesian Criterion

The Schwarz Bayesian Criterion is one of the most broadly known and utilised instruments in statistical model selection. The Schwarz Bayesian Criterion was presented by Schwarz (1978) as a contender to the Akaike (1973; 1974) information criterion (AIC). Unlike Akaike Information Criteria, in Bayesian applications pairwise correlations between models are regularly founded on Bayes factors (Schwarz, 1978). Assuming two candidate models are viewed as similarly plausible a priori, a Bayes factor denotes the proportion of the posterior probabilities of the models. The

model which is a posteriori probable is determined by whether the Bayes factor is less or more noteworthy than one. In specific settings, model selection based on Schwarz Bayesian Criterion is generally comparable to model selection based on Bayes factors (Kass and Raftery, 1995).

A significant advantage of Schwarz Bayesian Criterion is that for a broad range of statistical problems, it is order consistent (i.e. when the sample size advances to infinity, the likelihood of selecting the correct model converges to unity) prompting more parsimonious models. Shittu and Asemota (2009) contended that, similar to the AIC, the lower the value of Schwarz Bayesian Criterion, the better the model. Like AIC, Schwarz Bayesian Criterion can be used to compare in sample or out of sample predicting performance of a model (Shittu and Asemota, 2009).

4.7.4 Hannan-Quinn Criterion

The Hannan-Quinn information criterion was formed by Hannan and Quinn (1979). Hannan-Quinn Criterion is a measure of the goodness of fit of a statistical model and is frequently utilised as a criterion for model selection among a limited set of models. It is not based on log-likelihood function, and yet identified with Akaike information criterion.

Like AIC, the Hannan-Quinn Criterion presents a penalty term for the number of parameters in the model, however the penalty is bigger than one in the AIC.

4.8 The ARDL Bounds Test

In time series scrutiny, a noteworthy cointegrated affiliation between variables must happen in the model to preclude deceptive outcomes. Engle and Granger (1987) contend that a multivariate cointegration test is frequently utilised to distinguish the long run association among core variables of interest. Hypothetically, the multivariate cointegration test seems to be more proficient as it uncovers various cointegrating vectors. However, Ang (2009) advocates that such a test could be difficult to decipher if more than one cointegrating vector is found in the model. In situations where the model shows a mixed order of integration, multivariate cointegration test is unseemly.

An option in contrast to the hitherto mentioned cointegration tests is the Autoregressive Distributed Lag (ARDL) bounds test. The famous ARDL bounds testing method created by Pesaran, Shin and Smith (2001) and Pesaran and Shin (1996) will be applied to test the short run and long-run associations among the variables of interest and RGDP in model I and FDI in model II. The

benefits of the ARDL technique is that it handles integer or fractional order of integration and does not uphold the prohibitive presumption that all the variables under investigation must be incorporated of a similar order, along these lines abstains from testing the order of integration of variables. Pesaran and Shin (1996) contend this demonstrated to be a significant component as certain variables may have fractional order of integration. Narayan (2005) states that the ARDL technique uncovers prevalent small-sample properties than conservative cointegration tests. While Pesaran and Smith, (1998) acclaim that an appropriately expressed lag structure not only controls for serial correlation, but also diminishes conceivable endogeneity in the model. Finally, Baek (2016) contend that we can achieve a dynamic unrestricted ECM (UECM) by employing simply linear transformation to the stated ARDL model, with the transformed UECM enjoying the advantage of merging short run dynamics and long-run equilibrium together without losing any significant information. Prominently, this method is relevant whether variables are simply I(1) or a combination of both I(0) and I(1).

On the bases of these legitimizations above, we hypothesize the UECM of ARDL cointegration approach as follows:

$$\begin{aligned} \Delta \ln \text{RGDP}_t = & \alpha_0 + \sum_{i=1}^n \beta_{1i} \Delta \ln \text{RGDP}_{t-1} + \sum_{i=1}^n \beta_{2i} \Delta \ln \text{FDI}_{t-1} + \sum_{i=0}^n \beta_{3i} \Delta \ln \text{DI}_{t-1} \\ & + \sum_{i=0}^n \beta_{4i} \Delta \ln \text{EXR}_{t-1} + \sum_{i=0}^n \beta_{5i} \Delta \ln \text{FD}_{t-1} + \alpha_1 \ln \text{RGDP}_{t-1} + \alpha_2 \ln \text{FDI}_{t-1} + \\ & \alpha_3 \ln \text{DI}_{t-1} + \alpha_4 \ln \text{EXR}_{t-1} + \alpha_5 \ln \text{FD}_{t-1} + \mu_t \end{aligned} \quad (4.7)$$

$$\begin{aligned} \Delta \ln \text{FDI}_t = & \alpha_0 + \sum_{i=1}^n \beta_{1i} \Delta \ln \text{FDI}_{t-1} + \sum_{i=1}^n \beta_{2i} \Delta \ln \text{RGDP}_{t-1} + \sum_{i=0}^n \beta_{3i} \Delta \ln \text{DI}_{t-1} \\ & + \sum_{i=0}^n \beta_{4i} \Delta \ln \text{EXR}_{t-1} + \sum_{i=0}^n \beta_{5i} \Delta \ln \text{FD}_{t-1} + \alpha_1 \ln \text{RGDP}_{t-1} + \alpha_2 \ln \text{FDI}_{t-1} + \\ & \alpha_3 \ln \text{DI}_{t-1} + \alpha_4 \ln \text{EXR}_{t-1} + \alpha_5 \ln \text{FD}_{t-1} + \mu_t \end{aligned} \quad (4.8)$$

In equation 4.7 and 4.8, Δ symbolises the first difference, the short run and long run elasticities are $\alpha_1, \dots, \alpha_5$ and β_1, \dots, β_5 respectively, and μ_t is the error term.

To determine the long-run equilibrium connection between the variables, we progress to exam the null hypothesis of the variables. Consequently, the null hypothesis is assumed as $H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ and the alternative hypothesis stays as $H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0$. The null

hypothesis recommends the absence of cointegration nonetheless the alternative shows the occurrence of cointegration between variables.

The F-test of the ARDL approach is utilised to decide if there exists cointegration between the variables. If the F-statistic is over the upper bounds of the Narayan critical bounds table, the null hypothesis of no cointegration is dismissed which shows that a long run affiliation occurs between the variables. Then again, if the F-statistic is lower than the lower critical value of the Narayan critical bounds table the null hypothesis cannot be dismissed, inferring no cointegration among the variables. In any case, if the figured F-statistic lies between the upper bound and the lower bound at a preferred significance level, there is no choice on whether there is cointegration. That means the test is hesitant. In the wake of testing the connection between the variables, the long-run coefficients of the ARDL model can be assessed:

$$\begin{aligned} \Delta \ln \text{RGDP}_t = & \alpha_0 + \sum_{i=1}^n \beta_{1i} \Delta \ln \text{RGDP}_{t-1} + \sum_{i=1}^n \beta_{2i} \Delta \ln \text{FDI}_{t-1} + \sum_{i=0}^n \beta_{3i} \Delta \ln \text{DI}_{t-1} \\ & + \sum_{i=0}^n \beta_{4i} \Delta \ln \text{EXR}_{t-1} + \sum_{i=0}^n \beta_{5i} \Delta \ln \text{FD}_{t-1} + \mu_t \end{aligned} \quad (4.9)$$

$$\begin{aligned} \Delta \ln \text{FDI}_t = & \alpha_0 + \sum_{i=1}^n \beta_{1i} \Delta \ln \text{FDI}_{t-1} + \sum_{i=1}^n \beta_{2i} \Delta \ln \text{RGDP}_{t-1} + \sum_{i=0}^n \beta_{3i} \Delta \ln \text{DI}_{t-1} \\ & + \sum_{i=0}^n \beta_{4i} \Delta \ln \text{EXR}_{t-1} + \sum_{i=0}^n \beta_{5i} \Delta \ln \text{FD}_{t-1} + \mu_t \end{aligned} \quad (4.10)$$

If cointegration is established among the variables, the long-run and the short-run model of equation 4.9 and 4.10 will be anticipated utilising the normal OLS to acquire the speed of alteration of RGDP and FDI back to equilibrium just as the short run and long-run coefficients. The long-run model is shadowed by the error correction model introduced in equation 4.11 and 4.12.

$$\begin{aligned} \Delta \ln \text{RGDP}_t = & \alpha_0 + \sum_{i=1}^n \beta_{1i} \Delta \ln \text{RGDP}_{t-1} + \sum_{i=1}^n \beta_{2i} \Delta \ln \text{FDI}_{t-1} + \sum_{i=0}^n \beta_{3i} \Delta \ln \text{DI}_{t-1} \\ & + \sum_{i=0}^n \beta_{4i} \Delta \ln \text{EXR}_{t-1} + \sum_{i=0}^n \beta_{5i} \Delta \ln \text{FD}_{t-1} + \lambda_1 \text{ECM}_{t-1} + \mu_t \end{aligned} \quad (4.11)$$

$$\begin{aligned} \Delta \ln \text{FDI}_t = & \alpha_0 + \sum_{i=1}^n \beta_{1i} \Delta \ln \text{FDI}_{t-1} + \sum_{i=1}^n \beta_{2i} \Delta \ln \text{RGDP}_{t-1} + \sum_{i=0}^n \beta_{3i} \Delta \ln \text{DI}_{t-1} \\ & + \sum_{i=0}^n \beta_{4i} \Delta \ln \text{EXR}_{t-1} + \sum_{i=0}^n \beta_{5i} \Delta \ln \text{FD}_{t-1} + \lambda_1 \text{ECM}_{t-1} + \mu_t \end{aligned} \quad (4.12)$$

The coefficient of the error correction term (ECM) λ_1 , coordinates and measures the short-run speed of alteration back to the long-run equilibrium. It shows how the RGDP in model I and FDI

in model II, departs from the long-run equilibrium, then steadily returns to its long-run equilibrium path. A negative and significant ECM_{t-1} coefficient validates that any short-term movement among dependent and autonomous variables will gather back to the long-run association.

4.9 Granger Causality Tests

The Granger Causality test will be employed to decide the causal association among the variables. Granger causality depends on the expectation that if a sign on one variable can 'Granger cause' a sign on another variable, at that point the past values of that variable should contain data that predicts the other variable well beyond the data contained in the past values of the other variable alone (Gujarati, 2004). The rule expresses that if the probability value is somewhere in the range of 0 and 0.05, there is a causal association.

4.10 Validity and Reliability

The term validity implies how well the measuring instruments in the study fill the demand to measure what it means to measure. In other words, in quantitative research validity of a research instrument assesses the extent to which the instrument measures what it is designed to measure (Robson, 2011). It is the degree to which the results are truthful.

To ensure the validity of a research I made sure that the objectives and hypotheses of the study are clearly defined. Secondly, I selected an appropriate time scale for the study (1980-2016). Thirdly, I also selected an appropriate methodology considering the characteristics of the study. Lastly, I compared the empirical evidences and theoretical rationales that support the adequacy and suitability of interpretations and actions based on test scores.

In a quantitative study, reliability refers to the consistency, firmness and repeatability of outcomes, that is, the result of a researcher is considered reliable if consistent results have been obtained in identical conditions, but different circumstances. It scrutinizes whether or not the items within a scale or measure are homogeneous (DeVellis, 2016).

This could be measured by conducting the study again in order to see if the same results were to be obtained. A test-retest reliability was applied, I re-run the study multiple times and checked the correlation between results. The results are consistent. However, it is imperative to understand that

although threats to research reliability and validity can never be totally eliminated, this study strived to minimize this threat as much as possible.

4.11 Conclusion

This chapter mirrored the procedure of the study through model specification, variable analysis and the estimation approaches in the quest to investigate the indirect linkages between foreign direct investment and economic growth from a South African perspective. The study applied numerous econometric approaches, for example, diagnostic tests, unit root test, cointegration test, ARDL model, and Granger causality tests. Before making any inferences from the estimation results a progression of diagnostic tests were completed to check the model worthiness. The Augmented Dickey Fuller and the Phillips Perron tests were used to inspect the time series properties of the data. To confirm the lag length, the study used the AIC to illustrate the relative lag length. The long-run connection among variables is tested by employing the bounds F-test for cointegration. If a set of tested variables are built up to have at least one or more cointegrating vectors, at that point a suitable appraisal method is an ARDL model which modifies both short-run changes in variables and deviations from equilibrium. The Granger Causality tests inspect the causal association among variables. Thus, the substances of this chapter offer an establishment for the genuine estimations to the study, which are done in Chapter 5.

CHAPTER FIVE

DATA ANALYSIS, FINDINGS AND DISCUSSION.

5.1 Introduction

This section presents and discusses the results from the data analysis. Following the introduction, the study is organized as follows: Section 5.2 presents descriptive statistics, the correlation matrix is offered in section 5.3, whereas section 5.4 presents the unit root test applying Augmented Dickey-Fuller and Phillips-Perron tests and section 5.5 presents the optimal lag selection and the cointegration findings from the ARDL bound test. The reports on the long-run estimate and the short run terms of the ARDL method are offered in section 5.6. Section 5.7 shows the Granger Causality test. Section 5.8 is concerned with the diagnostic tests. The last section concludes the chapter.

5.2 Descriptive Statistics

Table 5.1 summarizes descriptive statistics for all variables utilised in this study. RGDP varies throughout 1980-2016 significantly, ranging from the minimum value of R42386.00 million to the maximum value of R56549.00 million in the sample. Moreover, the mean of RGDP and standard deviation are R48583 million and 4546, respectively. The mean of FDI is R481415 million, the standard deviation is 604699, the minimum value is R12273 million and the maximum value is R1970412 million.

Table 5.1. A summary of descriptive statistics.

Variables	Mean	Std. Dev	Min.	Max.	Jarque-Bera	Pro.
<i>ln</i> RGDP	48582.97	4542.544	42386.00	56549.00	3.307240	0.19
<i>ln</i> FDI	481415.3	604699.0	12273.00	1970412	7.921716	0.00***
<i>ln</i> CPS	55716.30	63936.55	2955.000	217090.0	6.985920	0.03**
<i>ln</i> GOVIN	63848.65	20076.31	36930.00	109084.0	2.587160	0.27
<i>ln</i> PI	55911.24	35448.82	23257.00	123935.0	6.914117	0.03***
<i>ln</i> FD	38019.41	48218.60	236.0000	189298.0	15.69515	0.00***
<i>ln</i> EXR	97.82189	14.35517	72.50000	136.7800	2.674953	0.23

***, ** and *denotes significant at 1%, 5% and 10% significance level, respectively Source: Authors' computation using EViews 10.

The skewness measures the extent to which a data is symmetrical around the mean, it is projected to be close to zero for a symmetric normal distribution. While kurtosis measures the peakedness

or the flatness of the distribution in the series, the accepted benchmark is 3 (see, Appendix A.5. (a) for a table). RGDP, FDI, GOVIN, and PI have lighter tails than a normal distribution (less in the tails) and platykurtic because the values of the dataset are less than 3. The CPS value is 3, which is equal to the kurtosis of the normal distribution. It means that the value of the distribution is similar to that of a normal distribution. Whereas, FD and EXR have a long right tail than a normal distribution (more in the tails) and leptokurtic because the values of the dataset are greater than that of a normal distribution.

The Jarque-Bera test measures the difference of skewness and kurtosis of the series with those from normal distribution. Table 5.1 shows the Jarque-Bera statistics for all variables and their respective probability values. The null hypotheses for Jarque-Bera test is that the distribution is normal. RGDP has a probability value of 0.191, therefore, we cannot reject the null hypothesis of normal distribution at the 5 percent level. Similarly, with GOVIN and EXR, one cannot reject the null hypothesis of normal distribution at the 5 percent level. In contrast, FDI, CPS, PI and FD have probability values that are below the hypothesis of normal distribution at the 5 percent level, thus, the hypothesis of normal distribution is rejected (see, Appendix A.5 (a)).

5.3 Correlation Matrix

When there is more than one independent variable, the collection of all pair-wise correlations is briefly represented in a matrix form. Table 5.2 shows the correlation matrix for all variables.

Table 5.2. A summary of the correlation test.

	Model I		Model II		
	RGDP	Pro.	FDI	Pro.	
RGDP	1.000000	-	FDI	1.000000	-
FDI	0.861306	0.00***	RGDP	0.861306	0.00***
CPS	0.834212	0.00***	CPS	0.981966	0.00***
PI	0.957689	0.00***	PI	0.791523	0.00***
GOVIN	0.921887	0.00***	GOVIN	0.917986	0.00***
FD	0.801399	0.00***	FD	0.965957	0.00***
EXR	-0.313445	0.59	EXR	-0.589848	0.00***

***, ** and *denotes significant at 1%, 5% and 10% significance level, respectively Source: Authors' computation using EViews 10.

The correlation results of two models of the OLS estimation uncovers that FDI (RGDP), CPS, PI, GOVIN and FD have positive effect on the RGDP (FDI). In any case, EXR is negative in affecting RGDP in model I and FDI in model II. It is evident that domestic credit to the private sector (CPS)

has the most grounded correlation to FDI at 0.98 in model II, where public investment (PI) has the most grounded correlation to RGDP in model I, and thus, is a good variable to include in the model, as it is indicative of predictability power of investment. It is then trailed by foreign debt at 0.97 in model II, uncovering a solid connection with FDI. Then again, public investment and government investment expenditure also uncovered a strong correlation to FDI at 0.96 and 0.91, respectively in model II. In addition, in model I, GOVIN and FDI demonstrated a stronger correlation to RGDP at 0.92 and 0.86, respectively. This positive 0.86 correlation between FDI and RGDP attests our hypothesis one, that there is a positive connection among variables. The real exchange rate shows a solid converse connection with the RGDP at -0.31 in model I and with FDI at -0.59 in model II.

Regarding multicollinearity in a regression model, "multicollinearity" alludes to the predictors that are correlated to different predictors. This correlation is an issue since predictors should be independent. On the off chance that there is a high correlation among the predictors (independent variables) there is a potential admonition of one of these variables being redundant within the model and subsequently, a profoundly correlated predictor must be extricated from the model.

The remainder of the columns were evaluated according to each one of the autonomous variables. To distinguish multicollinearity, a correlation analysis between independent variables must be led. The greater the coefficients size, regardless the direction, more noteworthy the potential issues (Hoje, 2016). Gujarati (2003) depicts that multicollinearity will befall if the correlation coefficient among independent variables are more than 0.95. The matrix reveals a most grounded correlation between FDI and CPS at 0.98 and between CPS and FD at 0.97 in model I, while in model II, RGDP and GOVIN showed a most correlation at 0.95 and CPS and FD at 0.97 (see, Appendix A.5 (b)). From there, a projected regression analysis was performed. The ordinary rule is that, one should expel the variable which has a greater p -value, because the greater the p -value, the lower the degree of significance, which means one of the extremely collinear regressor must be dropped on the grounds that it supplies redundant information. Nonetheless, Gujarati and Porter, (2008) contend that omitting some regressors may truly deceive the factual values of the parameters. Gujarati and Porter (2008) proposed that one should utilise a suitable trial design and increment the sample if conceivable. Blanchard (1987) contend that since multicollinearity is basically a data inadequacy issue and occasionally there is no choice over the data accessible for empirical assessment. Hoje (2016) contend that elevated levels of correlation among autonomous variables

can also prompt a model where most coefficients are not statistically significant. In any case, the outcomes from the assessed regression for the two models in table 5.3, demonstrate that most coefficients are significant, on the grounds that the p -values are under 0.05 percent. Ordinarily, in a good regression model most of the independent variables should be significant. If the p -value is under 5 percent, it implies that independent variables can impact the dependent variable as uncovered in Table 5.3. Increasingly significant p -values in the two models, could show that the multicollinearity did not influence the coefficients and p -values, hence no justified removal of any of the independent variables. The fact that some or practically all predictor variables are correlated among themselves does not, in general, hinder our capacity to acquire a good fit nor does it will in general influence inferences about mean reactions. Table 5.3 shows an estimated regression model for model I and model II. RGDP is the dependent variable in model I and FDI the dependent variable in model II.

Table 5.3. A summary of an estimated Regression.

Variable	Model I			Model II		
	Coefficient	t-Stat	Pro.	Coefficient	t-Stat	Pro.
C	37577.69	22.78192	0.0000***	-1289759.	-2.238023	0.0328**
<i>ln</i> FDI	0.004550	2.400766	0.0228**	35.41837	2.400766	0.0228**
<i>ln</i> CPS	0.002894	0.167390	0.8682	4.169686	3.153016	0.0037***
<i>ln</i> GOVIN	0.164205	8.335934	0.0000***	-7.227403	-2.512423	0.0175**
<i>ln</i> PI	0.007592	0.446731	0.6583	-4.046750	3.087874	0.0043***
<i>ln</i> FD	-0.007592	-2.207552	0.0351**	3.632247	2.183777	0.0369**
<i>ln</i> EXR	-6.903537	-0.383685	0.7039	-866.5745	-0.547272	0.5882
	R-squared	0.958658		R-squared	0.981840	
	Adjusted R ²	0.950389		Adjusted R ²	0.978208	

***, ** and *denotes significant at 1%, 5% and 10% significance level, respectively Source:

Authors' computation using EViews 10.

5.4 Diagnostic tests

Before making any conclusions from the estimation results, a series of diagnostic outcomes were carried out. A basic prerequisite in the traditional linear regression is that the residuals must be normally distributed with zero mean and constant variance (Enders, 1995). The reason for the residual test is to recognise whether autocorrelation and heteroscedasticity are a major issue in the model. In this study, autocorrelation will be confirmed utilising the Lagrange Multiplier (LM) test, and heteroscedasticity applying the Breusch-Pagan Godfrey's heteroscedasticity test, the Jarque-

Bera test will be employed to test for normality. The Cumulative total (CUSUM) tests are applied to affirm the steadiness of the variables in the short and long run.

Table 5.4. RGDP Model I: Residual Analysis Results

Items	Test Applied	Values	P-values
Serial correlation	Breusch-Godfrey Serial LM	5.954727	0.0509
Heteroskedasticity	Breusch-Pagan Godfrey	16.52219	0.4171
Normality	Jarque– Bera Test	0.365325	0.833049

Source: Authors' computation using EViews 10.

Table 5.4 indicated the outcomes of the residual analysis performed to test for the fitness of the model. The Breusch-Godfrey Serial LM test was utilised to test for autocorrelation in the model. The LM tests the null hypothesis that there is no serial correlation. The outcomes from the LM tests are appeared in table 5.4. The study also tested for the occurrence of serial autocorrelation amongst the assessed variables utilising the Breusch-Godfrey Lagrange Multiplier Tests. The null hypothesis for this test is that there is no serial correlation. The *p*-value for the Jarque-Bera statistic for the model indicated that the residuals have no serial correlation, they are homoscedastic and are normally distributed since all the *p*-values are larger than 0.05, thus the null hypothesis could not be rejected.

Table 5.5. FDI Model II: Residual Analysis Results

Items	Test Applied	Values	P-values
Serial correlation	Breusch-Godfrey Serial LM	4.674489	0.0966
Heteroskedasticity	Breusch-Pagan Godfrey	15.59186	0.0759
Normality	Jarque– Bera Test	0.121814	0.940911

Source: Authors' computation using EViews 10.

Table 5.5 unveils the outcomes of the residual analysis performed to test for the suitability of the model. The results uncovered that the residuals have no serial correlation, they are homoscedastic and are normally distributed since all the *p*-values are greater than 0.05, subsequently the null hypothesis could not be rejected. Normal distribution of the residuals suggested that the coefficients of the estimates themselves were also normally distributed (Greene, Caracelli and Graham, 1989).

Figure 5.1 shows the plots of the CUSUM associated with the conditional error correction model.

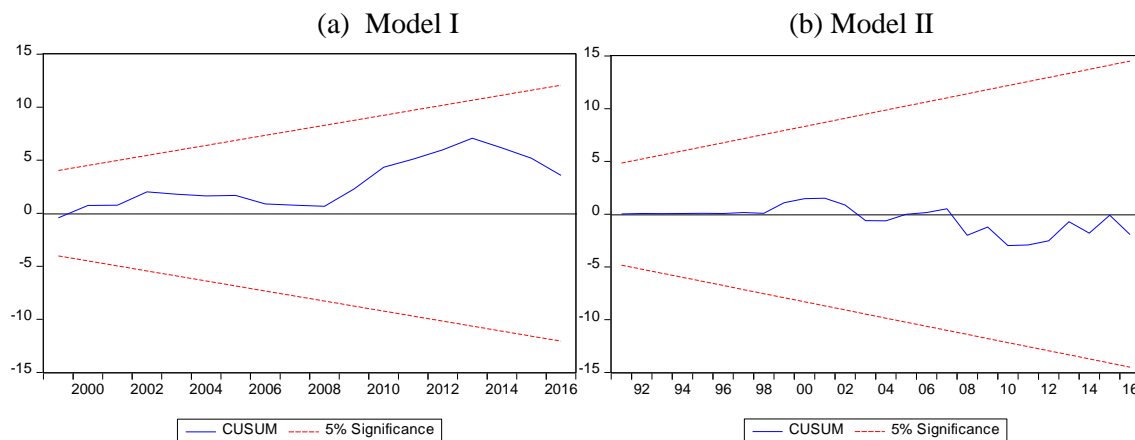


Figure 5.1. Stability Test: CUSUM

The outcomes are within the critical bounds at 5 percent significance signifying that the model is steady, predictable and solid (Figure 5.1 (a) and (b)). The plots of the CUSUM affirm that the long-run coefficients and all short-run coefficients in ECM are steady and influence RGDP and FDI over the sample period 1980-2016.

5.5 Unit Root Test Results

The initial phase in leading an empirical study utilising time series data is to check the stationarity of variables utilising unit root tests. The study applied two most normally utilised procedures of testing stationarity; the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests. ADF and PP tests have a null hypothesis of non-stationarity. The null hypothesis expresses that a series is stationary (there is no unit root). The primary motive for applying two-unit root tests is the shortcoming of the ADF test contrasted with PP test (as explained in detail in Chapter 4). The ADF test does not consider autocorrelation in blunder process while, the PP utilises non-parametric statistical techniques to deal with the serial correlation in the error terms without including lagged contrast terms.

Granger (1986) clarified the importance of unit root tests with the assistance of an example that if a solitary series is 'stationary', at that point it implies that it has "linear properties" and such series are named $I(0)$ signifying integrated of order zero'. In the event that series are not stationary and should be differenced to accomplish the properties of linearity, at that point it will be integrated of order one signified by $I(1)$. This was applied to guarantee that the variables were not $I(2)$ stationary

or of a greater order than I(1). Outtara (2004) contend that in the event of I(2) variables, the computed F- statistics explained by Pesaran *et al.*, (2001) are not substantial in light of the fact that the bounds test expect that the variables are I(0) or I(1). Both ADF and PP tests were completed at levels and first differencing with trend and intercept. Table 5.6 shows that all the variables are integrated of order 1 (i.e. at first difference).

Table 5.6. ADF Unit Root Results.

Variables	ADF Test	Critical Value	Status	Remark
<i>ln</i> RGDP	-4.782473	-4.243644***^	I(1)	Stationary
<i>ln</i> FDI	-9.508613	-4.243644***^	I(1)	Stationary
<i>ln</i> CPS	-8.287903	-4.243644***^	I(1)	Stationary
<i>ln</i> PI	-4.215342	-3.544284***^	I(1)	Stationary
<i>ln</i> GOVIN	-5.483735	-4.243644***^	I(1)	Stationary
<i>ln</i> FD	-4.138185	-3.544284***^	I(1)	Stationary
<i>ln</i> EXR	-5.375633	-4.243644***^	I(1)	Stationary

Note. (***), (**), indicate significant at 1%, 5%. (^) trend and intercept. All the variables are log linearized. Source: Authors' computation using EViews 10.

To affirm the order of integration of each variable, the ADF test was employed. The outcomes of the ADF unit root test uncovered that all variables are non-stationary (have unit roots) at levels, hence the null hypothesis of unit root for the variables cannot be dismissed at levels but become stationary after first differences for example I(1). Since the critical values are less than the ADF test statistics at 1 percent and 5 percent level of significance, the null hypothesis is rejected. The time series gathered, therefore, are all stationary.

The Phillips-Perron (PP) unit root test is employed to test order of integration of the variables. The PP test the null hypothesis of a unit root against the alternative null hypothesis of stationarity. The outcomes provided in Table 5.7 shows that none of the variables are integrated at an order greater than one based on the Newey-West bandwidth, thus permitting for the legitimate utilisation of the ARDL bounds procedures.

Table 5.7. PP Unit Root Results.

Variables	PP Test	Critical Value	Status	Remark
<i>ln</i> RGDP	-4.817197	-4.243644***^	I(1)	Stationary
<i>ln</i> FDI	-17.75795	-4.243644***^	I(1)	Stationary
<i>ln</i> CPS	-10.74988	-4.243644***^	I(1)	Stationary
<i>ln</i> PI	-4.019580	-3.544284***^	I(1)	Stationary
<i>ln</i> GOVIN	-5.364253	-4.243644***^	I(1)	Stationary
<i>ln</i> FD	-4.377736	-4.243644***^	I(1)	Stationary
<i>ln</i> EXR	-6.194380	-4.243644***^	I(1)	Stationary

Note. (***), (**), indicate significant at 1%, 5%. (^) trend and intercept. All the variables are log linearized. Source: Authors' computation using Eviews 10.

Having affirmed that all our variables applied in this study are integrated of order one, I(1), it was possible to perform the ARDL bounds test.

5.6 Optimal Lag Selection and Cointegration test results

Chandio *et al.* (2019) contend that the Akaike information criterion (AIC) is superior to the other criteria in the case of small sample, in the manners that AIC minimise the chance of under estimation while maximizing the chance of recovering the true lag length. The maximum lag length used in testing the model was picked utilising the Akaike information criterion (AIC), in view of the number of regressors comprised in the economic growth model, is 2. The ARDL growth model therefore attained is ARDL (1,1,2,2,2,0,2). Also, in model II, the maximum lag length was chosen by AIC, considering the number of regressors contained in the FDI model, is 2. The ARDL for FDI model then resulted in ARDL (1,0,0,1,1,0,0), (see, Appendix, A.5. (d)).

To test the long run and the short-run associations among the variables, it was first essential to gauge whether a cointegration connection existed between the variables. Table 5.8 presents the findings for cointegration from employing the ARDL bound test.

Table 5.8. F-Bounds Test

Model I		Model II		Signif.	I(0)	I(1)
Test Statistic	Value	Test Statistic	Value			
F-statistic	6.127961***	F-statistic	4.938004***	10%	2.12	3.23
K	6	K	6	5%	2.45	3.61
				2.5%	2.75	3.99
				1%	3.15	4.43

***, ** and *denotes significant at 1%, 5% and 10% significance level, respectively, ARDL: Autoregressive distributed lag. Source: Authors' computation using Eviews 10.

The bounds test in Table 5.8 reveals that the null hypothesis of no cointegration is rejected since the F-statistic, 6.127961, lies overhead the upper bound, I(1), at the 1 percent level of significance in model I. This shows that there is a long run association between *ln*RGDP and all the explanatory variables. Similarly, in model II, the null hypothesis of no cointegration is rejected because the F-statistic, 4.938004, lies above the upper bound, I(1), at the 1 percent level of significance. This reveals that there is a long run linkage between *ln*FDI and all the independent variables.

5.7 Long Run and Short Run Analysis

The first model utilises *ln*RGDP as the dependent variable and the last model employs the *ln*FDI as dependent variable. Following the occurrence of the long run cointegration association between the dependent variables and explanatory variables, the study forecasts the long-run coefficients of the ARDL. The short-run equilibrium association is tested utilising the error correction model (ECM). The ECM representation integrates the short run dynamics with the long run dynamics. Where ECM_{t-1} is the speed adjustment towards the long-run equilibrium. The coefficient of ECM_{t-1} must be negative and significant to guarantee that there is both the long and short run causality running from *ln*RGDP and *ln*FDI to *ln*CPS, *ln*GOVIN, *ln*PI, *ln*FD and *ln*EXR. Table 5.9 Panel A reveals the long-run estimates of the chosen model. The short run findings are conveyed in Table 5.9 Panel B under Model I.

Table 5.9. Long Run and Short Run Results for RGDP from ARDL (1,1,2,2,2,0,2) model.
The model selected based on Akaike information criteria (AIC).

Panel A: Long run			Panel B: Short run		
Variables	Coefficient	Pro.	Variables	Coefficient	Pro.
<i>ln</i> FDI	0.005726	0.0662*	C	32174.63	0.0000***
<i>ln</i> CPS	0.055659	0.0500**	Δ FDI	0.000386	0.7036
<i>ln</i> GOVIN	0.204712	0.0000***	Δ CPS	-0.008748	0.2720
<i>ln</i> PI	-0.042379	0.1358	Δ CPS ₋₁	-0.049204	0.0000***
<i>ln</i> FD	-0.088829	0.0023***	Δ GOVIN	0.182546	0.0000***
<i>ln</i> EXR	-56.50974	0.0145**	Δ GOVIN ₋₁	-0.061519	0.0006***
			Δ PI	-0.035728	0.0161**
			Δ PI ₋₁	0.029805	0.0251**
			Δ EXR	-19.59903	0.1108
			Δ EXR ₋₁	53.68563	0.0001***
			ECM _{t-1}	-0.765797	0.0000***
R-squared	0.865296		F-statistic	15.41680	
Adjusted R-squared	0.809169		Pro(F-statistic)	0.000000	
Durbin-Watson stat	1.483550				

***, ** and *denotes significant at 1%, 5% and 10% significance level, respectively.

Source: Authors' computation using EViews 10.

The long-run coefficient of $\ln\text{RGDP}$ uncovered a positive association between $\ln\text{FDI}$, $\ln\text{CPS}$ and $\ln\text{GOVIN}$. The link between $\ln\text{RGDP}$ and $\ln\text{GOVIN}$ is statistically significant at the 1 percent level of significance while $\ln\text{CPS}$ at 5 percent and $\ln\text{FDI}$ at 10 percent significance level. These results imply that a 1 percent increase in $\ln\text{FDI}$, $\ln\text{CPS}$ and $\ln\text{GOVIN}$ would expand economic growth by 0.005726, 0.055659 and 0.204712 units in the long run, respectively. The above finding shows the crowding-in effect of $\ln\text{FDI}$, $\ln\text{CPS}$ and $\ln\text{GOVIN}$ on economic growth in the long run.

Also, a negative affiliation happens between RGDP and $\ln\text{PI}$, $\ln\text{FD}$ and $\ln\text{EXR}$ in the long run. $\ln\text{PI}$ is negative and statistically insignificant in the model, this conflicts with a priori expectations that domestic investment has a positive and significant impact on economic growth. While $\ln\text{FD}$ is negative and statistically significant at 1 percent level of significance and $\ln\text{EXR}$ is negative and significant at 5 percent significance level. This goes in accordance with a priori expectations that FD and EXR have a significant negative effect on economic growth. A one percent increase in $\ln\text{PI}$, $\ln\text{FD}$ and $\ln\text{EXR}$ would bring down the economic growth by -0.042379, -0.088829 and -56.50974 units, respectively, in the long run.

A glance at the short run growth dynamics in Table 5.9 (Panel B) indicates that the ECM_{t-1} coefficient of -0.765797 has a negative sign and it is statistically significant at 1 percent significance level. The empirical finding underpins the long run association among the variables. Its value -0.765797 demonstrates an adjustment to equilibrium in the short run.

The short-run ECM equation on $\ln\text{RGDP}$ showed that $\ln\text{FDI}$ has a positive (0.000386) but not significant association with $\ln\text{RGDP}$. This therefore suggests that an expansion in FDI causes an increment in economic growth. The implication of the above outcome is that $\ln\text{FDI}$ stimulate economic growth by 0.000386 units. This goes in accordance with a priori expectations that FDI has a positive association with economic growth (RGDP). This view is bolstered by the discoveries of Agrawal (2015); Pegkas (2015); Pulstova (2016), who all uncovered a positive influence of $\ln\text{FDI}$ on the domestic investment.

The estimation discoveries from the model disclose that $\ln\text{RGDP}$ has a negative and a significant impact on the lagged values of the $\ln\text{CPS}$ (-0.049204). This implies that an expansion in domestic investment as assessed by domestic credit to the private sector will cause a reduction in growth (RGDP). The significant negative coefficient of $\ln\text{CPS}$ shows a crowding-out effect of capital flows on economic growth by -4.9 percent in the short run. This goes against a priori expectations

that domestic investment has a positive and significant effect on economic growth. This finding is reliable with the outcomes found by Begum and Aziz (2019) who discovered that credit to private domestic sector is adversely related to economic growth in Bangladesh.

Similarly, the short-run ECM equation on lagged $\ln\text{GOVIN}$ has a negative and statistically significant association with $\ln\text{RGDP}$. This suggests that an expansion in domestic investment as assessed by government investment expenditure would diminish the $\ln\text{RGDP}$ by -0.061519 units. The ramification of the above results is that government investment expenditure does not impact economic growth in the short run. This goes against a priori expectations.

In contrast, the short-run ECM equation on $\ln\text{RGDP}$ has a positive and a statistically significant association with lagged public investment. This implies a one percent expansion in $\ln\text{PI}$ will drive to 0.029805 units increment in $\ln\text{RGDP}$. The ramification of the above results is that $\ln\text{PI}$ as a measure of domestic investment crowds in $\ln\text{RGDP}$ in the short run. This also shows the greater public investment by public corporations inspires economic growth in South Africa. This goes in line with a priori expectations. This finding is in accordance with the outcomes uncovered by Rabnawaz and Jafar (2015); Felipe, Gomez-Zaldivar and Ventosa-Santaularia, (2019) who presented that there is a positive relation between public investment and growth in the short run in Pakistan and Mexico. Rabnawaz and Jafar (2015) contend that the increase in public investment causes a quick expansion in GDP. While, Felipe *et al.*, (2019) claimed that the noteworthy effect of public investment varies relying upon the kind of public investment measured.

In any case, the estimation discoveries from the model uncovered that $\ln\text{RGDP}$ has a positive and statistically significant connection with lagged real exchange rate. A one percent expansion in the $\ln\text{EXR}$ prompts to 53.68563 units increment in economic growth. This demonstrates that the currency variances have a positive impact on economic growth in South Africa during the period of study. This outcome is reliable with the prior results of Sokang (2018); Ditta and Hassan (2017) who all discovered a positive significant affiliation between the exchange rate and economic growth in Cambodia and Pakistan.

From the above result, the adjusted R^2 that is, the coefficient of multiple determination displays that 80.09 percent of the total variation in $\ln\text{RGDP}$ (economic growth) is portrayed by the independent variables comprised in the model. Additionally, it was found that the Durbin-Watson value for the model was 1.483550 which shows that there is no autocorrelation in the model.

This study discloses mixed outcomes about the effect of domestic investment (as estimated by domestic credit to the private sector, public investment by public corporations and government investment expenditure by the national government other than the public corporations) on economic growth. For instance, over the long run $\ln\text{CPS}$ and $\ln\text{GOVIN}$ are positively associated with economic growth (crowding-in effect) whereas PI indicated a negative affiliation with economic growth (crowding-out effect). A look at the short-term dynamics, the study stated that $\ln\text{CPS}$ and $\ln\text{GOVIN}$ have a negative connection with economic growth (crowding-out effect) whereas PI offered a positive affiliation with economic growth (crowding-in effect).

The study unveils a negative effect of foreign debt on economic growth in the long run (crowding-out effect). In any case, the study also uncovers fluctuated findings about the impact of real exchange rate on economic growth. For instance, in the long run $\ln\text{EXR}$ has a negative impact on the economic growth while in the short run lagged $\ln\text{EXR}$ positively affects economic growth.

Table 5.10 Panel A reveals long-run estimates of the chosen model and the short run findings are reported in Table 5.10 Panel B under Model II.

Table 5.10. Long Run and Short Run Results for FDI from ARDL (1,0,0,1,1,0,0) model.
The model selected based on Akaike information criteria (AIC).

Panel A: Long run			Panel B: Short run		
Variables	Coefficient	Pro.	Variables	Coefficient	Pro.
$\ln\text{RGDP}$	13.84473	0.5898	C	-204656.2	0.0000***
$\ln\text{CPS}$	7.951352	0.0513*	ΔGOVIN	1.888408	0.3714
$\ln\text{GOVIN}$	-5.561674	0.2336	ΔPI	-0.124788	0.9310
$\ln\text{PI}$	6.865473	0.0107**	ECM_{t-1}	-0.547072	0.0000***
$\ln\text{FD}$	-1.647890	0.7283			
$\ln\text{EXR}$	-1818.718	0.4982			
R-squared	0.597420		F-statistic	15.82907	
Adjusted R-squared	0.559678		Pro(F-statistic)	0.000002	
Durbin-Watson stat	2.460566				

***, ** and *denotes significant at 1%, 5% and 10% significance level, respectively.

Source: Authors' computation using EViews 10.

Table 5.10 (Panel A-Model II) demonstrates the values of the anticipated long-run coefficients; the dependent variable is $\ln\text{FDI}$. The coefficient of the rate of $\ln\text{RGDP}$ is 13.84473, $\ln\text{CPS}$ is 7.951352 and $\ln\text{PI}$ is 6.865473, which implies that in the long run, $\ln\text{FDI}$ is positively connected to the $\ln\text{RGDP}$, $\ln\text{CPS}$, and $\ln\text{PI}$ in South Africa. It explains further that a one percent expansion in $\ln\text{RGDP}$, $\ln\text{CPS}$, and $\ln\text{PI}$ prompts 13.84473, 7.951352 and 6.865473 units increment in $\ln\text{FDI}$

respectively, over the long run and the linkage is statistically insignificant except for *lnPI* which is significant at 5 percent level of significance.

The anticipated long-term coefficient of *lnFDI* presented an adverse affiliation with the *lnGOVIN*, *lnFD*, and *lnEXR*. One unit increment in *lnGOVIN*, *lnFD* and *lnEXR* will diminish the FDI by -5.561674, -1.647890 and -1818.718 units in the long run. This merely suggests that *lnGOVIN*, *lnFD* and *lnEXR* crowd out foreign direct investment in the long run.

Table 5.10 (Panel B-Model II) divulges the error correction estimation for the ARDL model. The coefficient of ECM_{t-1} is statistically significant at 1 percent level of significance and has an accurate negative sign. This significance also supports the short run cointegration link among variables. The coefficient of ECM_{t-1} is -0.547072, which stipulates the rapidity of alteration to the long-run equilibrium after a short run stun. About 54.71 percent adjustment will occur inside one year if there is a shock.

The results unveil that *lnFDI* is certainly connected to government investment expenditure but not significantly as confirmed by the *p*-value of 0.3714. This suggests a 1-unit increment in *lnGOVIN* would expand the rate of *lnFDI* by 1.888408 units in the short run. The result goes accordance with the a priori expectation. This shows that domestic investment as estimated by government investment expenditure crowds in FDI in South Africa during the period of study. This view is upheld by the revelations of Othman (2018) who uncovered a positive link between government spending and FDI in Malaysia, Indonesia, Singapore, Thailand and Philippine (ASEAN-5), India and China.

Interestingly, the short-run coefficient of *lnFDI* shows that *lnPI* has a negative (-0.124788) impact on *lnFDI*. This negative impact suggests a substitutionary connection between public investment and *lnFDI*. As such, public investment restrains foreign direct investment. This therefore implies that a one percent expansion in public investment drive to 12.48 percent decline in *lnFDI*. The suggestion is that public capital crowded out *lnFDI* by 12.48 percent. This goes against a priori expectations that public investment has a positive and significant connection with *lnFDI*. It was anticipated that an expansion in public investment would build *lnFDI* through formation of essential infrastructural facilities, for example, highways, ports, and so on.

The adjusted R^2 (i.e. the coefficient of determination) connotes that 55.60 percent of the variations in the dependent variable (FDI) is due to independent variables. The F-statistic uncovers the inclusive significance of the variables utilised in the model. Also, it was found that the Durbin-Watson value for the model was 2.460566 which shows that there is no autocorrelation in the model.

This study reports mixed outcomes about the effect of domestic investment (as estimated by domestic credit to the private sector, public investment by public corporations and government investment expenditure by national government other than the public corporations) on FDI. For instance, over the long run $\ln\text{CPS}$ and $\ln\text{PI}$ have a positive affiliation with FDI (crowding-in effect) while $\ln\text{GOVIN}$ presented a negative affiliation with FDI (crowding-out effect). Concentrating on the short-run dynamics, the study uncovers that $\ln\text{PI}$ has a negative association with FDI (crowding-out effect) whereas $\ln\text{GOVIN}$ offered a positive affiliation with FDI (crowding-in effect).

Then again, the study uncovers a negative effect between foreign debt and foreign direct investment in a long run (crowding-out effect). Similarly, the study unveils a negative influence of real exchange rate on foreign direct investment.

5.8 The Granger Causality Test

ElemUche, Omekara and Nsude (2018) contend that the Granger causality test is a technique for determining whether one variable is helpful in foreseeing another variable. To discover out the direction of causality between economic growth (RGDP) and foreign direct investment (FDI) and chosen macroeconomic variables, the study conducts a pair-wise Granger causality test employing an ADL model with two lags and the results are presented in Table 5.11.

Table .5.11. Pairwise Granger Causality Tests: Model I

Null Hypotheses	Obs	F-Statistics	Probability
FDI does not Granger Cause RGDP	35	5.78345	0.0075***
RGDP does not Granger Cause FDI		0.04433	0.9568
CPS does not Granger Cause RGDP	35	6.35021	0.0050***
RGDP does not Granger Cause CPS		0.23477	0.7922
GOVIN does not Granger Cause RGDP	35	1.25334	0.3001
RGDP does not Granger Cause GOVIN		16.4735	1.E-05***
PI does not Granger Cause RGDP	35	1.14875	0.3306
RGDP does not Granger Cause PI		11.4165	0.0002***
FD does not Granger Cause RGDP	35	6.48583	0.0046***
RGDP does not Granger Cause FDI		0.79502	0.4609
EXR does not Granger Cause RGDP	35	3.99881	0.0289**
RGDP does not Granger Cause EXR		2.15723	0.1332

Note: *, ** and *** denote rejection of null hypothesis at 10%, 5% and 1% level of significance. Source: Author's Computation using Eviews 10.

Table 5.11 unveils the outcomes of the Granger causality test. The F-statistics and p -value are applied to ascertain the responses among the variables. The results uncovered a unidirectional causal association running from FDI to RGDP, RGDP to FDI; CPS to RGDP, RGDP to CPS, GOVIN to RGDP, RGDP to GOVIN; PI to RGDP; RGDP to PI, FD to RGDP; RGDP to FD and EXR to RGDP; RGDP to EXR.

Table 5.12. Pairwise Granger Causality Tests: Model II

Null Hypotheses	Obs	F-Statistics	Probability
RGDP does not Granger Cause FDI	35	0.04422	0.9568
FDI does not Granger Cause RGDP		5.78345	0.0075***
CPS does not Granger Cause FDI	35	2.45522	0.1029
FDI does not Granger Cause CPS		3.03323	0.0631*
GOVIN does not Granger Cause FDI	35	0.84717	0.4386
FDI does not Granger Cause GOVIN		6.30751	0.0052***
PI does not Granger Cause FDI	35	0.64221	0.5332
FDI does not Granger Cause PI		6.71551	0.0039***
FD does not Granger Cause FDI	35	2.28453	0.1193
FDI does not Granger Cause FD		3.49936	0.0431**
EXR does not Granger Cause FDI	35	0.26218	0.7711
FDI does not Granger Cause EXR		2.64963	0.0872*

Note: *, ** and *** denote rejection of null hypothesis at 10%, 5% and 1% level of significance. Source: Author's Computation using Eviews 10.

Table 5.12 unveils the outcomes of the Granger causality test for the variables, revealing a unidirectional causal relationship running from RGDP to FDI, FDI to RGDP; GOVIN to FDI, FDI to GOVIN; PI to FDI, FDI to PI and FD to FDI, FDI to FD. The Granger causality test also shows that there is a bidirectional causality running from CPS to FDI, FDI to CPS; EXR to FDI, FDI to EXR. This means CPS and EXR can predict information contained in the past values of FDI.

The outcomes of the Granger causality test in both model I and model II uncover that FDI Granger causes RGDP at the 5 percent level of significance. In any case, the outcomes failed to reject the null hypothesis that RGDP does not Granger cause FDI. This implies FDI predicts RGDP but not the opposite way around. In this manner, there is unidirectional causality among RGDP and FDI in the two models.

5.9 Summary and Conclusion

This chapter detailed the empirical results of the indirect linkages between foreign direct investment and economic growth in South Africa over the time of 1980-2016 utilising the ARDL bounds test. In view of the empirical studies the effect of foreign direct investment on the economic growth is equivocal. In any case, this study concludes that foreign direct investment has a positive effect on economic growth in South Africa during the analysed period. The analysis started with descriptive statistics and correlations. This was followed by analysing the diagnostic tests, the outcomes attained for economic growth and foreign direct investment models pass all the diagnostic tests on serial correlation, normality and heteroscedasticity. The test for adequacy performed on the residuals indicates that they are homoscedastic, and have no serial correlation suggesting that the model is good. The CUSUM tests show that our models are structurally stable and remain within the 5 percent of critical bounds.

The study also analysed the unit root test by employing the Augmented Dickey-Fuller test and Phillips-Perron test. The two tests unveiled that the variables were not stationary at levels but became stationary at first difference. With the establishment of the order of integration, the analysis tested for cointegration between the dependent and independent variables. The bounds test technique to cointegration was utilised to establish the presence of long-run and the short-run affiliation between variables. The discoveries demonstrated the long run relationship among the variables. In this manner, the null hypothesis that none of the variables are cointegrated was rejected.

The long run cointegration equation on $\ln\text{RGDP}$ as a measure for economic growth indicated that there is a positive connection between RGDP and $\ln\text{FDI}$, $\ln\text{CPS}$ and $\ln\text{RGDP}$ and between $\ln\text{RGDP}$ and $\ln\text{GOVIN}$ in the long run, while, a negative relationship exists between $\ln\text{PI}$ and $\ln\text{RGDP}$, FD and RGDP and EXR and RGDP in the long run in model I. Similarly, regarding $\ln\text{FDI}$ in model II, the outcomes uncovered a positive relationship between $\ln\text{RGDP}$, $\ln\text{CPS}$, and $\ln\text{PI}$ to $\ln\text{FDI}$ in the long run. Then again, the outcomes indicated a negative relationship between $\ln\text{GOVIN}$, $\ln\text{FD}$ and $\ln\text{EXR}$ to $\ln\text{FDI}$ in the long run.

Also, the short-run estimate of the coefficient of ECM_{t-1} in model I and model II are statistically significant and negative. The negative symbol of the error correction term specifies a retrograde movement toward long-run equilibrium from short run disproportion. The negative and significant coefficient of the ECM_{t-1} is in accordance with the cointegration relationship recommended by Pesaran, *et al.* (2001).

In model I, the short-run estimate of the coefficient results revealed that $\ln\text{FDI}$, lagged $\ln\text{PI}$ and lagged $\ln\text{EXR}$ are positively related to $\ln\text{RGDP}$ at a one percent significance level, except for $\ln\text{FDI}$ which is statistically insignificant. Then again, lagged $\ln\text{CPS}$ and lagged $\ln\text{GOVIN}$ are statistically significant at one percent and adversely related to $\ln\text{RGDP}$ in the short run. This implies that domestic investment as estimated by domestic credit to the private sector and government investment expenditure crowd out economic growth in South Africa in the short run. SARB (2017) data indicated that capital spending by the private sector remained frail in recent years. The decay mirrored a decrease in investment spending in the manufacturing and mining sectors, hence domestic investment by private sector does not spur economic growth in South Africa in the short run.

Moreover, in model II, the coefficient of $\ln\text{FDI}$ is positively related to $\ln\text{GOVIN}$, but statistically insignificant. This unveils that $\ln\text{FDI}$ crowds in domestic investment as estimated by government investment expenditure in South Africa during the period of study. On the other hand, the short-run ECM equation on $\ln\text{FDI}$ showed a negative relationship with public investment by public corporations. This simply infers that FDI crowds out domestic investment (public investment). The outcomes are in accordance with SARB (2017) data that exposed that the capital spending by public corporations also continued to be weak, hence public investment by public corporations does not enhance $\ln\text{FDI}$ inflows in the short run.

CHAPTER SIX

CONCLUSIONS AND POLICY RECOMMENDATIONS

6.1 Introduction

This chapter offers conclusions and policy recommendations for the empirical study. The opening section provides a short summary of each chapter of the study. The second section provides a discussion on policy implications and recommendations from the findings. The last section presents the limitations of the study and recommends areas for further exploration.

6.2 Summary of the study

The reason for this dissertation was to examine the indirect linkages between foreign direct investment and economic growth in South Africa utilising annual time series data over a period of 36 years (1980-2016). There is a universal theoretical accord among researchers, development economists and policymakers that FDI inflows are required to assume an important role in clarifying growth of host nations. Moreover, FDI ostensibly assumes a significant role in economic development when there is an inadequacy of household savings and investments.

FDI supplements local domestic financial resources in order to permit a nation's economic growth prospects and elevate standards of living. FDI inflows to South Africa have continued at generally low levels likened with other emerging economies. Adepoju, Salau and Obayelu (2007) featured that developing nations in Africa are notable by lacking internal capital development because of the endless loop of low output, low degree of income and saving. Subsequently, when the developing nations do not have enough resources or are confronting budget shortfall, they will be encouraged to take foreign debt as a channel to support economic growth. Thinking about this pattern, increased degrees of foreign debt held by emerging nations like South Africa keep on producing questions regarding its commitment to the economy.

Despite that there are contrasts in econometric approaches; some authors have endeavoured to determine whether indeed an increment in FDI, domestic investment, foreign debt, exchange rate leads to economic growth. Little has been done to explore the relationships among them. Most studies tend to focus on bidirectional causality rather than multiple causalities. The bidirectional affiliation has anyway caused some discussion among analysts and the discussion across beliefs

on the relationship has not been suitably settled yet. Subsequently, the primary goal of this study was to analyse the nature of the multiple causal connections between domestic investment, foreign debt, exchange rate to FDI and economic growth in South Africa. This study contends that FDI, domestic investment and foreign debt are a central wellspring of public and private financing in South Africa and convey the possibility to assume a key role in advancing economic growth.

In Chapter two, an overview of historical FDI and economic growth in South Africa post-1994 was presented. The data confirmed that the global FDI flows fell in 2018, this was the third sharp successive decrease in FDI in 2018. This decay was because of enormous repatriations of retained earnings by the United States of American MNEs (WIR, 2019). FDI flows to developed economies debilitated by 27 percent in 2018 arriving at the most minimal levels since 2014. Also, FDI inflows into transition economies declined for a second progressive year by 28 percent in 2018. Then again, FDI to developing economies saw an upsurge of 2 percent in 2018. Similarly, FDI flows to the least developed economies improved in 2018 from their 2017. UNCTAD (2019) data confirmed that inward FDI flows into South Africa have been unable to arrive at the degrees of other emerging nations within the BRICS group of nations. Concerning domestic investment, and capital expenditure by the national government, the private sector and public corporations remained low as of late.

In previous chapters, it was noted that South Africa's foreign debt outline is also consistently expanding. South Africa's outstanding foreign debt as a fraction of the GDP rose from 21.2 percent in 1994 to 46.8 percent in 2018. There was, however, a huge degrading of the Rand's real effective exchange rate from 115.91 percent in 1994 to 69.45 percent in 2002. In 2002 the real effective exchange rate reached its least rate since post-1994. There was a further decay of the real effective exchange rate from 100 percent in 2010 to 87.17 in 2018.

The economic condition remained extremely testing throughout 2018, especially for the products producing sectors of the South African economy. The mining sector kept on being adversely influenced by frail demand with domestic operating difficulties additionally affecting everything. Similarly, 2018 saw a weak execution by the manufacturing sector. The sector kept on battling even with repressed domestic and external demand (SARB, 2017). Agricultural, forestry and fishing sectors kept on being contrarily influenced by the most exceedingly awful dry season.

In Chapter three endogenous growth theories, FDI theoretical framework and empirical evidence were reviewed. Neither empirical literature nor theoretical literature has arrived at an agreement on the linkages between FDI inflows and economic growth in economies. Romer (1994) contends that endogenous growth separates itself from neoclassical growth by focusing on that growth is an endogenous result of an economic framework, not the impact of powers that impose from external.

The cause behind market-chasing FDI is to adventure the new markets and to just serve the resident market. A corporation with the resource-seeking FDI places resources into the foreign nation to exploit assets that are not accessible at home, for example, natural resources. Efficiency-seeking FDI is characterised by investments assumed to limit production costs. While strategic asset seeking might be different since, in this case, the drive of the investment is that of achieving new innovative base as opposed to exploiting the extant assets.

Hymer (1976) recognised two significant sorts of incentives, that is, "monopolistic or oligopolistic advantages" that the domestic firms appreciated over foreign firms and removal of rivalry between the firms in various nations while the eclectic theory implies that an enterprise takes part in FDI if three settings are satisfied and these are ownership, location and internalisation advantage.

For the most part, most explored studies have introduced consistent discoveries with respect to the growth effects of FDI. Researchers backing the positive effects of FDI on growth accept that it may rouse and spike economic growth through the espousal of foreign expertise and technological spillovers, eventually reforming the host country's economy. The reviewed literature into the idea of the connection between domestic investment and FDI on economic growth uncovered mixed outcomes. An enormous collection of empirical studies advocates a vigorous positive connection between FDI and domestic investment. There is a general assent that trade and export decidedly add to growth. The proof radiates from both the gigantic empirical literature trade/export and growth, just as the growth incidents seen in diverse parts of the world. Several studies have been carried out investigating the impact of foreign debt on the economy. The influence of foreign debt on investment and economic growth of a nation has remained questionable for policymakers. There is a huge assortment of literature that scrutinises the influence of the exchange rate on FDI and economic growth. For example, several empirical studies show that real exchange rate instability can influence growth results. Some other schools of thought are of the view that no critical connection exists between the exchange rate and economic growth.

Chapter four illustrated the technique adopted by the researcher in gathering data and making analysis for this exploration work. Diagnostic tests were utilised to recognise whether autocorrelation and heteroscedasticity are a major issue in the model. The Jarque-Bera test was utilised to test for normality. The CUSUM test was also utilised to check the steadiness of the variables in short and long-run. The study applied numerous econometric methods, for example, unit root test, cointegration test, ARDL model, diagnostic test and Granger causality tests. Augmented Dickey Fuller and the Phillips Perron tests analysed the time series properties of the data. The long-term association among variables was confirmed by exploiting the bounds F-test for cointegration. A set of verified variables were established to have at least one cointegrating vectors, then an appropriate evaluation procedure ARDL model was employed which adjusts to both short-run and long-run changes in variables and deviations from equilibrium. The Granger Causality test was additionally used to look at the causal connection among variables.

Chapter five introduced data analysis, discoveries and discussion. It started with the diagnostic tests of the variables. The outcomes acquired for economic growth and FDI models pass all the diagnostic assessments on serial correlation, normality and heteroscedasticity. The test for reasonableness performed on the residuals shows that they are homoscedastic and have no serial correlation implying that the model is acceptable. The CUSUM tests display that our models are structurally steady and stay inside the 5 percent of critical bounds. It followed with an investigation of the unit root test discoveries of the Augmented Dickey-Fuller and Phillips-Perron test. The two tests uncovered that some variables were not stationary at levels but became stationary at first difference.

This was succeeded by the bounds test; the bounds test demonstrated the long run connection among the variables. In the wake of setting-up the long run relationship between variables, the analysis utilised the ADRL model. The findings of long run cointegration condition on \ln RGDP as a measure for economic growth uncovered that there is a positive alliance among RGDP and \ln FDI, \ln CPS and \ln RGDP and between \ln RGDP and \ln GOVIN over the long run. The results are in line with the hypotheses of the study. While, a negative affiliation exists among \ln PI and \ln RGDP, \ln EXR and \ln RGDP and \ln FD and \ln RGDP over the long run in model I. This goes contrary with hypotheses of the study that the \ln RGDP and \ln PI have a positive affiliation,

whereas, a negative effect between the $\ln EXR$, $\ln FD$ and $\ln RGDP$ is consistent with hypotheses of the study.

Similarly, as for $\ln FDI$ in model II, the outcomes found a positive connection between $\ln RGDP$, $\ln CPS$, and $\ln PI$ to $\ln FDI$ over the long run. The results are consistent with hypotheses of the study. Then again, the outcomes demonstrated a negative connection between $\ln GOVIN$, $\ln EXR$ and $\ln FD$ to $\ln FDI$ over the long run. The result suggests that a negative connection between $\ln GOVIN$ and $\ln FDI$ is inconsistent with hypothesis of the study. On the other hand, a negative affiliation between $\ln EXR$, $\ln FD$ and $\ln FDI$ is in line with hypotheses of the study.

Moreover, the short-run estimate of the coefficient of ECM_{t-1} in model I and model II are statistically significant and negative. The negative sign of the error correction term stipulates a backward movement toward long-run steadiness from short-run disequilibrium.

In model I, the short-run estimate of the coefficient results demonstrated that $\ln FDI$, lagged $\ln PI$ and lagged $\ln EXR$ are positively connected to $\ln RGDP$ at a one percent significance level, with the exception for $\ln FDI$ which is statistically insignificant. The positive relations between $\ln FDI$, lagged $\ln PI$ and $\ln RGDP$ are in line with the hypotheses of the study, while, a positive link between lagged $\ln EXR$ and $\ln RGDP$ is contrary with the hypothesis of the study. Then again, lagged $\ln CPS$ and lagged $\ln GOVIN$ are negative and statistically significant at a one percent level. This recommends lagged $\ln CPS$ and lagged $\ln GOVIN$ are not a wellspring of economic growth in the short run. This goes against the hypotheses of the study.

Finally, in model II, the coefficient of $\ln FDI$ is certain yet not noteworthy with $\ln GOVIN$. This shows $\ln FDI$ crowds in government investment expenditure (domestic investment). This goes in line with the hypothesis of the study. Then again, the short-run ECM equation on $\ln FDI$ indicated a negative relationship with public investment. This simply suggests that FDI crowds out public investment. The result goes accordance with the hypothesis of the study.

6.3 Policy Implication and Recommendations

Given the various difficulties of neediness, joblessness, income imbalances and high budget shortfall the South African economy has been experiencing some challenges since the dawn of democracy in 1994. Despite the progress made by the government to unravel these hitches through

some macroeconomic strategies, to be specific RDP between 1994 and 1995, GEAR from 1996 to 2004, ASGISA from 2005 to 2009, NGP from 2010 to 2012 and NDP from 2013 prompting 2030, the battle against 'jobless' growth and neediness proceeds.

The outcomes show a positive relationship between FDI and economic growth over the long run. This recommends South Africa policymakers must create and execute strategies that will convince a quickly growing economy which can draw in a greater portion of FDI inflows. Given the nation's low degrees of residential saving and domestic investment, immense FDI inflows are vital to spike growth.

The outcomes additionally demonstrated a positive connection between domestic investment as estimated by domestic credit to the private sector and economic growth and FDI inflows over the long run. The outcomes propose that FDI makes positive spillover impacts on South Africa's domestic investment. Through linkage with domestic corporations, foreign companies may increment and improve the formation ability of the host nation (see Rodriguez-Clare, 1996). This suggests that South Africa should design and implement procedures that are intended at improving domestic investment and FDI inflows. Similarly, the empirical outcomes suggest a positive connection between economic growth and domestic investment as estimated by government investment expenditure. This implies government should keep on implementing policies that meant at building fundamental infrastructure, for example, roads and schools.

Then again, the empirical outcomes suggest a negative linkage between domestic investment as estimated by public investments made by public corporations with economic growth over the long run. Fourie (2014) contends that state-owned enterprises (SOEs) are impetuses for growth and advancement because of their twofold role in the economy, namely that of creating a demand for products and services with a multiplier effect from one viewpoint and making marginal supporting industries on the other. As indicated by Sunita (2018) a Presidential Review Commission (PRC) on SOEs was set up in 2014 to examine SOE execution in South Africa. The PRC features various difficulties confronting SOEs, which incorporates extreme politicization, numerous and clashing goals, insufficient financing strategies and system, absence of adequate oversight and liability. This suggests that South Africa needs a solid strategy in addressing these deficiencies in SOEs.

The empirical discoveries also announced that the real exchange rate negatively affects economic growth and FDI in South Africa over the long run. This proposes that policymakers should form and implement real exchange rate policies intended at advancing economic growth and FDI inflows. Having a competitive and steady exchange rate market can be a significant instrument for both macro-stability and improvement in South Africa. Guzman (2018) argues that an increasingly competitive and stable real exchange rate prompts diversification, mostly for resource-rich nations.

The result from empirical discoveries suggests that foreign debt negatively affects economic growth and FDI in South Africa over the long run. This is not unexpected given that the foreign debt state of South Africa has been on the growth and has made a base of worry about the future. South Africa's unsettled foreign debt as a proportion of the GDP ascended from 21.2 percent in 1994 to 46.8 percent in 2018 (SARB, 2019). South African authorities should try to safeguard that both the level and degree of growth in foreign debt is basically reasonable and can be paid under a broad scope of conditions while gathering cost and hazard targets. Public debt civil servants must safeguard that the fiscal authorities are aware of the result of government financing commitments and debt statures on borrowing costs. Examples of economic indicators that address the substance of debt sustainability involve the government debt service ratio and foreign debt as a ratio of the GDP and ratio to tax revenue.

6.4 Limitations of the Study and areas of further research

The study utilised total FDI inflows and domestic investment in data analysis and model building. This phenomenon does not distinguish the impact of each sectors' contribution to economic growth in South Africa. This has consequences on the execution of policies intended to attract and boost sector-specific FDI inflows and domestic investments that South Africa needs.

Future studies could explore the effects of FDI on human capital in South Africa. Lucas (1988) assumes that devoting financial resources in education and training lead to the production of human capital which is the dominant factor in the growth process. In other words, the Lucas model is founded on the notion that the engine of growth is human capital development. This stems from the belief that FDI encompasses an adoption and execution of new knowledge which entail training and development of the existing workforce in South Africa.

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APPENDIX

A.5. (a) Descriptive Statistics

	<i>ln</i> RGDP	<i>ln</i> FDI	<i>Ln</i> CPS	<i>ln</i> GOVIN	<i>Ln</i> PI	<i>ln</i> FD	<i>ln</i> EXR
<i>Mean</i>	48582.97	481415.3	55716.30	63848.85	55911.24	38019.41	97.82189
<i>Median</i>	47144.00	91862.00	18853.00	59320.00	41929.00	12734.00	96.62000
<i>Maximum</i>	56549.00	1970412.	217090.0	109084.0	123935.0	189298.0	136.7800
<i>Minimum</i>	42386.00	12273.00	2955.000	36930.00	23257.00	236.0000	72.50000
<i>Sts. Dev.</i>	4542.544	604699.0	63936.55	20076.31	35448.82	48218.60	14.35517
<i>Skewness</i>	1.882251	1.133295	1.063880	0.524949	1.001587	1.414630	0.643607
<i>Kurtosis</i>	3.307240	2.968677	3.063607	2.241139	2.312886	4.475101	3.279615
<i>Jarque-Bera</i>	3.307240	7.921716	6.985920	2.587160	6.914117	15.69515	2.674953
<i>Probability</i>	0.191356	0.019047	0.030411	0.274287	0.031522	0.000391	0.262507
<i>Sum</i>	1797570.	17812365	2061503.	2362400.	2068716.	140678.	3619.410
<i>Sum Sq. Dev</i>	7.34E+08	1.32E+13	1.47E+11	1.45E+10	4.52E+10	8.37E+10	7418.554
<i>Observations</i>	37	37	37	37	37	37	37

A.5. (b) Correlation Test Results

Model 1

Covariance Analysis: Ordinary

Date: 05/06/19 Time: 09:56

Sample: 1980 2016

Included observations: 37

Correlation Probability	RGDP	FDI	CPS	GOVIN	PI	FD	EXR
RGDP	1.000000 -----						
FDI	0.861306 0.0000	1.000000 -----					
CPS	0.834212 0.0000	0.981966 0.0000	1.000000 -----				
GOVIN	0.957689 0.0000	0.791523 0.0000	0.777258 0.0000	1.000000 -----			
PI	0.921887 0.0000	0.917986 0.0000	0.887354 0.0000	0.878707 0.0000	1.000000 -----		
FD	0.801399 0.0000	0.965957 0.0000	0.976865 0.0000	0.762270 0.0000	0.852358 0.0000	1.000000 -----	
EXR	-0.313445 0.0589	-0.589848 0.0001	-0.593221 0.0001	-0.231464 0.1681	-0.400589 0.0140	-0.638229 0.0000	1.000000 -----

Model II

Covariance Analysis: Ordinary
 Date: 05/06/19 Time: 14:31
 Sample: 1980 2016
 Included observations: 37

Correlation Probability	FDI	RGDP	CPS	GOVIN	PI	FD	EXR
FDI	1.000000 -----						
RGDP	0.861306 0.0000	1.000000 -----					
CPS	0.981966 0.0000	0.834212 0.0000	1.000000 -----				
GOVIN	0.791523 0.0000	0.957689 0.0000	0.777258 0.0000	1.000000 -----			
PI	0.917986 0.0000	0.921887 0.0000	0.887354 0.0000	0.878707 0.0000	1.000000 -----		
FD	0.965957 0.0000	0.801399 0.0000	0.976865 0.0000	0.762270 0.0000	0.852358 0.0000	1.000000 -----	
EXR	-0.589848 0.0001	-0.313445 0.0589	-0.593221 0.0001	-0.231464 0.1681	-0.400589 0.0140	-0.638229 0.0000	1.000000 -----

A.5. (c) Estimated Regression Test Results

Model I

Dependent Variable: RGDP
 Method: Least Squares
 Date: 05/06/19 Time: 09:58
 Sample: 1980 2016
 Included observations: 37

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	37577.69	1649.452	22.78192	0.0000
FDI	0.004550	0.001895	2.400766	0.0228
CPS	0.002894	0.017287	0.167390	0.8682
GOVIN	0.164205	0.019698	8.335934	0.0000
PI	0.007592	0.016996	0.446731	0.6583
FD	-0.041555	0.018824	-2.207552	0.0351
EXR	-6.903537	17.99272	-0.383685	0.7039
R-squared	0.958658	Mean dependent var		48582.97
Adjusted R-squared	0.950389	S.D. dependent var		4542.544
S.E. of regression	1011.782	Akaike info criterion		16.84547
Sum squared resid	30711110	Schwarz criterion		17.15024
Log likelihood	-304.6412	Hannan-Quinn criter.		16.95292
F-statistic	115.9415	Durbin-Watson stat		1.369515
Prob(F-statistic)	0.000000			

Model II

Dependent Variable: FDI
Method: Least Squares
Date: 05/06/19 Time: 10:00
Sample: 1980 2016
Included observations: 37

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1289759.	576293.6	-2.238023	0.0328
RGDP	35.41837	14.75295	2.400766	0.0228
CPS	4.169686	1.322443	3.153016	0.0037
GOVIN	-7.227403	2.876666	-2.512423	0.0176
PI	4.046750	1.310529	3.087874	0.0043
FD	3.632247	1.663287	2.183777	0.0369
EXR	-866.5745	1583.444	-0.547272	0.5882

R-squared	0.981840	Mean dependent var	481415.3
Adjusted R-squared	0.978208	S.D. dependent var	604699.0
S.E. of regression	89266.19	Akaike info criterion	25.80529
Sum squared resid	2.39E+11	Schwarz criterion	26.11006
Log likelihood	-470.3979	Hannan-Quinn criter.	25.91274
F-statistic	270.3314	Durbin-Watson stat	1.550822
Prob(F-statistic)	0.000000		

A.5. (d) Optimal Lag Selection Test Results

Model I

VAR Lag Order Selection Criteria
Endogenous variables: RGDP
Exogenous variables: C FDI CPS GOVIN PI FD EXR
Date: 05/06/19 Time: 09:50
Sample: 1980 2016
Included observations: 34

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-280.6607	NA	1314952.	16.92122	17.23547	17.02839
1	-276.4743	6.402759*	1093494.	16.73378	17.09292*	16.85626
2	-274.8857	2.336142	1060440.*	16.69916*	17.10320	16.83695*
3	-274.8513	0.048596	1128028.	16.75596	17.20489	16.90906

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Model II

VAR Lag Order Selection Criteria

Endogenous variables: FDI

Exogenous variables: C RGDP CPS GOVIN PI FD EXR

Date: 05/06/19 Time: 09:53

Sample: 1980 2016

Included observations: 34

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-433.0057	NA	1.03e+10	25.88269	26.19694	25.98986
1	-428.4758	6.927995	8.36e+09	25.67505	26.03419	25.79753
2	-425.1786	4.848856*	7.33e+09*	25.53992*	25.94396*	25.67771*
3	-425.1437	0.049309	7.79e+09	25.59669	26.04562	25.74979

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

A.5. (e) Cointegration Test Results

Model I

F-Bounds Test		Null Hypothesis: No levels relationship			
Test Statistic	Value	Signif.	I(0)	I(1)	
F-statistic	6.127961	10%	2.12	3.23	
k	6	5%	2.45	3.61	
		2.5%	2.75	3.99	
		1%	3.15	4.43	

Model II

F-Bounds Test		Null Hypothesis: No levels relationship			
Test Statistic	Value	Signif.	I(0)	I(1)	
F-statistic	4.938004	10%	2.12	3.23	
k	6	5%	2.45	3.61	
		2.5%	2.75	3.99	
		1%	3.15	4.43	

A.5. (f) Long run Analysis Test Results

Model I

Levels Equation				
Case 3: Unrestricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	0.005726	0.002928	1.955855	0.0662
CPS	0.055659	0.026492	2.100990	0.0500
GOVIN	0.204712	0.019119	10.70712	0.0000
PI	-0.042379	0.027138	-1.561625	0.1358
FD	-0.088829	0.025088	-3.540654	0.0023
EXR	-56.50974	20.88458	-2.705812	0.0145

$$EC = RGDP - (0.0057*FDI + 0.0557*CPS + 0.2047*GOVIN - 0.0424*PI - 0.0888*FD - 56.5097*EXR)$$

Model II

Levels Equation				
Case 3: Unrestricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP	13.84473	25.35925	0.545944	0.5898
CPS	7.951352	3.891259	2.043388	0.0513
GOVIN	-5.561674	4.560825	-1.219445	0.2336
PI	6.865473	2.494725	2.751996	0.0107
FD	-1.647890	4.692695	-0.351161	0.7283
EXR	-1818.718	2647.700	-0.686905	0.4982

$$EC = FDI - (13.8447*RGDP + 7.9514*CPS - 5.5617*GOVIN + 6.8655*PI - 1.6479*FD - 1818.7179*EXR)$$

A.5. (g) Short run Test Results.

Model I

ARDL Error Correction Regression
 Dependent Variable: D(RGDP)
 Selected Model: ARDL(1, 1, 2, 2, 2, 0, 2)
 Case 3: Unrestricted Constant and No Trend
 Date: 08/23/19 Time: 14:27
 Sample: 1980 2016
 Included observations: 35

ECM Regression				
Case 3: Unrestricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	32174.63	4230.201	7.605934	0.0000
D(FDI)	0.000386	0.000999	0.386628	0.7036
D(CPS)	-0.008748	0.007719	-1.133204	0.2720
D(CPS(-1))	-0.049204	0.009165	-5.368669	0.0000
D(GOVIN)	0.182546	0.019830	9.205490	0.0000
D(GOVIN(-1))	-0.061519	0.019842	-3.100506	0.0062
D(PI)	-0.035728	0.013459	-2.654528	0.0161
D(PI(-1))	0.029805	0.012198	2.443367	0.0251
D(EXR)	-19.59903	11.68478	-1.677313	0.1108
D(EXR(-1))	53.68563	11.11283	4.830958	0.0001
CointEq(-1)*	-0.765797	0.101260	-7.562692	0.0000
R-squared	0.865296	Mean dependent var		145.6857
Adjusted R-squared	0.809169	S.D. dependent var		1100.812
S.E. of regression	480.8813	Akaike info criterion		15.44040
Sum squared resid	5549925.	Schwarz criterion		15.92922
Log likelihood	-259.2069	Hannan-Quinn criter.		15.60914
F-statistic	15.41680	Durbin-Watson stat		1.483550
Prob(F-statistic)	0.000000			

Model II

ARDL Error Correction Regression
 Dependent Variable: D(FDI)
 Selected Model: ARDL(1, 0, 0, 1, 1, 0, 0)
 Case 3: Unrestricted Constant and No Trend
 Date: 08/23/19 Time: 14:42
 Sample: 1980 2016
 Included observations: 36

ECM Regression				
Case 3: Unrestricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-204656.2	40208.40	-5.089886	0.0000
D(GOVIN)	1.888408	2.076354	0.909483	0.3714
D(PI)	-0.124788	1.428122	-0.087379	0.9310
CointEq(-1)*	-0.547072	0.083875	-6.522485	0.0000
R-squared	0.597420	Mean dependent var	51148.17	
Adjusted R-squared	0.559678	S.D. dependent var	102110.7	
S.E. of regression	67757.41	Akaike info criterion	25.18969	
Sum squared resid	1.47E+11	Schwarz criterion	25.36564	
Log likelihood	-449.4145	Hannan-Quinn criter.	25.25110	
F-statistic	15.82907	Durbin-Watson stat	2.460566	
Prob(F-statistic)	0.000002			

A.5 (h) The Granger Causality Test Results

Model I

Pairwise Granger Causality Tests
 Date: 08/23/19 Time: 15:12
 Sample: 1980 2016
 Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause RGDP	35	5.78345	0.0075
RGDP does not Granger Cause FDI		0.04422	0.9568
CPS does not Granger Cause RGDP	35	6.35021	0.0050
RGDP does not Granger Cause CPS		0.23477	0.7922
GOVIN does not Granger Cause RGDP	35	1.25334	0.3001
RGDP does not Granger Cause GOVIN		16.4735	1.E-05
PI does not Granger Cause RGDP	35	1.14875	0.3306
RGDP does not Granger Cause PI		11.4165	0.0002
FD does not Granger Cause RGDP	35	6.48583	0.0046
RGDP does not Granger Cause FD		0.79502	0.4609
EXR does not Granger Cause RGDP	35	3.99881	0.0289
RGDP does not Granger Cause EXR		2.15723	0.1332

Model II

Pairwise Granger Causality Tests

Date: 08/23/19 Time: 15:18

Sample: 1980 2016

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
RGDP does not Granger Cause FDI	35	0.04422	0.9568
FDI does not Granger Cause RGDP		5.78345	0.0075
CPS does not Granger Cause FDI	35	2.45522	0.1029
FDI does not Granger Cause CPS		3.03323	0.0631
GOVIN does not Granger Cause FDI	35	0.84717	0.4386
FDI does not Granger Cause GOVIN		6.30751	0.0052
PI does not Granger Cause FDI	35	0.64221	0.5332
FDI does not Granger Cause PI		6.71551	0.0039
FD does not Granger Cause FDI	35	2.28453	0.1193
FDI does not Granger Cause FD		3.49936	0.0431
EXR does not Granger Cause FDI	35	0.26218	0.7711
FDI does not Granger Cause EXR		2.64963	0.0872