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THE RELATIONSHIP BETWEEN FOREIGN DIRECT INVESTMENT AND ECONOMIC GROWTH: A SOUTH AFRICAN CASE STUDY

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I, the undersigned, Nomatshetshi Sisinyana Matolweni, hereby declare that the dissertation is my own original work and that it has not been submitted and will not be presented at any other university for a similar or any other degree award.

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Dedication

I would like to dedicate this thesis to my late mother Nomsa Kholeka Matolweni, my late older brother Sivile Matolweni and also to my other two brothers Putuma and Siphelele Matolweni. I also dedicate this thesis to my late grandfather Reverend Warrant Xhelithole Matolweni and my grandmother Mrs Agnes Buyiswa Matolweni. I am grateful for the love, support and encouragement they gave me when they were still alive. This thesis is also dedicated to my uncle and guardian Mr Zithulele Donald Poswayo, I thank him for all the love and support he has and still giving me.

Abstract

This study investigates the relationship between Foreign Direct Investment and economic growth in South Africa over the period of 1990-2012 with quarterly time series data being employed in the study. Since theory suggests a positive long-run relationship between Foreign Direct Investment and economic growth, it is crucial to examine whether Foreign Direct Investment has played a role in increasing economic growth of South Africa. The current study employed the Romer (1990) endogenous growth theory in order to explain how Foreign Direct Investment contributes to economic growth of South Africa. The Johansen test of cointegration was employed by the current study to determine any presence of a long-run relationship between Foreign Direct Investment and economic growth in South Africa. According to the cointegration results of the current study, the presence of cointegration between Foreign Direct Investment and economic growth was found to exist and as a result the Vector Error Correction Model (VECM) was estimated. The VECM estimation results suggested that there is a positive significant relationship between Foreign Direct Investment and economic growth. However, in the short-run no significant relationship was found between Foreign Direct Investment and economic growth. This statement indicates that Foreign Direct Investment positively contributes to economic growth in the long-run, but not in the short-run. It therefore reveals that South Africa should continue focusing on Foreign Direct Investment to improve economic growth and that policies should focus on [illegible] that can assist to improve Foreign Direct Investment inflows to South Africa.

Keywords: Foreign Direct Investment, Economic Growth, South Africa, Technology, Spillovers.

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Acronyms

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
ASGISA	Accelerated and Shared Growth Initiative for South Africa
BRICS	Brazil, Russia, India, China, South Africa
CLRM	Classical Linear Regression Model
CUTS	Consumer Unity and Trust Society
DTC	Diamond Trading Company
DTI	Department of Trade and Industry
ELIDZ	East London Industrial Development Zone
EP	Export promoting
FDI	Foreign Direct Investment
FKF	Fixed Capital Formation
GDP	Gross Domestic Product
GEAR	Accelerated and Shared Growth Initiative for South Africa
IS	Import Substituting
JCI	Johnson Control International
JV	Joint Venture
M & A	Mergers and Acquisitions
MIDP	Motor Industry Development Programme
MNC	Multinational Corporations
OECD	Organization for Economic Co-operation and Development
P & G	Procter and Gamble
PP	Phillips-Perron
REX	Real Exports of goods and services
RFDI	Real Foreign Direct Investment
RGDP	Real Gross Domestic Product
RIMP	Real Imports of goods and services
SAA	South African Airways
SADC	Southern African Development Community
SAICA	South African Institute of Chartered Accountants
SARB	South African Reserve Bank
TISA	Trade and Investment South Africa
UNCTAD	United Nations Conference of Trade and Development
US	United States
US$	United States Dollar
VAR	Vector Autoregressive
VECM	Vector Error Correction Model

VW	Volkswagen
WTO	World Trade Organization

Chapter 1

1.1 Background

The current study looks at the relationship between Foreign Direct Investment and economic growth in South Africa over the period of 1990-2012 with quarterly data being employed in the study. The study will run for the period 1990-2012 in order to compare volumes of Foreign Direct Investment that have been flowing into South Africa during and post-apartheid period in order to observe how real Foreign Direct Investment has contributed towards economic growth in South Africa. Since theory suggests the existence of a positive long-run relationship between Foreign Direct Investment and economic growth, it is necessary to examine whether Foreign Direct Investment has any role that it has played in generating economic growth in South Africa.

Kransdorff (2010) argues that in order for South Africa to have an increased economic growth there should be an increase in Foreign Direct Investment and that the manner through which Foreign Direct Investment is attracted towards the host country is affected by the host country's tax regime. Therefore, Foreign Direct Investment could be a determining factor of economic growth and in order to attract more Foreign Direct Investment towards the domestic country the extent of taxation on Foreign Direct Investment activities should be critically looked at. Foreign Direct Investment could also have a relatively large impact on economic growth and any escalation in Foreign Direct Investment could lead to an upsurge in economic growth (taking into account the country's tax regime as a form of attracting more Foreign Direct Investment into South Africa). According to National Treasury (2011), South Africa has an open economic environment allowing other foreign countries to invest in its domestic firms in order to sustain long-term economic growth.

In March 1995 restrictions on capital flows (including inward Foreign Direct Investment) by foreign investors were removed enabling capital to flow freely into South Africa with no stringent restrictions. According to Ayanwale (2007), there are various directions which Foreign Direct Investment can take and some of these directions are namely: Greenfield Investment (investment in new assets; also referred to as mortar and brick investment) or it can be a Merger and Acquisition (Investment in already existing assets; Brownfield Investment and Joint Venture are also examples). National Treasury (2011) argues that South Africa is regarded as being a low-savings developing economy with high requirements for domestic investment and as a result attracting more Foreign Direct Investment into South Africa supports domestic investment financing requirements. This implies that Foreign Direct Investment assists in financing or funding domestic projects such as construction and other infrastructure projects that occur within the domestic economy. It is therefore necessary to examine the nature of the relationship between Foreign Direct Investment and economic growth and the contribution (if any) of Foreign Direct Investment towards economic growth. Trade openness, political and economic stability and excellent education system also attract high levels of Foreign Direct Investment by foreign companies (Spar, 1998). It is suggested that these factors need to be in place in order for Foreign Direct Investment to contribute to economic growth and if they are not in place, Foreign Direct Investment may depict an insignificant impact on economic growth.

Countries which are hosting Foreign Direct Investment activities benefit from Foreign Direct Investment inflows because foreign investors bring with them their expertise, know-how, technology, financial resources and other resources which were not previously available in the domestic country. Lall (1981) suggests that when foreign firms invest in the companies that are in the host country, the latter starts having more advanced technology as foreign companies bring with them their advanced technology when directly investing in the domestic country. This advanced technology would therefore increase economic growth in the host country.

In light of the above, the current study is therefore concerned with establishing how Foreign Direct Investment and economic growth in South Africa are related. Foreign Direct Investment and economic growth in South Africa are expected to have a positive significant relationship as Foreign Direct Investment brings positive technological spillovers, innovation, the bridging of ideas' gap and an increase in human capital base.

1.2 Statement of the problem

According to UNCTAD (2011), there was a decrease of more than 70% of Foreign Direct Investment inflows to South Africa as Foreign Direct Investment decreased from \$5.4-billion in 2009 to just \$1.6-billion in 2010. The report further indicates that contrary to what was experienced in South Africa in 2010, other BRICS partners to South Africa which are namely: Brazil, Russia and India appeared amongst the 20 leading recipients of Foreign Direct Investment, so did Saudi Arabia, Mexico, Chile and Indonesia. Macias and Massa (2009) argue that the factors which were responsible for the decline in external finances such as Foreign

Direct Investment were a reduced propensity and capability to invest and they also argue that this was also coupled with stringent credit conditions which made it very hard and also costly to invest in the operations of the foreign countries.

In the face of a decline in Foreign Direct Investment flows due to the global financial crisis in 2007/2008, this study seeks to explore the extent to which the South African growth might have been affected by the foreign capital inflow channel, specifically Foreign Direct Investment. In 2007/2008 South Africa and many other foreign countries experienced global financial crisis (SAICA, 2011). The study will examine the impact of Foreign Direct Investment on economic growth in South Africa. Also, in order to understand the determinants of economic growth in South Africa, it is critical to examine and thus gain an understanding of the role and impact of Foreign Direct Investment on economic growth.

1.3 Objectives of the Study

The general objective of the current study is to examine the relationship between Foreign Direct Investment and economic growth in South Africa as a host country for the period of 1990-2012.

Specific objectives of the study are:

- Analyse the trends of Foreign Direct Investment and economic growth in South Africa.
- Estimate the contribution of Foreign Direct Investment on economic growth in South Africa.
- Based on the empirical findings, make conclusions and policy recommendations.

1.4 Hypotheses to be tested

Hypotheses to be tested in the study are as follows:

- H_0: Foreign Direct Investment does not contribute towards economic growth in South Africa.
- H_1: Foreign Direct Investment contributes towards economic growth in South Africa.

1.5 Justification of the study

It is necessary to conduct the study in order to find out the degree to which Foreign Direct Investment contributes to economic growth in South Africa. This is especially since there are many policies implemented in order to attract and increase Foreign Direct Investment. Ayanwale (2007) concludes that the impact that Foreign Direct Investment has on economic growth depends on the variables that the study has used. Some countries use variables that are different from those used in other foreign countries to assess how Foreign Direct Investment and economic growth are related. The current study will add value in that it will analyse how Foreign Direct Investment has been performing prior to and post democracy and how the global economic crises as well as the types of government policies have caused Foreign Direct Investment to contribute towards economic growth in South Africa during these two periods.

The current study will also add value in that it will look at South Africa alone as a host country because there are fewer studies that have analysed how Foreign Direct Investment and economic growth are related in South Africa as most studies have looked at a panel of African or SADC countries rather than South Africa alone. Policies which will induce more Foreign Direct Investment and cause it to have a stronger positive contribution towards economic growth will also be provided in the current study. Therefore, the current study will establish the relationship between Foreign Direct Investment and economic growth in order to provide an understanding the contribution that the Foreign Direct Investment has towards the South African economic growth during the period of 1990-2012.

1.6 Delimitations

The proposed study will examine the relationship between Foreign Direct Investment and economic growth in South Africa over the period of 1990-2012. This study will therefore not examine the relationship between Foreign Direct Investment and economic growth prior to 1990 and post 2012. The current study will only look at the relationship between Foreign Direct Investment and economic growth in South Africa as a host country and will not examine countries other than South Africa. Only Foreign Direct Investment inflows data will be employed in the study which means that outflows and net inflows of Foreign Direct Investment will not be looked at nor employed. Therefore, the study will examine the degree to which Foreign Direct Investment inflows affect the economic growth in South Africa and it will not look at Foreign Direct Investment outflows.

1.7 Ethical Considerations

The proposed study will make use of the quantitative data which involves extracting data from official sources. Even though secondary data sources will be utilised from published sources, no ethical right will be infringed. Interpreted results will be cleared with the relevant organisations to ensure that no value judgements or misrepresentations are made. In this manner, an ethical code of conduct is maintained throughout the proposed study.

1.8 Outline of Chapters

The chapter outline of this thesis will be as follows:

- **Chapter 1**- Introduction.
- **Chapter 2**- Background and Overview of Foreign Direct Investment and Economic Growth in South Africa.
- **Chapter 3**- Theoretical and Empirical Literature Review.
- **Chapter 4**- Research Methodology and Analytical Framework.
- **Chapter 5**- Estimation Results.
- **Chapter 6**- Conclusions and Recommendations.

Chapter 2

Background and Overview: FDI and Economic Growth in South Africa

2.1 Introduction

Foreign Direct Investment (FDI) is regarded as a vital phenomenon which is adopted in order to develop economies which are underdeveloped and which are still developing. This is because Foreign Direct Investment contributes to the domestic country's economic growth in the sense that when foreign firms directly invest in the domestic country's firms they bring with them their expertise, technology, skills and other resources previously unavailable in the domestic country which then contributes to the domestic country's economic growth. In this manner, Foreign Direct Investment is considered to be crucial because it brings positive spillovers to the domestic country and these positive spillovers could possibly lead to an increase in the domestic country's economic growth.

Foreign Direct Investment occurs when residents of the source country (foreign country) directly acquire ownership of assets in a domestic country's company (usually 10 percent of ownership or controlling interest for developing and developed countries) with the objective of controlling the domestic country's production, distribution and other business activities taking place in the domestic firm (Moosa, 2002). Since Foreign Direct Investment involves the acquisition of ownership of approximately 10 percent or more, the foreign company that has directly invested in the domestic company's operations has a significant influence on the domestic firm's operations than is the case with portfolio investment because Foreign Direct Investment entails more involvement in the management and running of the firm.

This chapter will explore the history of Foreign Direct Investment and economic growth in South Africa; the relationship between Foreign Direct Investment and growth; the types of Foreign Direct Investment; the spillover effects; the impact of outward-oriented trade policies and what happened in South Africa due to the change to outward-oriented trade policy. The extent to which political uprising in South Africa affected Foreign Direct Investment inflows and gross domestic product output will also be looked at; the trends of Foreign Direct Investment and gross domestic product pre- and post- democracy in order to observe the relationship between the two variables. The role played by Foreign Direct Investment inflows in South Africa as a host country will also be analysed in this chapter. The different types of economic crises that have occurred pre- and post- apartheid period will also be looked at in order to determine the extent to which the economic crises have led Foreign Direct Investment to contribute towards economic growth.

2.2 History of Foreign Direct Investment and Growth in South Africa

2.2.1 Overview of Foreign Direct Investment and Growth in South Africa.

2.2.1.1 Period of 1867-1909

The history of Foreign Direct Investment in South Africa dates back to the 18th century when South Africa's industrial development was due to foreign capital from the European companies, particularly British companies such as the British South Africa Company (Kransdorff, 2010). South Africa is regarded as being endowed with natural resources and also being an emerging market economy with a sophisticated financial system. Such characteristics led to the establishment of De Beers Mining company in South Africa and have also attracted Foreign Direct Investment inflows to South Africa such as Anglo Platinum, Anglo Gold directly investing in the South African mining industry as well as Anglo American's acquisition of De Beers.

South Africa is in possession of principal world reserves in gold, diamond and other mineral resources (Boocock, 2002). This makes South Africa to be attractive to foreign investors because large amounts of Foreign Direct Investment inflows have been invested in the South African mining industry. In 1867 diamonds were discovered in South Africa followed by the discovery of gold in 1884 which enabled foreign investors and entrepreneurs to come and invest in South Africa in order to take advantage of those mineral resources (Kransdorff, 2010). Due to South Africa's endowment to mineral resources, foreign investors realized that they would make good profits if they directly invest in the mining industry after the mineral resources were discovered in South Africa. The discovery of diamond mines in South Africa marked the beginning of De Beers's mining company.

In 1888 De Beers Consolidated Mines Ltd (a merger between De Beers Mining Company and Kimberly mines) was founded after discovery of diamond in South Africa (De Beers Group, 2013). De Beers trades in diamonds and has its mining branches in South Africa; Namibia; Botswana, Canada as well as other diamond sorting branches in other foreign countries. According to De Beers Group (2013), De Beers South Africa has two shareholders namely: Anglo American which holds 85 percent of ownership and the government of the Republic of Botswana which holds about 15 percent of ownership. The Anglo American's 85 percent and the government of the Republic of Botswana's 15 percent ownership at De Beers resulted in a rise of the mining industry's Foreign Direct Investment inflows. According to Boocock (2002), the major industry that has become the key recipient of Foreign Direct Investment in the Sub-Saharan Africa (South Africa included) has been the mining industry. As a result, the mining industry (gold and diamonds included) has contributed to an increase in Foreign Direct Investment inflows to South Africa and this is confirmed by the Foreign Direct Investment in the gold and diamond mining industries by companies such as Anglo Gold and Anglo American.

Discovery of mineral resources such as diamond and gold brought into attention the industrial development in South Africa and mining houses were then established by foreign firms in the domestic economy in order for diamond and gold to be extracted in South Africa and be sold within the domestic country as well as abroad (Gelb, 2002). De Beers became a dominant company in the mining industry and it discovered other diamond locations abroad and started extracting those resources then it later expanded to other foreign countries as well. Anglo American and Anglo Gold started exploiting the domestic country's mineral resources in order to make profits and benefit from these mineral resources. Due to an increase in a number of foreign investors directly investing in South Africa, domestic industries became developed leading to creation of service and manufacturing industries (Gelb, 2002).

The development of manufacturing industries lead to an increase in productivity because when manufacturing industries are developed, then it means more goods will be produced domestically and be sold locally and to other foreign firms as well. Lonmin PLC is also a foreign-based mining company which mines platinum resources which are then transformed into jewelleries. Lonmin PLC was founded on the 13th of May 1909 with its headquarters being in Britain (Lonmin, 2014). The Lonmin PLC also contributes to Foreign Direct Investment as it is a foreign direct investing firm with its operations taking place at Marikana, North-West Province in South Africa.

2.2.1.2 Period of 1920 – 1991

Starting from the period of 1920s to 1970s Foreign Direct Investment from British, European and US companies to South Africa contributed positively to the secondary industry's development (Gelb, 2002). Therefore, when the British, European and U.S companies directly invested in South Africa the domestic economy's growth increased as Foreign Direct Investment inflows from foreign firms resulted in secondary industries being developed in order to convert raw mineral resources to commodities that can be sold in the domestic as well as the foreign markets.

The collapse of gold standard in 1933 resulted in the depreciation of the domestic country's exchange rate and as a result there was development in the domestic manufacturing as there was an increase in demand (Gelb and Black, 2004). When the domestic country's exchange rate depreciates, domestic goods become more competitive in the foreign market pushing the demand for domestic country's goods upwards leading to development of manufacturing industries in order to meet the increased demand for domestic country's goods.

The decrease in the domestic country's exchange rate also meant that foreign investors could buy more of the domestic currency in order to invest in the domestic firms. If, for example, the value of a rand has depreciated relative to other foreign currencies, foreign investors who want to invest in South African firms can now buy more units of currency in order to invest in those firms in South Africa at a relatively lower rate. In this manner, Foreign Direct Investment will increase as foreign investors will now be able to invest in South Africa since their currency would be stronger than the rand and Foreign Direct Investment will flow into the domestic country. When the value of the rand has depreciated it is most likely that it will be relatively less expensive to buy ownership in the South African companies. Since there will be an increased demand for Foreign Direct Investment with more foreign investors now affording to directly invest in South African firms, that can then push the demand for Foreign Direct Investment upwards which will in turn affect the domestic economy's growth.

Boocock (2002) indicates that 75 percent of Foreign Direct Investment inflows to the sub-Saharan Africa (South Africa included) during the period of 1985-1991 went to the mining and oil extraction industries and that South Africa together with other African countries have attracted large sums of Foreign Direct Investment in the mining industry. Since mining industry has attracted large volumes of Foreign Direct Investment, it means that minerals such as diamonds and gold also led to an influx of Foreign Direct Investment.

2.2.2 FDI and Economic Growth in South Africa: Political Instability

Foreign Direct Investment inflows from foreign investors continued to increase even up to the 1950s, but the difficulties arose in 1961 when there was a massacre in Sharpeville that led to many foreign investors disinvesting their direct investments in South Africa resulting in a decrease in Foreign Direct Investment inflows to South Africa (Kransdorff, 2010). The political instability caused more foreign investors to disinvest in South Africa as they disapproved the political situation that was happening in South Africa; their disinvestment acted as a protest against the apartheid government as well as concerns regarding the future profitability of their investments (Ajayi, 2006). Therefore, other international firms put pressure on firms that had invested in South Africa to disinvest in South Africa due to the political instability as well as the apartheid government system that was in control of the South African economy during that period.

South Africa would manufacture foodstuffs, shirts and a small amount of motor cars, but it was difficult for the country to produce items such as fridges and it was impossible for the country to produce capital goods (for example factory machinery and other equipment) and commercial aircrafts due to the issue of economies of scale (Legassick, 2012). The inability of South Africa to produce some kinds of goods also became disadvantageous for the domestic country because it meant that they were unable to produce and export such goods in order to earn revenue so that it contributes to the country's gross domestic product. The crisis led to the balance of payments' deficit.

This political uprising also negatively affected the capital inflow channel, specifically the Foreign Direct Investment, because more foreign investors disinvested in South Africa and invested in other foreign countries since they were concerned that they would lose their returns on investments or that their operations would be running at a loss considering the political instability (Ajayi, 2006). In addition, there was an international boycott campaign against apartheid in the mid-1980s that resulted in financial and official trade sanctions leading to South Africa being cut off from international capital markets (Kransdorff, 2010). This resulted in a large foreign capital outflow with foreign direct investors disinvesting in the South African firms.

When a great number of foreign investors disinvested their direct investments the Foreign Direct Investment therefore became negatively affected because it implied that the capital was leaving the domestic country. This resulted in a relatively large outflow of Foreign Direct Investment with about 225 United States Corporations leaving the domestic country together with their direct investments and about 20 percent of firms from the United Kingdom left South Africa between the period of 1984 to 1988 (Gelb & Black, 2004). The exit of these United States Corporations and United Kingdom firms negatively affected Foreign Direct Investment inflows to South Africa as there was a decrease in Foreign Direct Investment between the period of 1984 and 1988 with Foreign Direct Investment decreasing from R156 113 million in

1984 to R72 877 million in 1988. This negatively affected the Foreign Direct Investment inflows to South Africa as these foreign countries' capital was flowing out of South Africa to other countries (Kransdorff, 2010).

Amongst other foreign firms that had disinvested in South Africa was the U.S based Mobil Corp which had more than $400 million worth of assets in South Africa (Knight, 2001). The disinvestment by the U.S based Mobil Corp was indeed a great loss for the Foreign Direct Investment activities because there was reduction of $400 million worth of assets in South Africa. As a result, the Foreign Direct Investment disinvestments by foreign countries reduced the volumes of Foreign Direct Investment inflows to South Africa. The gross domestic product decreased from R1 013 009 million in 1984 to R1 000 737 million in 1985, but it started increasing to R1 000 915 million in 1986 and continued to increase to R1 064 864 million through to 1988. Even though there were about 225 United States corporations and about 20 percent of United Kingdom firms disinvesting in South Africa, in the 1990s there were still more than 450 firms that were still investing directly in South Africa (Gelb & Black, 2004). The anti-apartheid movement which resulted in foreign firms disinvesting in South Africa as the means to protest against the political government that was ruling in the early 1980s resulted in the reduction of the presence of U.S oil producing firms in the South African oil industry Mobil to disinvest in South Africa (Knight, 2001).

In the mid-1980s South Africa experienced economic sanctions that were applied in order to pressurize the South African government to combat and put the apartheid system to an end. Levy (1999) explains that in the face of the apartheid regime, many countries adopted financial and trade sanctions leading to significant amounts of foreign investments being withdrawn from South Africa. The adoption of these sanctions led to South Africa experiencing difficulties economically and the domestic country's residents started complaining about the negativities brought by these sanctions and requested that there should be political changes. Gelb (2002) indicates that new foreign investment in South Africa disappeared during the 1980s because more than 350 companies left the country. Hence, a large number of companies that withdrew their investments and operations in South Africa negatively affected the amount of Foreign Direct Investment in the 1980s causing reduction in Foreign Direct Investment in the period of the 1980s.

In the 1980s there was also a global economic crisis that occurred which was due to the apartheid crisis because the government that was ruling during that period was the apartheid government. Due to the economic and political instability that took place in the 1980s, many investors from within and abroad South Africa lost confidence in investment activities because these investors were no longer certain whether they were going to get good returns on their investments or not. In 1985 the economic growth in South Africa dropped when compared to economic growth in 1984 (SARB, 2012). The decrease in the domestic country's economic growth was due to the economic crisis that the country experienced in 1985.

Foreign Direct Investment inflows to South Africa decreased in 1985. The decrease in Foreign Direct Investment between 1984 and 1985 was due to foreign firms that had disinvested in South Africa during that period because of the political instability. The Foreign Direct Investment inflows to South Africa continued to decrease through to 1986 whereas gross domestic product in 1986 increased. During the period of the mid-1980s the per capita gross domestic product became negative; fixed investments and the use of plant capacity dropped; the value of capital stock in the manufacturing industry also fell. The government of 1985 then declared a state of emergency and the state of emergency occurs when the government does a declaration which puts into suspension a few normal executive functions, legislative and judicial powers (Levy, 1999).

In 1985 many foreign banks refused to roll over the South African loans and some of the foreign investors disinvested their private capital from the domestic country as a sign of protest against the political instability that was occurring during that time (Knight, 2001). The international firms used investment boycotts and trade sanctions as their tool for putting pressure on the apartheid situation. During the state of emergency human rights and freedom were suspended in order to do damage control as the domestic country was negatively affected by the economic crisis that was taking place (Levy, 1999).

The declaration of the state of emergency by the government implies that people do not have the freedom to move. As a result, Foreign Direct Investment also became negatively affected as the government would for example declare that there should be no Foreign Direct Investment flowing into the domestic country during the period of crisis. Immediately after the state of emergency was declared, Chase Manhattan Bank made an announcement that it would not renew its short-term loans and as a result of that there was liquidity crisis because other lenders did the same thing as well (Levy, 1999). The Chase Manhattan Bank decided to disinvest because they feared that the economic instability and political unrest was getting worse for their investors and the fact that the state of emergency involved suspension of human rights and freedom to movement drove them to disinvest and leave the domestic country with their direct investment.

2.2.3 The Road to Democracy

In the 1990s there were political changes that eliminated the disinvestment pressures leading to Foreign Direct Investment activities resuming again. Due to the change in political conditions of the domestic country, democratic elections began to take place in 1994 and the banned organizations were then brought back (Gelb & Black, 2004). Since there were political changes in the 1990s, South Africa started to have more Foreign Direct Investment flowing into the domestic country compared to Foreign Direct Investment inflows in the pre-democratic era with economic growth on the other side showing a sustained increase. Te Velde (2006) indicates that after countries that were restricting Foreign Direct Investment inflows in the 1960s, 1970s and 1980s realized that Foreign Direct Investment brought positive spillovers to the host country, they started removing such restrictions and became more open to Foreign Direct Investment inflows in the 1990s and as a result Foreign Direct Investment inflows in the 1990s increased.

Since 1993 Foreign Direct Investment inflows to South Africa consisted of roughly 1.5 percent of gross domestic product whereas other middle-income countries' Foreign Direct Investment constituted 3 percent of gross domestic product (Kransdorff, 2010). South Africa is also classified as a middle-income country but has not been attracting large volumes of Foreign Direct Investment like other middle-income countries and this is shown by the 1.5 percent (3 - 1.5 = 1.5 percent) difference between South Africa's and other middle-income countries' Foreign Direct Investment percentage of gross domestic product. This therefore shows that even though Foreign Direct Investment to South Africa increased in the 1990s, the domestic country was still unable to attract more Foreign Direct Investment like other middle-income countries as it is also classified as a middle-income class.

The democratic elections that took place in 1994 marked an end of the apartheid system resulting in reduction of tariffs, liberalization of financial system and capital account as well as the liberalization of economic policy regime making it to be more outward oriented than it was before (Gelb, 2002). Since the democratic period major positive changes have occurred in the South African economy with Foreign Direct Investment and economic growth showing a sustained increase. These positive changes included South Africa getting into an agreement and signing up with the World Trade Organization (WTO) and making changes to the import tariffs which then lead to more Foreign Direct Investment flowing into the domestic country (OECD, 2001).

Since 1994 the South African policy framework for the entry of foreign investors has become less stringent than it was before as these foreign firms now do not have to be officially approved before they can enter the domestic country, but there is an exception for the banking sector because it still requires an official approval before any foreign firm can enter the domestic country's banking sector (Gelb, 2010). The purpose of the change in policy was to encourage more investors to directly invest in companies that are situated in South Africa in order to support the promotion of Foreign Direct Investment. The reduction of import tariffs attracted more foreign investors to directly invest in the domestic country because it is no longer excessive and difficult to directly invest in South African firms than it was before democracy and policy changes.

In South Africa there is no discrimination between domestic and foreign investors and as a result the laws that domestic investors are subject to also apply to foreign investors with no special treatment being given to domestic investors or strict policies given only to foreign investors. The fair treatment given to domestic as well as foreign investors has attracted more foreign investors to directly invest in South African firms. Gelb (2010) argues that there is a set of royalties and licensing requirements that affect all Greenfield operations which both domestic and foreign investors should comply with when investing in the mining sector, whereas foreign entrants buying shares in mines that are already operating (Brownfield) are unaffected. This statement therefore provides an argument that the Greenfield Foreign Direct Investment has more stringent operational requirements than the Brownfield Foreign Direct Investment. The reason for the difference in the way these Foreign Direct Investment activities are regulated could be because one Foreign Direct Investment (Greenfield) involves investing in new assets whereas the other one (Brownfield) involves investing in already existing assets.

Gelb and Black (2004) argue that after the transition that took place in 1994 Foreign Direct Investment inflows increased to an average of US$ 1.861 billion per annum and the increase sustained through to year 2002. Therefore, changes in policies and restrictions on Foreign Direct Investment inflows led to South Africa receiving more Foreign Direct Investment than it did before the transition. After the democratic elections in South Africa, major transformation to the South African economy also included transformation in Growth, Employment and Redistribution (GEAR) framework which is a macro-economic policy

(OECD, 2001). The GEAR strategy led to stabilization of the main macroeconomic variables, such as real interest rates, the budget deficit to gross domestic product ratio and inflation as these factors are crucial for a country's development and productivity.

In 1996 South Africa formulated the Growth, Employment and Redistribution (GEAR) strategy as means of improving the domestic economy's growth level. The GEAR strategy identified an increase in Foreign Direct Investment as being the driver of economic growth as it was one of the GEAR strategies to attract and increase Foreign Direct Investment (Gelb & Black, 2004). More so, formulating policies that induce more Foreign Direct Investment towards South Africa was among the strategies of GEAR which were aimed at increasing the domestic country's economic growth. In 1997/1998 there was an Asian financial crisis which originated from South-East Asia. However, Foreign Direct Investment was not affected by the Asian financial crisis as Foreign Direct Investment to the domestic country continued to increase from R123 529 million in 1997 to R130 331 million in 1998. Gross domestic investment also increased from R1 214 768 million in 1997 to R1 291 053 million in 1998. This argument shows that the 1997/1998 financial crisis did not negatively affect Foreign Direct Investment inflows to South Africa neither did it negatively affect the domestic country's growth because both gross domestic product and Foreign Direct Investment to South Africa continued to increase between 1997 and 1998 (SARB, 2012). Since both Foreign Direct Investment and economic growth during the 1997/1998 Asian financial crisis period were not negatively affected by the Asian financial crisis, this could provide an implication that the Asian financial crisis did not have that much of an impact on the Foreign Direct Investment inflows to South Africa and economic growth.

One of the contributors to an increase in Foreign Direct Investment in 1997 was the partial sale of government shares in Telkom and partial sale of SAA assets during this period (Khosa, 2003). The partial sale of government shares and the SAA assets also gave foreign investors an opportunity to purchase these assets and shares thereby contributing to an augmentation of Foreign Direct Investment in South Africa. As a result, there was an increase in Foreign Direct Investment since foreign companies had the opportunity to directly invest in Telkom as well as to partially buy assets of the SAA. In 1998 the Department of Trade and Industry (DTI) formulated Trade and Investment South Africa (TISA) programme in order to attract foreign firms to directly invest in South African firms (Khosa, 2003). The aim for the formulation of the TISA programme was to attract foreign investors in order to increase South African firms' productivity so that more goods are produced domestically and sold abroad. An increase in the domestic economy's productivity causes an increase in the domestic economy's growth which is a positive impact on the domestic economy.

Khosa (2003) argues that the government's investment policy framework stipulates that there was an expected increase of 20-26 percent in gross domestic product by year 2000 and that such an increase would be due to maintaining a positive investment environment that would attract Foreign Direct Investment. This argument shows the importance of the government's implementation of policies that attract investments such as Foreign Direct Investment in order to increase the domestic country's economic growth. As a result, Foreign Direct Investment is viewed as a crucial engine for increasing the domestic economy's growth. In 2001 South Africa had an increase in Foreign Direct Investment inflows and one of the contributors to this increase was the takeover of De Beers's mining company by Anglo American (Arvanitis, 2006). The domestic country's Foreign Direct Investment went from R421 107 million in 2000 to R509 688 million in 2001 with an increase of R88 581 million. Gross domestic product also increased from R1 301 773 in 2000 to R1 337 382 in 2001.

However, in 2001/2002 the situation regarding Foreign Direct Investment to South Africa deteriorated as there was a currency crisis which resulted in an overvaluation of the rand and deterred Foreign Direct Investment inflows (Kiat, 2008). As a result, Foreign Direct Investment inflows to South Africa decreased from R509 688 million in 2001 to R344 072 million in 2002 and this decline amounted to R165 616 million, but gross domestic product continued to increase and it reached R1 386 435 million in 2002 (SARB, 2012). Goldberg (2009) explains that exchange rates can influence the total amount of Foreign Direct Investment across various countries and that when the value of one currency declines relative to the other, then the country whose currency has depreciated will have lower wages and production costs compared to other foreign counterparts.

When the domestic currency has depreciated, for instance, it will be relatively less expensive for investors to establish their businesses in the domestic country (Kiat, 2008). Therefore, the domestic country will attract more Foreign Direct Investment inflows because foreign investors will want to take advantage of the low wages and production costs found in the domestic economy. Gross domestic product will also increase because more goods will be demanded which leads to an increase in the domestic production causing gross domestic product to increase more. Foreign Direct Investment and gross domestic product will both increase due to lower wages and production costs.

Another implication of an exchange rate movement on Foreign Direct Investment is that the country whose exchange rate has depreciated will have a locational advantage which means that South Africa as a domestic country will be a location that will attract productive capacity investments (Goldberg, 2009). As a result, there will be more Foreign Direct Investment flowing into South Africa because foreign investors will want to take advantage of the depreciated exchange rate as it will be relatively less expensive for them to directly invest in the domestic firms which will then push economic growth upwards.

According to Gunnarsen *et al* (2007), in 2005 the South African government adopted a new macroeconomic framework called the Accelerated and Shared Growth Initiative for South Africa (ASGISA) which was a new macroeconomic policy aimed at increasing employment by making the tourism and business process outsourcing sectors a priority by giving both labour-intensive export sectors opportunities to be in small and medium- sized businesses. What happened is that the South African government adjusted and enhanced the GEAR strategy which then resulted in the existence of ASGISA. Since the ASGISA macroeconomic policy was aimed at supporting domestic businesses, this contributed positively towards Foreign Direct Investment because when businesses are established more foreign investors become interested to directly invest in the domestic businesses which then causes Foreign Direct Investment to the domestic economy to increase.

In 2007/2008 South Africa was again affected by a global financial crisis that caused many job losses and some of the industries began to shut down. McCulloch (2008) states that the 2007/2008 global financial crisis led to a decrease in exports growth and Foreign Direct Investment inflows in developing economies (South Africa included). The Foreign Direct Investment inflows decreased from R801 086 million in 2007 to R622 692 million in 2008 (decrease of R178 394 million). The global financial crisis caused Foreign Direct Investment inflows to South Africa to decrease as the investors became reluctant of investing in economies which were affected by the crisis because of the risks involved such as losing their investments, loss of profits and businesses shutting down.

Since foreign investors had decided to withdraw their direct investment from emerging economies that were affected by the global financial crisis, the South African exchange rate lost its value with the Rand losing about 35 per cent of its value between mid-September and mid-October (McCulloch, 2008). Therefore, Foreign Direct Investment inflows to South Africa were negatively affected by the 2007/2008 global financial crisis as there was a decrease in Foreign Direct Investment to the domestic economy. The gross domestic product continued to increase in 2007 and 2008, but only started to decrease the following which is 2009 and it amounted to R1 786 897 million. Since Foreign Direct Investment decreased from R801 086 million in 2007 to R622 692 million in 2008 and gross domestic product increased from R1 751 165 million in 2007 to R1 814 594 million in 2008, then it means Foreign Direct Investment and economic growth could possibly have a negative relationship as the two variables take different directions.

In the first quarter of 2011 Foreign Direct Investment inflows to South Africa again had an additional increase of $2.4 billion since Wal-Mart acquired 51 percent of ownership at Massmart (Creamer, 2011). The acquisition of 51 percent of Massmart by Wal-Mart contributed positively towards the domestic country's Foreign Direct Investment inflows and economic growth because $2.4 billion was directly invested in the South African's company Massmart (Creamer, 2011). It is not good to only focus on Foreign Direct Investment inflows and outflows values because if only Foreign Direct Investment monetary values are analyzed, then it will make the domestic country to perform poorly when compared to other emerging economies (Roberts, 2011). Hence, when analyzing Foreign Direct Investment in monetary value terms, the domestic country's performance will not be as good as it would be had the qualitative resources been also considered.

In 2011 there was a euro zone crisis which originated from Europe and which left many countries, more especially developing, lower-income and middle-income countries negatively affected. Massa *et al* (2012) argue that the countries that were most vulnerable and exposed to the risk of the European crisis were mostly developing countries which exported their products to countries that were affected by the European-crisis. Countries that are highly dependent on Foreign Direct Investment, remittances and financial aids from European countries were also at the risk of being negatively affected by the euro zone crisis. Another issue is that exports of goods that have high elasticity in income were also exposed to the risk of being hit by the euro zone crisis. Developing countries are likely to be strongly hit by the European debt crisis through the channel of trade.

Massa *et al* (2012) contend that financial contagion, exchange rate and fiscal consolidation effects are the major effects of the euro zone sovereign debt crisis affecting countries linked to or trading with the European countries. With regard to financial contagion effects, investors change their risks' perceptions concerning the investments and they tend to move away from markets affected by the crisis. However, Foreign Direct Investment inflows to South Africa were not significantly negatively affected as they show an increase between 2010 and 2012. Foreign Direct Investment inflows to South Africa increased from R852 895 million in 2010 to R897 088 in 2012 and the gross domestic product also increased from R1 843 008 million in 2010 to R1 956 444 million in 2012 (SARB, 2013). These upward sloping trends suggest that the euro zone crisis did not have a negative effect on the South African growth and Foreign Direct Investment as these two variables continued to increase even during the euro zone crisis.

Department of Trade and Industry (2013) explains that Johnson Controls International (JCI) announced its investment of R380 million into East London Industrial Development Zone (ELIDZ) Automotive Supplier Park as an expansion of the current plant that Johnson Controls International owns in East London Industrial Development Zone. The Department of Trade and Industry (2013) states that the plant is currently supplying Mercedes Benz South Africa with cockpits for the Mercedes Benz w204 resulting in approximately 180 new jobs being created. The direct investment of R380 million by Johnson Controls International contributes positively to the South African economic growth because more than one hundred people will be employed to carry out production of the cars in order to export such cars as well as sell them domestically.

Even though some of the foreign firms such as the largest U.S. investing company Mobil have disinvested in South Africa, that did not cause the domestic country to not have any other foreign firms investing in the domestic economy because more than 130 U.S companies still have a controlling interest in the subsidiaries of the domestic country (Knight, 2001). This argument suggests that even though some of the firms had disinvested because of political stability, South Africa still benefits from Foreign Direct Investment as there are other foreign firms that are still directly investing in South Africa. When comparing the volumes of Foreign Direct Investment inflows pre- and post-democracy, it is clear that the apartheid system together with its government and its policies played a huge role on the reduction of Foreign Direct Investment inflows to South Africa.

2.3 The Types of Foreign Direct Investment

According to Moosa (2002) there are different types of Foreign Direct Investment classified from two different perspectives with Foreign Direct Investment under the investor's perspective being classified into: Horizontal Foreign Direct Investment, Vertical Foreign Direct Investment and Conglomerate Foreign Direct Investment and from the host country's perspective being classified into import-substituting Foreign Direct Investment; export-increasing Foreign Direct Investment and government initiated Foreign Direct Investment. Horizontal Foreign Direct Investment is a Foreign Direct Investment whereby the multinational firm produces similar goods in multiple locations in order to expand operations, earn profitability and gain market share from different locations (Aizenman & Marion, 2004).

A foreign firm will, for instance, produce goods in its original country and also produce the same goods it produces in its home country in South Africa and other countries as well in order to expand its operations, make profits and to also gain market share. For example, Daimler Chrysler produces Mercedes Benz automobiles in Germany and it also has a plant in East London South Africa which also produces Mercedes Benz automobiles and these cars are sold both domestically and abroad. Denisia (2010) argues that market failures lead to attraction of Foreign Direct Investment because multinational firms believe that their innovative and unique technology will lead them to make bigger profits and gain a market share.

According to (Aizenman & Marion, 2004), vertical Foreign Direct Investment is a Foreign Direct Investment whereby the multinational firm divides the production processes internationally with each stage of production being located and undertaken in a country where it can be done at low costs and this form of Foreign Direct Investment is divided into: Backward vertical Foreign Direct Investment and forward vertical Foreign Direct Investment. An example of vertical Foreign Direct Investment would be De Beers diamond producing company as it has different locations where it does: diamond formation, diamond exploration, diamond mining, diamond sorting, diamond cutting and polishing, and diamond jewellery.

According to De Beers Group (2013) diamond mining takes place in South Africa, Namibia, Canada and Botswana; the De Beers Diamond Jeweller Ltd being in London then there is a joint ownership of Diamond Trading Company (DTC) in South Africa, Botswana, Namibia, United Kingdom and Canada. Backward vertical Foreign Direct Investment is undertaken in order to exploit raw materials whereas forward vertical Foreign Direct Investment is undertaken in order to be closer to consumers by acquiring distribution outlets then Conglomerate Foreign Direct Investment is the combination of both horizontal and vertical Foreign Direct Investment (Moosa, 2002).

Foreign Direct Investment from the host country's perspective can be classified into: import-substituting Foreign Direct Investment; export-increasing Foreign Direct Investment and government initiated Foreign Direct Investment. Import-substituting Foreign Direct

Investment is a Foreign Direct Investment whereby the host country now locally produces goods that they imported before and that leads to a decline in imports since the domestic firm can now locally produce previously imported goods. The host country will then produce those goods and sell them in the foreign market and this reduces imports and increases exports resulting in an increased economic growth. The import-substituting Foreign Direct Investment is determined by the host country's market size, trade barriers and transportation costs (Moosa, 2002). Under the import-substituting Foreign Direct Investment, foreign investors should look at trade barriers, market size that the domestic country has and transportation costs involved.

In contrary, export-increasing Foreign Direct Investment is driven by the urge to look for new sources of input like raw materials and intermediate goods. This form of Foreign Direct Investment is export-increasing because the host country will export the increased volumes of raw materials and intermediate goods to the foreign country that is investing (the foreign direct investor) and other foreign countries as well. Government-initiated Foreign Direct Investment is an initiative by the host country's government to offer foreign investors an incentive in order to directly invest in the domestic country (Asafo-Adjei, 2007). Government offers incentives to foreign investors as a way of motivating them to directly invest in the domestic country's firms and this is done in order to eliminate the domestic country's balance of payments deficit.

An example of incentives offered by the South African government to foreign direct investors include: non-stringent foreign exchange controls, tax concession to foreign investors who take part in projects that are aimed at national development with the Coega development project in Port Elizabeth being an example of such projects and also the ease of investments' repatriation (Asafo-Adjei, 2007). If foreign investors are given an incentive to directly invest in the host country's firms, then it means more foreign investors will be interested in taking advantage of the incentives offered to them resulting in more Foreign Direct Investment flowing into the host economy.

The department of Trade and Industry (2013) concludes that in 2009 Procter and Gamble built a Pampers' nappies production plant in Johannesburg with a total government incentive of approximately R36 230 159 that came from the department of Trade and Industry. The domestic country's government, through its incentives, plays a vital role in attracting more Foreign Direct Investment into the domestic country because it increases the domestic country's capital formation thereby increasing the domestic country's development and economic growth.

Other forms of Foreign Direct Investment include: Greenfield investment and reinvested earnings. According to Woldemeskel (2008) Greenfield investment is an investment whereby a new firm is established so that productive assets are created in a host country and the new firm is financed through capital that comes from the foreign investor's home country. An example of Greenfield investment would be Daimler-Chrysler's establishment of Mercedes-Benz South Africa, building new manufacturing facilities where the production of automobiles will be undertaken in order to export those finished cars to other foreign countries. According to National Treasury (2011), Greenfield investment is beneficial to the host country because with this type of investment new businesses are established as it involves investment in new production capacity.

The Department of Trade and Industry (2013) argues that an American-based multinational firm Procter and Gamble (P&G) made an announcement of over R1.6 billion direct investment in a Greenfield manufacturing facility that will create more than 500 additional jobs at Procter and Gamble. The creation of 500 more additional jobs implies that 500 more people will now be employed to produce goods and services and that will contribute positively to gross domestic product per capita as well to the overall gross domestic product. This initiative will result in an increase in Foreign Direct Investment flows to South Africa, increase in job creation as well as an increase in the domestic country's gross domestic product.

Procter and Gamble is currently a foreign direct investor at Pampers nappies in Johannesburg as it currently has a direct investment of R500 million in a manufacturing plant at Pampers Johannesburg (Department of Trade and Industry, 2013). According to Te Velde (2006), Greenfield investment results in increased capital formation whereas Mergers and Acquisitions result in financial transfer. Reinvested earnings are profits earned by the foreign firm in the domestic country and which are not taken back to the foreign country, but instead are reinvested in the domestic country (Woldemeskel, 2008). When profits earned in the domestic country are reinvested in the domestic country, then the domestic country's economic growth will increase because the reinvested profits can be used for infrastructural purpose in order to improve and develop the domestic country's growth.

2.4 Relationship between Foreign Direct Investment and Economic Growth

Host countries, especially the developing countries, benefit from Foreign Direct Investment in the sense that foreign countries which directly invest in the host (domestic) countries' firms bring with them know-how, technology diffusion, access to global markets, managerial skills and human capital. Most of inward Foreign Direct Investment to South Africa has been Mergers and Acquisitions (M & A) than Greenfield investment (CUTS, 2002). Therefore, foreign investors have been more attracted to the already existing business establishments than establishing new ones because these foreign investors are avoiding costs involved in setting up new business establishments hence most of foreign investors have been more attracted and interested in Mergers and Acquisitions than Greenfield investments.

The difference between Mergers and Acquisitions and Greenfield investments is that Mergers and Acquisitions involve investment in already existing business operations and assets whereas Greenfield investment involves establishing new firms or plants. Wöcke and Sing (2013) suggest that large Foreign Direct Investment inflows to South Africa were partly due to Mergers and Acquisitions in the banking, telecommunications and retail industries with Barclays Bank PLC's acquisition of 55.5 percent of Absa for US$3.1 billion in 2005 followed by the acquisition of 20 percent ownership at Standard Bank Group for US$5.5 billion by the Industrial and Commercial Bank of China (ICBC) in 2007. Since these direct investments are of great amounts, both Foreign Direct Investment and gross domestic product in 2005 and 2007 increased by great amounts. In this regard, Mergers and Acquisitions play a vital role in increasing amounts of total Foreign Direct Investment inflows to South Africa.

Foreign Direct Investment does not only provide capital to the host country, but it also brings new management techniques and technologies that were previously unavailable in the host country (Moosa, 2002). If, for example, Daimler Chrysler directly invests in the South African automotive industry, then they will install production plants that were previously unavailable in the domestic country and also send off some experts in order to ensure smooth productivity of cars so that there is an increase in the number of cars produced and sold in the foreign markets. This then gives rise to job creation because if more plants are installed in the domestic country's automotive industry more people will be employed to operate these machines and they will be groomed with skills from the foreign company's experts in order to increase their knowledge, skills, expertise and production of cars. Boreinsztein *et al* (1998) indicate that in order for Foreign Direct Investment to have a positive impact on economic growth, there should be a minimum threshold human capital stock. In this regard, the stock of human capital is important as an input in order for Foreign Direct Investment to successfully impact economic growth positively.

Developing countries like South Africa do not have enough skilled human capital stock and this can cause problems on the effect that Foreign Direct Investment can have on economic growth and can possibly cause the relationship between Foreign Direct Investment and economic growth to take opposite directions. According to Knight (2001), Caltex is a U.S based firm which owns 34 percent of South African Oil Refinery (Pty) Ltd and has about $350 million worth of assets in South Africa as well as servicing 1 185 filling stations. This then causes Foreign Direct Investment to contribute positively to the domestic economy's growth.

According to Kransdorff (2010), Foreign Direct Investment is an important phenomenon for South Africa's growth rate and development and he argues that South Africa has failed to attract tremendous amounts of Foreign Direct Investment into the country. In this manner, South Africa has to look at its current policies on Foreign Direct Investment and how the country can improve these policies in order to make them attract more Foreign Direct Investment into the domestic country. Many developing countries that do not have enough funding internally rely on foreign aid and investments in order to maintain a sustained economic growth and that leads to South Africa competing with different developing and emerging market economies in order to partake in Foreign Direct Investment.

However, allocation of Foreign Direct Investment has been relatively low for other countries because in 2003 the world's top five (developed economies) received 68 percent of Foreign Direct Investment while the five at the bottom (developing economies) only received 1 percent (Moolman *et al*, 2006). Therefore, many developed countries have been receiving more Foreign Direct Investment than the developing countries because the majority of Foreign Direct Investment has been flowing into developed economies. When developed countries receive more Foreign Direct Investment than the developing countries it becomes difficult for developing countries as some of the developing countries depend on external finance such as Foreign Direct Investment to develop and for their countries' productivity to grow. If developed countries receive more Foreign Direct Investment than developing countries then it means the developed countries will continue to develop more than they are already developed leaving developing countries still struggling behind in terms of development.

Sridharan *et al* (2009) conclude that the host country's economic growth and development is increased by Foreign Direct Investment through exports and productivity growth. This means that when the host country receives Foreign Direct Investment, the host country's productivity increases leading to an increase in domestic goods produced in order for them to be sold in the foreign markets as exports and exports increase the domestic country's economic growth. According to Moolman *et al* (2006), Foreign Direct Investment inflows to developed countries in 2003 amounted to about 70 percent of total Foreign Direct Investment whereas Foreign Direct Investment inflows to developing countries amounted to 30 percent of total Foreign Direct Investment. This could then mean that the country's level of growth and development are also important in attracting more Foreign Direct Investment into the domestic country because if developed countries receive more Foreign Direct Investment than the developing countries, then it implies that the host country's level of development is crucial in attracting inward Foreign Direct Investment. However, some developing countries like South Africa are resource abundant because they are enriched with diamond mines, gold mines and other mineral resources and that has caused other foreign based companies like De Beers, Anglo American to directly invest in the South African mining industry.

According to Sridharan *et al* (2009), the domestic country's ability to attract Foreign Direct Investment is affected by the domestic country's inward or outward investors' propensity and that the investors' propensity is dependent on the pattern and level of the domestic firms' ownership-specific advantages; advantages linked to the location and how much of owner-specific advantages do domestic and foreign firms utilize in the markets' internationalization. Sridharan *et al* (2009) argue that technological and economic factors are the drivers of international production growth and that the liberalization of Foreign Direct Investment and trade policies act as growth facilitators. Liberalization of Foreign Direct Investment means foreign investors are able to directly invest in the domestic economy and that the investments are able to move from a foreign to the domestic country without stringent restrictions.

Liberal trade policies imply that South Africa is able to trade with other countries in the foreign markets without being restricted and it allows capital to move freely from one country to the next. Li and Liu (2005) argue that in the process of capital accumulation in the host country, Foreign Direct Investment is expected to promote growth through encouraging that new inputs and technologies be incorporated in the production process. The tax regime of the domestic economy also plays a vital role in attracting Foreign Direct Investment inflows. According to Bellak *et al* (2008), countries that impose large amounts of corporate income tax tend to receive small amounts of Foreign Direct Investment. Therefore, in order to attract more Foreign Direct Investment into the domestic economy, the tax system of the domestic economy should not be too stringent.

2.4.1 Foreign Direct Investment and Efficiency Spillover

Blomstrom (1989) indicates that if there is an increase in the host country's productivity due to Foreign Direct Investment and if that increase is not fully appropriated by the investor, then other groups that are in the host country will also receive some direct gains from the investment and these direct gains include: higher real wages to domestic labour, higher tax revenues to government and lower prices to consumers. When a foreign firm directly invests in the domestic country, which results in job creation as domestic labour will be employed to produce goods and services. The domestic country's real wages will then be higher. Again, when the foreign investor directly invests in the domestic country, government will receive more revenue in the form of taxes that are imposed on the Foreign Direct Investment by the foreign firms. In this manner, the higher tax revenue that the government will receive from the direct investors will contribute to the domestic economy's growth positively.

The entry of foreign investors will cause competition to increase in the domestic country and one of the great ways of gaining market share and remaining in the market is to make prices competitive. Reduction of prices will cause an increase in the demand for domestic goods and the more the goods are demanded, the more they will be sold leading to an increase in the domestic country's economic growth. The indirect effects of Foreign Direct Investment on host economies are also called spillovers or external effects. Te Velde (2006) indicates that after countries that were restricting Foreign Direct Investment inflows in the 1960s, 1970s and 1980s realized that Foreign Direct Investment brought positive spillovers to the host country, they started removing such restrictions and became more open to Foreign Direct Investment inflows in the 1990s.

Blomstrom (1989) suggests that many economists state that one of great foreign investment contributions are most likely to come from spillovers (technology diffusion included) and that other forms of the spillover effects that Foreign Direct Investment brings to the host economy are: the training of management and labour (also referred to as investment in human capital). The presence of foreign direct investors gives the domestic country's management and labour to have access to training in order to be well equipped with skills and knowledge that the domestic country did not have. Kiat (2008) argues transfer of technology and knowledge from Foreign Direct Investment occurs mostly in countries whose human capital is sophisticated. In this manner, the domestic country's human capital stock plays a vital role on the transfer of technology and knowledge from Foreign Direct Investment. Technology diffusion is another form of spillovers gained through the presence of multinational corporations (MNCs) in the domestic economy. Since MNCs are relatively large firms and because they play a huge role in Foreign Direct Investment, their presence in the domestic economy allows the technology to be transferred from their home countries to the domestic economy improving the domestic economy's economic performance and productivity.

Borensztein *et al* (1998) argue that Foreign Direct Investment by multinational corporations (MNCs) allows developing countries to have access to advanced technologies because when these multinational corporations directly invest in the domestic country's firms, they transfer their advanced technology from their home countries to the domestic country. Transfer of advanced technology from foreign investors' home countries to the domestic country will then improve the domestic country's economic performance and productivity. Economies that are backward in terms of technology benefit from the presence of Foreign Direct Investment because technology diffusion is one of the positive spillovers brought by Foreign Direct Investment inflows to the domestic economy. As a result, when foreign firms directly invest in the domestic economy's firms, domestic producers gain access to advanced technology that was not even available in the domestic economy before. Therefore, foreign firms do not only bring their technology and expertise, but that they also help the domestic economy's firms and residents learn more because of the knowledge that the foreign investors bring with them when directly investing in the domestic economy's firms.

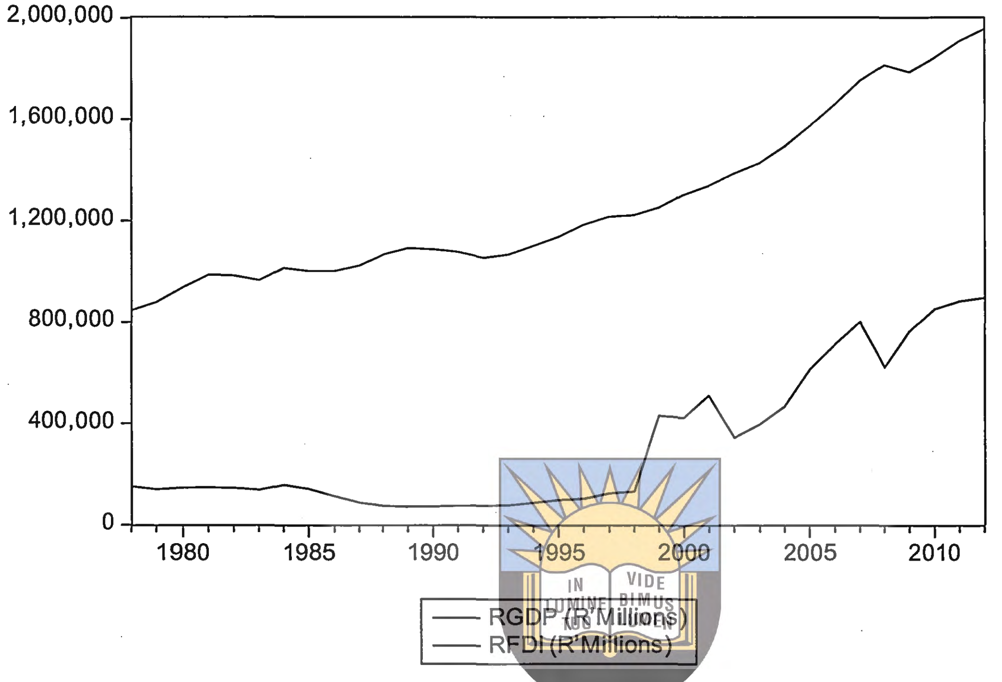
When foreign firms enter and become present in the host country, the host country's structure, conduct and performance are influenced. But, the presence of big firms such as the multinationals could have negative effects on the domestic country (host country) because when they enter the domestic country (more especially if the domestic country is a developing country) there is a risk that the domestic firms could lose their production and be forced out of the business by the multinational firms (Blomstrom, 1989). Even though Foreign Direct Investment brings positive spillovers to the host country, the presence of big firms can cause harm on local small businesses that are still growing by gaining the market share and pushing those small business out of the market. It is difficult for small domestic firms to compete with the multinational firms because the multinational firms are from developed economies and they bring their innovative technology and human capital stock.

Kransdorff (2010) explains that Foreign Direct Investment does not only provide capital, but it also disseminates new technologies and management practices in host countries leading to an increase in the host country's economic growth and that Foreign Direct Investment is a crucial foreign exchange source for making the South African currency reserves strong in order to guard against capital account shocks. If South Africa has more Foreign Direct Investment flowing into the country then the country will have more funds and that will enable them to meet their financial commitments. Technology and human capital spillovers are some of the positive effects that Foreign Direct Investment has on the domestic country's economy. Sjöholm (1999) suggests that the role played by Foreign Direct Investment is country-based and that it can be positive, negative or insignificant and it all depends on the host country's technological, economic and institutional conditions.

2.4.2 The Trends of FDI and Economic Growth in South Africa

It is crucial to examine the Foreign Direct Investment and economic growth trends in order to analyze the relationship between the two variables and in order to see whether or not the economic crises have affected the relationship between the two variables. Another reason why it is crucial to examine the relationship between Foreign Direct Investment and economic growth it is because Foreign Direct Investment inflows to South Africa serve as an important source of capital which in turn cause the domestic country's economic growth to increase. Figure 2.1 below will graphically analyse the trends between Foreign Direct Investment and economic growth in order to see the nature of the relationship between Foreign Direct Investment and economic growth in South Africa.

Figure 2.1 FDI and RGDP Relationship Graphical Presentation (R' million)



Source: South African Reserve Bank website

Figure 2.1 outlines how the relationship between Foreign Direct Investment (FDI) and real gross domestic product (RGDP) in South Africa has been over the period of 1978-2012. Analysing figure 2.1 above, Foreign Direct Investment and real gross domestic product seemed to be moving in different directions in 1979 because during this period the Foreign Direct Investment was decreasing whereas the real gross domestic product was increasing. Moving from 1979 to 1980 both the Foreign Direct Investment and real gross domestic product increased moving in the same direction. However, the increase was not a great increase as the graphical presentation depicts a very small upward trend in Foreign Direct Investment and real gross domestic product. From 1980 to 1981 Foreign Direct Investment increased by a very small amount and as a result there is a very minimal upward trend in Foreign Direct Investment as per figure 2.1. However, the real gross domestic product on the other hand showed a great upward trend and its increase is greater than the increase that is found in real gross domestic product because between 1980 and 1981 real gross domestic product reached the peak point.

Regardless of how much Foreign Direct Investment and real gross domestic product increased by, it can be deduced that from 1980 to 1981 Foreign Direct Investment as well as the real gross domestic product moved in the same direction as they both increased. In 1982 and 1983 Foreign Direct Investment and real gross domestic product again moved in the same direction as the two variables both decreased in 1982 and 1983. There was an upward trend in Foreign

Direct Investment and real gross domestic product in 1984 and this upward trend depicted an increase in both Foreign Direct Investment and real gross domestic product. In 1985 there was a decline in both the Foreign Direct Investment and real gross domestic product and in this manner, both Foreign Direct Investment and real gross domestic product moved in the same direction.

From 1986 through to 1989 Foreign Direct Investment continuously decreased and the trend in the graphical presentation as per figure 2.1 dropped down to such an extent that it almost lied along the horizontal axis. The real gross domestic product on the other hand continued to show a sustained increase from 1986 to 1989. As a result, in 1986, 1987, 1988 and 1989 real gross domestic product moved in the opposite direction of Foreign Direct Investment because from 1986 to 1989 Foreign Direct Investment dropped and during the same period the real gross domestic product rather showed a sustained increase. Again, in 1990 Foreign Direct Investment and real gross domestic product moved in opposite directions as the Foreign Direct Investment had an upward trend whereas real gross domestic product on the other hand showed a declined depicted by the downward trend as per figure 2.1.

Moving from 1991 to 1993 real Foreign Direct Investment showed a sustained increase as there was an upward trend as per the graphical presentation. However, the real gross domestic product showed a decline from 1991 to 1993. Therefore, during the periods 1991 to 1993 Foreign Direct Investment and real gross domestic product moved in opposite directions because when one variable was increasing, the other one was decreasing. The Foreign Direct Investment and real gross domestic product showed a sustained increase from 1993 to 1999 and the two variables both moved in the same directions as they showed an upward trend. In the year 2000 Foreign Direct Investment and real gross domestic product moved in opposite direction because the former decreased during this period whereas the latter continued to increase. The Foreign Direct Investment and real gross domestic product again moved in the same direction in 2001 as they both showed an upward trend during this period. Due to the 2001/2002 global financial crisis, Foreign Direct Investment then fell in 2002.

Contrary to the decrease in Foreign Direct Investment in 2002, the real gross domestic product continued to show an upward trend. Therefore, in 2002 Foreign Direct Investment and real gross domestic product moved in the opposite directions because when Foreign Direct Investment deteriorated, the real gross domestic product augmented. The Foreign Direct Investment and real gross domestic product both continued to show an upward trend from 2003 through to 2007. However, since the domestic economy was negatively affected by the global financial crisis that had taken place in 2007/2008, the real Foreign Direct Investment fell in 2008 showing a downward trend as per figure 2.1 of the graphical presentation. Even though Foreign Direct Investment declined in 2008, the real gross domestic product continued to increase. In 2008 the Foreign Direct Investment and real gross domestic product moved in the opposite directions.

The Foreign Direct Investment and real gross domestic product both showed a sustained increase from 2009 through to 2012 and they both moved in the same direction. According to the graphical analysis of the relationship between Foreign Direct Investment and real gross domestic product, it can be deduced from the direction of movement of the two variables that there is possibly a positive relationship between Foreign Direct Investment and economic growth. This evidence is supported by the fact that in most periods Foreign Direct Investment and real gross domestic product moved in the same direction rather than the opposite direction as there are few periods whereby Foreign Direct Investment and real gross domestic product moved in different directions.

2.4.3 The Automotive Industry Foreign Direct Investment in South Africa

The automotive industry is amongst the industries which contribute largely towards Foreign Direct Investment inflows to South Africa. The Trade and Investment South Africa (TISA) programme that was formulated by the Department of Trade and Industry in 1998 resulted in an increase in Foreign Direct Investment to South Africa as per table 2.1 below.

Table 2.1: TISA Committed Investments (Automotive Sector): 1 April to 25 October 2001.

Source	Value (R'm)	Type	Region in SA
Italy	71	Brownfield	Port Elizabeth
Germany	1,500	Expansion	Pretoria
USA	70	Greenfield	Port Elizabeth
Germany	12	Expansion	Port Elizabeth
USA	12	JV	Cape Town

Source: South African Reserve Bank Quarterly Bulletin (2001)

Table 2.1 above outlines the different kinds of Foreign Direct Investment from Italy, Germany and United States of America to the South African automotive industries from the 1st of April to the 25th of October 2001. According to table 2.1 the largest amount of Foreign Direct Investment was amounted to R1 500 million coming from Germany to the Pretoria region. The automotive Foreign Direct Investment of R1 500 million was in a form of Expansion. Italy directly invested an amount of R71 million towards Brownfield Foreign Direct Investment in Port Elizabeth followed by United States of America which directly invested R70 million of Greenfield Foreign Direct Investment in Port Elizabeth as well.

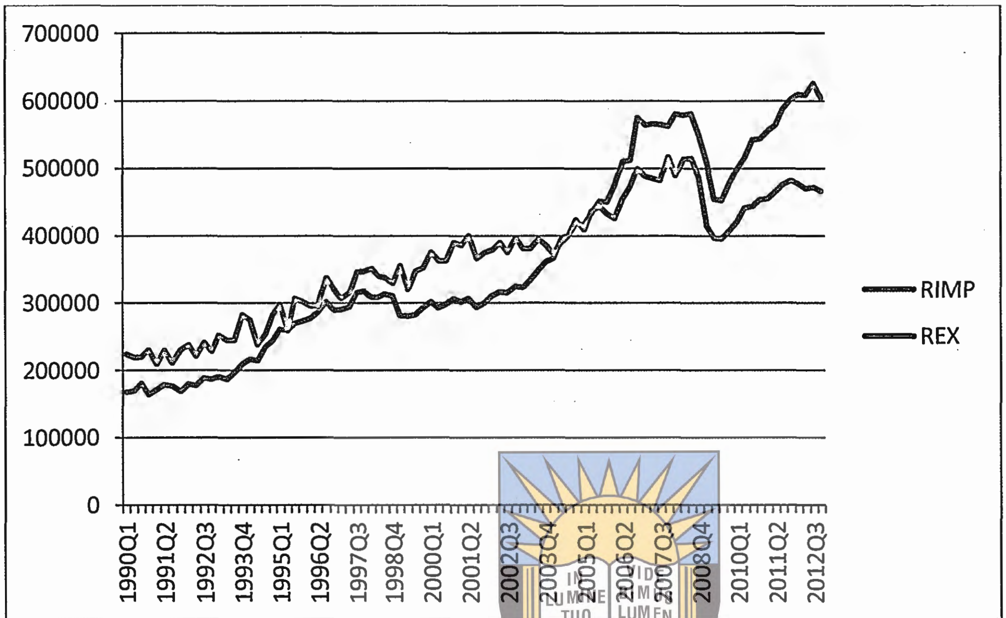
Germany expanded a South African automotive industry firm based in Port Elizabeth to the value of R12 million. Another form of a Foreign Direct Investment that went to a South African automotive industry based in Cape Town was a Joint Venture to the value of R12 million. This Joint Venture Foreign Direct Investment came from the United States of America. The three major German automobile producers such as BMW, Volkswagen and Daimler-Chrysler have always been committed in directly investing in the South African automotive industries around South African. As a result, Foreign Direct Investment keeps on increasing as these three foreign based firms continue to directly invest in the South African automotive industries.

As part of the Motor Industry Development Programme (MIDP) the above mentioned German companies have invested massively in South Africa's automotive industry in order to take advantage of and capitalize on the MIDP opportunities that are found in MIDP (Hartzenberg & Muradzikwa, 2002).

2.4.4 Trends on real Imports and Exports of Goods and Services

South Africa is involved in business activities of real imports and exports of goods and services with other countries in order to augment the domestic economy's growth. Lee and Huang (2002) explain that exports lead to an increase in economic growth. When a domestic country allows Foreign Direct Investment inflows it is able to produce goods and services and sell them in the foreign markets. Some goods such as Mercedes-Benz automobiles require components such as engines to be imported in order for the cars to be further produced and be sold both locally and abroad. Therefore, both the imports and exports of goods and services are vital for the country to experience growth. The real imports and real exports of goods and services also determine the openness of the domestic economy to international trade. If the ratio of trade openness is high it implies that the domestic economy is more open to foreign trade leading to an increased economic growth. An analysis of the real imports of goods and services and real exports of goods and services trends will be analysed below.

Figure 2.2 The real Imports and Exports of Goods and Services



Source: South African Reserve Bank (2013)

Looking at figure 2.2 comparing the real imports of goods and services and the real exports of goods and services it can be noted that in the first quarter of 1990 the domestic economy exported more than it imported. Starting from the first quarter of 1990 to the third quarter of 2003 the domestic country exported more goods and services than it exported. The South African economy imported more goods and services that it exported from the third quarter of 2005 through to the fourth quarter of 2012. Overall, it can be noted that the domestic economy relies more on exports of goods and services to increase the economic growth than the imports of goods and services. It could be because it imports products which are utilised to further produce goods produced locally in order to export them.

Even though overall the exports of goods and services as per figure 2.2 are greater than the imports of goods and services, some of the imported goods and services were utilised in order to produce goods and services that will be exported. Cronje (2014) argues that the Mercedes-Benz East London plant in South Africa imports components such as engines from Germany in order to further produce the Mercedes-Benz C-class automobiles which are then sold both locally and internationally. As a result, the engines imported to South Africa have contributed towards producing the Mercedes-Benz C-class automobiles in order for them to be sold both in South Africa as well as exported to other foreign countries.

2.5 Conclusion

South Africa is endowed with mineral resources such as gold, diamond, iron ore and these minerals have drawn attention to foreign investors driving them to directly invest in the South African industries. Trade openness and policy implementation have played a huge role in attracting Foreign Direct Investment into South Africa. However, in the past South Africa was ruled by the apartheid government which implemented unfair policies that drove other foreign investors away from the country with many countries that had directly invested in the South African industries disinvesting and leaving with their investments.

This became a relatively large cost to South Africa as more companies left the country leading to decrease in productivity in some of the sectors in the country and Foreign Direct Investment inflows decreasing. In 1994 there was new election of a democratic government and the apartheid policies were scrapped. This then attracted more foreign investors to come and directly invest in South African firms as the policies were now more advantageous to foreign investors because they no longer had restrictions. When foreign investors directly invest in the domestic economy's companies they bring with them their expertise, technological spillovers, human capital and other resources that were previously unavailable in the domestic economy. When comparing volumes of Foreign Direct Investment inflows during and after apartheid regime it can be seen that they have increased. Examples of companies that have directly invested in South Africa include VW, Daimler-Chrysler, Barclays, Industrial and Commercial Bank of China (ICBC), Anglo American, Anglo Gold, and Procter and Gamble.

Daimler Chrysler has a plant at Mercedes Benz in East London and VW has a plant in Uitenhage and both these companies are producing motor vehicles to be sold within and abroad South Africa. The automotive industry is amongst industries that have a large amount of contribution towards the overall Foreign Direct Investment in South Africa. Looking at the overall movements of Foreign Direct Investment and real gross domestic product during the period of 1990 to 2012, it can be concluded that the Foreign Direct Investment and real gross domestic product could possibly have a positive relationship since in most of the years these two variables were moving in the same direction. Analysing the overall trends of real imports of goods and services as well as the real exports of goods and services, it can be concluded that in between 1990 and 2005 South African economy imported more than it exported. However, from 2006 through to 2012 the domestic economy imported more than it exported. For a long time the South African economy has relied on exports until 2006 when it imported more than it exported.

Chapter 3

Literature Review

3.1 Introduction

This section of the study is divided into: theoretical literature review, empirical literature review and the assessment of literature. The theoretical literature review section will discuss the theories that explain the existence of the relationship between Foreign Direct Investment and economic growth. The empirical literature review section examines the empirical studies previously done on the relationship between Foreign Direct Investment and economic growth. An analysis of theoretical part of the study is crucial in order to provide clear understanding of the relationship between Foreign Direct Investment and economic growth taking into account theories that explain the relationship between Foreign Direct Investment and economic growth in South Africa. Both theoretical and empirical literature reviews are examined in order to support the study in establishing the relationship that might exist between Foreign Direct Investment and economic growth in South Africa.

3.2 Theoretical Literature Review

The current study will employ the Romer (1990) endogenous growth model to examine the relationship between Foreign Direct Investment and economic growth. The reason for employing the Romer (1990) model is that Foreign Direct Investment is assumed to cause technological progress which will then cause the domestic country's growth to increase in the long-run rather than in the short-run (Bérthelemy and Démurger, 2000). In the Neoclassical growth model, growth occurs outside the system. The Neoclassical growth model explains that in the long run when there is no presence of technological progress the growth equals zero and that the economy grows when there is technological progress. It can therefore be deduced from the Neoclassical growth model that there is a positive relationship between Foreign Direct Investment and economic growth. The different growth theories have different views regarding the effect that Foreign Direct Investment has on economic growth and these views will be analysed in this section of the study. Even though the study will discuss the Neoclassical growth model, the main focus will be the Romer (1990) endogenous growth model. The study will therefore examine the nature of the relationship between Foreign Direct Investment and economic growth in terms of whether it is positive or negative.

3.2.1 The Neoclassical (Exogenous) Growth Model

The Neoclassical growth model explains that growth is found to exist as a result of exogenous factors originating from outside the system. Farishta (2013) argues that in the Neoclassical growth model, population growth, technological progress, productivity as well as capital accumulation are explained in determining economic growth. The Neoclassical growth models indicate that the per capita income long-run growth is equal to the rate of technical progress (Egbo & Onwumere, 2011). Therefore, under the Neoclassical growth models, long-run growth is equal to zero when there is no presence of technical progress and it is exogenous. This indicates that Foreign Direct Investment has a short-run effect on economic growth rather than the long-run effect when there is no presence of technology. This is the case because the economy under the Neoclassical growth model always goes back to the steady state when there is no technical progress and it ends up as if Foreign Direct Investment did not take place (Mabrouk, 2004).

The conditions under which Foreign Direct Investment has short-run effects on economic growth are when the marginal productivity of capital decreases, when the host country converges to the steady-state as well as when the impact that Foreign Direct Investment had on economic growth was not permanent but instead temporal (Hansen & Anis, 2012). As a result, the manner in which Foreign Direct Investment affects economic growth is when Foreign Direct Investment causes permanent technology shocks and those shocks then affect the domestic country's economic growth leading to Foreign Direct Investment having a permanent long-run effect on economic growth. In the Neoclassical growth model Foreign Direct Investment increases the level of investments as well as its efficiency, but the effect that Foreign Direct Investment has on economic growth is rather temporal in the short-run and permanent in the long-run (Sandalcilar & Altiner, 2012). Therefore, the main conclusion is that the Neoclassical suggested a positive relationship between Foreign Direct Investment and economic growth.

The Neoclassical growth model states that growth rates of inputs such as Foreign Direct Investment inflows, capital, labour and technology contribute towards the growth of the host country's economy (Sengupta, 2011). Ziyane (2008) states that the Neoclassical growth model was formed by Robert Solow in 1950s. The production function consists of labour and capital inputs that are needed in order to produce output. Solow (1957) rewrote the Cobb-Douglas production function into:

$$Y = K^{\alpha} A L^{1-\alpha} \quad (3.1)$$

Where Y is the per capita output, K is capital per worker, A is the technological progress which is exogenously determined or is determined outside the system and it is viewed as a variable that augments labour, L denotes labour (Chamberlin & Yueh, 2006). In equation (3.1) above, α takes the values between 0 and 1 and it is a number with both α and $1-\alpha$ representing the output elasticity with regards to capital and labour (Romer, 2006). Looking at equation (3.1) above it can be noted that technology is represented by the letter A which is attached to labour (denoted by the letter L) meaning that labour becomes more productive and effective when there is technology attached to it (Mabrouk, 2004). An increase in technological progress will cause output to increase because of the effect that technology has on labour as technology augments the unit of labour productivity. Therefore, technology progress augments labour resulting in an increase in a steady-state per capita output growth. This suggests that given the higher levels of technology, each unit of labour in the production process will become more productive since technological progress augments labour and its productivity. As a result, Foreign Direct Investment inflows increase the domestic country's economic growth because when more foreign firms directly invest in the domestic economy, the economic growth is enhanced. This argument supports the possibility of the positive relationship that might exist between Foreign Direct Investment and economic growth in South Africa.

Sridharan *et al* (2009) argue that in the Neoclassical growth model, Foreign Direct Investment has been seen as a successful direction taken in order to transfer technology and augment growth in countries that are still developing. This implies that technology brought in by the presence of foreign firms contributes to the domestic country's economic growth as the transfer of technology enhances the domestic country's economic growth more especially if the domestic country is backward in terms of technology as well as to add to the stock of knowledge that already exists in the domestic economy thereby increasing the domestic economy's knowledge database.

Based on the argument by Aghion and Howitt (2007), it can be deduced that in the Neoclassical growth models, the long-run growth rate of output will be rate of the technology progress which augments labour. Therefore, in order for there to be long-run economic growth there should be technological progress as long-run growth rate in the Neoclassical growth models is caused fully by progress in technology. Under the Neoclassical growth model technology is regarded as being exogenous which means that it is determined outside the model rather than within the model indicating the fact that technology is as a result of factors that are outside the system. This means that there is no source inside the model causing technological progress, but rather the source is found to exist outside the model hence technology is regarded to be exogenous in the Neoclassical growth model.

Aghion and Howitt (2007) argue that every growth arising from output produced by each worker is due to technological progress. This argument provides an implication that technological progress is crucial for every worker because given the higher levels of technology that the workers are exposed to or are provided, they will each produce higher levels of output as technology adds knowledge to workers thereby giving them the ability to know how and to effectively produce higher levels of output. The production of higher levels of output therefore contributes positively to the domestic country's growth and as a result, Foreign Direct Investment is crucial in order to provide a positive and sustained economic growth as it brings technological progress. Chamberlin and Yueh (2006) argue that when looking at the simple version of Solow growth model (the one without technological progress), it can be noted that when the economy is at its steady state there is no presence of per capita growth. This argument provides an implication that technological progress is crucial in achieving a sustained economic growth as the presence of technological progress leads to a long-run economic growth rather than the short-run growth that is achieved when there is no technological progress. Therefore, in order for an economy to have a sustained per capita growth, there should be technological progress which will then augment labour leading to an increased long-run economic growth.

The absence of technological progress leads to Foreign Direct Investment only affecting economic growth in the short-run and as a result the presence of technological progress enables Foreign Direct Investment to have a sustained long-run economic growth in the host country. According to the Neoclassical growth model, economic growth will increase when there is improvement in technology, when the quality and quantity of labour increase through the intensification in education and population as well as when there is an increase in capital through foreign capital (Chamberlin & Yueh, 2006). In this manner, Foreign Direct Investment could possibly contribute positively to the domestic country's growth because the progress of the domestic economy in terms of technology is improved as well as the domestic economy's knowledge, human and physical capital stocks. Foreign Direct Investment does not only bring in advanced technology, but it also augments the stock of capital that the domestic country has because Foreign Direct Investment is a form of foreign capital. Aghion and Howitt (2007) explain that in the Neoclassical growth model such as the Solow (1956) growth model, it is crucial for technological progress to take place in order to prevent the diminishing returns from distracting every growth in capita-labour ratio.

Foreign Direct Investment flows mostly from developed countries into developing and emerging market economies because those developed countries have advanced and innovative technologies, highly-skilled human capital as well as other advanced resources previously unavailable in the domestic economy resulting in the domestic economy benefiting from the spillovers brought in by the presence of foreign direct investors (Nunnenkamp, 2002). Since South Africa is a developing economy which is also an emerging market economy, it also benefits from the Foreign Direct Investment that flows from the developed countries. In the Neoclassical growth model a long-run growth effect of Foreign Direct Investment is found when Foreign Direct Investment brings technological spillover effects and as a result the host country benefits from the presence of foreign direct investor firms through the technological progress. In this manner, Foreign Direct Investment enhances the domestic economy's growth through technological progress. For example, Daimler-Chrysler Germany has the innovative and advanced technology as well as highly-skilled labour that come up with the ideas and design the automobiles. In this instance, South Africa benefits from the presence of Daimler-Chrysler Germany because technology is transferred from Daimler Chrysler Germany to Daimler-Chrysler South Africa as well as the highly-skilled labour in order to ensure productivity of prestigious Mercedes Benz automobiles.

Begg *et al* (2000) suggest that when a firm has higher levels of capital then other firms will experience higher levels of productivity as they will also be able to partake in the capital that was previously unavailable in the domestic economy. This argument suggests that when foreign firms directly invest in the domestic country and install innovative and advanced equipment, other domestic firms will also benefit from the presence of such foreign firms' equipment. If, for example, a foreign-based diamond cutting and polishing firm installs the diamond cutting and polishing equipment in the domestic economy, the jewellers will benefit because they can now utilize the services provided by the foreign-based firm in cutting and polishing the diamonds and transform them into jewelleries.

The Neoclassical growth model consists of the production function as well as the capital accumulation function. Since there are diminishing returns to capital per worker, the more the units of capital are added into the production process, the further output will increase but, output will increase by the unit of capital that is less than the previous one (Chamberlin &

Yueh, 2006). This argument suggests that when more capital input is added into the production process, output increases and then it reaches a point where it can no longer increase but rather decrease because of the addition in input. The diminishing returns exist because one input in the production process is fixed while the other input is increasing (Aghion & Howitt, 2007). An increase in Foreign Direct Investment will therefore increase capital and output per capita, but because of the presence of diminishing returns, the growth will be limited. When Foreign Direct Investment flows from foreign countries into the domestic economy the latter economy will then employ the same amount of labour to produce more output. As a result, there will be net capital per labour increment leading to an increase in the host country's economic growth indicating a positive relationship between Foreign Direct Investment and economic growth. (Mabrouk, 2004).

However, since there is presence of diminishing returns to capital, Foreign Direct Investment will not show any permanent impact on the domestic economy's growth since the economy will converge back to its steady state causing Foreign Direct Investment to only have a temporary impact on the economic growth of the domestic economy. Campos and Kinoshita (2002) state that in a Neoclassical growth model, Foreign Direct Investment is traditionally regarded as an addition to the host country's stock of capital. The Neoclassical growth model depicts a positive relationship between Foreign Direct Investment and economic growth. However, the sustainability, long or short-run effect of Foreign Direct Investment lies with the version of the Neoclassical growth model that the economy is adopting as one with technological progress leads to a positive long-run effect whereas the one without technological progress leads to a positive but short-run effect.

In conclusion, Foreign Direct Investment does not only bring positive technological spillovers, but it also augments the domestic economy's level of capital since Foreign Direct Investment is some form of foreign capital. The Neoclassical growth theory suggested a positive relationship between Foreign Direct Investment and economic growth. However, in the Neoclassical growth model without technical progress the relationship between Foreign Direct Investment is positive but only lasts for a short period whereas when there is technical progress the relationship between Foreign Direct Investment and economic growth last for a long period. Therefore, the relationship between Foreign Direct Investment and economic growth is positive both in the short and long-run and the amount of period of the effect depends on whether there is any technical progress or not.

3.2.2 The Endogenous Growth Model

The endogenous growth model describes the role played by technology and science, innovation and human capital as vehicles to the development of the economy as a whole. According to Chamberlin and Yueh (2006), endogenous growth models incorporate technology determinants into the framework and technology in this manner is regarded as the main engine of growth meaning that when the domestic country's technological growth rate increases, the economic growth as a whole will also increase. Ickes (1996) argues that under the endogenous growth models the diminishing returns to the inputs do not exist and as a result the return on investment is considered to be persistent. In the endogenous growth model an increase in Foreign Direct Investment will positively affect economic growth through technological spillovers brought into the domestic economy by foreign countries. Hunt (1997) argues that technological progress is a great contributor to economic growth and that technology should no longer be treated as being exogenous when determining the economic growth due to its importance in economic growth.

Unlike in the Solow (1956) growth model, technology and knowledge in the endogenous growth models are considered to be private goods meaning that they are not identically and equally available to the public, but instead they are endogenous (Sengupta, 2011). In this manner, Foreign Direct Investment causes an increase in technology and knowledge and since these variables are not identically and equally available, countries that become involved in Foreign Direct Investment activities will have an increased economic growth because they now benefit from foreign technology and knowledge that was previously unavailable in the domestic economy. According to Findlay (1978), when the technological gap between the developed and developing country is extensive, there will be large potential to imitate technology which then leads to an increase in economic growth (Sjöholm, 1997). In this manner, technology coming from an American firm for example will have a more positive impact on the domestic economy's growth because of the scarcity of technology in the domestic economy as scarcity of a product makes it to be more valuable.

Therefore, Foreign Direct Investment will increase economic growth because the presence of foreign firms results in the presence of advanced technology as well as domestic economy's knowledgeable labour force. Snowdon and Vane (2005) argue that in the endogenous growth theory, there is a crucial role played by the capital accumulation in the process of economic growth when compared to the Neoclassical growth model. In this regard, the presence of Foreign Direct Investment in the domestic country leads to capital accumulation which then contributes positively to economic growth. Balasubramanyam *et al* (1996) suggest that Foreign Direct Investment contributes positively to the domestic economy's growth because it has been acknowledged as the most important source of know-how, good managerial skills and technology to countries that are still developing. As a result, Foreign Direct Investment also plays a vital role in the domestic country's economy as capital also forms part of Foreign Direct Investment because when Foreign Direct Investment is present in the domestic economy, capital gets accumulated. Developing and underdeveloped countries tend to experience low labour skills than the developed countries which means that their human capital base is less qualitative than the one found in the developed countries. Therefore, Foreign Direct Investment bridges the gaps in skills that might exist between developing and developed countries because through the presence of Foreign Direct Investment activities in the domestic economy, knowledge that has been produced in the developed countries is transferred from the developed to the developing countries through Foreign Direct Investment. This section of the study will explain the Romer (1990) endogenous growth model and how economic growth in the Romer (1990) endogenous growth model occurs.

3.2.2.1 The Romer (1990) Endogenous Growth Model

Romer (1990) adjusted the Romer (1986) endogenous model with the assumption that technology is endogenously determined and that endogenous technological progress is the key engine of economic growth. Through the presence of Foreign Direct Investment, the domestic economy's technology progresses leading to an increased economic growth (Olusanya, 2013). The presence of foreign firms pushes the performance by local firms to be more improved due to the high levels of competition which also contributes positively to economic growth of the domestic economy. Through competition brought in by foreign firms, domestic firms are forced to work even harder on incurring profitability so that they are not conquered by the foreign firms.

The Romer (1990) endogenous growth theory suggests that Foreign Direct Investment increases economic growth through enhancing human capital as well as enhanced technological progress (Anwar & Nguyen, 2010). This implies that the presence of Foreign Direct Investment in the domestic country increases the domestic country's growth through human capital enhancement and also technology. Therefore, when foreign firms directly invest in the domestic firm they bring with them their expertise which then allows the domestic economy's labour force to be equipped with the required skills and knowledge from the foreign firms as well as diffuse technology. Chamberlin and Yueh (2006) state that technology in the Romer

(1990) endogenous growth model can be referred to as the ideas that researchers invent in order to increase economic growth. It can therefore be concluded that the technological progress in the endogenous growth models plays a vital role in increasing returns to scale. According to the Romer (1990) endogenous growth model, technological externalities brought into the domestic economy by foreign direct investors cause the domestic economy's growth to increase (Hansen & Anis, 2012). Therefore, the Romer (1990) endogenous growth model outlines the importance of technology brought in through Foreign Direct Investment in increasing the domestic economy's growth.

Arnold (2001) argues that technological advances may be due to new methods of producing goods such as new and enriched techniques employed to manage business operations. This argument gives clarity on the importance of the presence of Foreign Direct Investment in the domestic economy in increasing economic growth of the domestic country. Begg *et al* (2000) conclude that saving, investment and capital accumulation are crucial for a country to experience growth. Therefore, it is vital for a country to be involved in Foreign Direct Investment activities in order to boost the domestic country's economic growth. In order for foreign direct investing firms to provide the domestic country with advanced technology when directly investing in the domestic economy, they have to do some research in order to add to the ideas that they currently have so that they can transfer those ideas to the domestic country as well as to transform those ideas into usable and marketable goods (Arnold, 2001). Foreign direct investors spend some funds in R&D (Research and Development) in order to increase their ideas and knowledge database so that when, for example, they want to install a specific plant in South Africa they know how to utilize that plant and which goods that plant is able to produce thereby allowing the domestic economy to also benefit from their research and development database.

Fu *et al* (2011) argue that economic growth in the Romer (1990) endogenous growth model is caused by technological changes that arise from investment decisions made an example being foreign firms that directly invest in the domestic firms. This suggests that when foreign firms directly invest in domestic firms, the level of technology increases more especially if the Foreign Direct Investment inflows are from developed economies leading to an increase in economic growth. Chamberlin and Yueh (2006) argue that in the Romer (1990) endogenous growth model, research and development is crucial in order for the developing and poor countries to experience technology transfer because if poor countries do not implement research and development then they will experience lower technology levels. This argument shows that the presence of technological progress in the host economy is crucial for its economic growth and as a result, Foreign Direct Investment bridges the technological gap between developed and developing countries as it brings advanced technology previously unavailable in the domestic economy. As a result, if economies want to experience a sustained economic growth, they should allow Foreign Direct Investment activities to take place in the domestic economy. Technology can be regarded as being ideas that the researchers produce in order to increase the level of research and development that the domestic economy has (Chamberlin & Yueh, 2006). In this manner, a foreign company such as Daimler-Chrysler Germany installs a motor industry plant in Daimler-Chrysler East London in South Africa and they come up with ideas to invent a new model of the Mercedes Benz automobiles which are produced and sold in South Africa and other foreign countries leading to an increase in economic growth. As a result, through the ideas invented by Daimler-Chrysler Germany as a foreign direct investor, the economic growth of South Africa is then enhanced and improved.

In the Romer endogenous growth model, th[illegible] of technology is crucial for a country's economy to grow because transfer of technology is very crucial for developing countries in order to enhance their economic growth (Chamberlin, 2006). Since the presence of Foreign Direct Investment involves transfer of technology from foreign countries to the domestic country, the domestic country's growth is due to the technology that has been transferred from the developed countries to the domestic economy. Since Foreign Direct Investment brings technological change to the domestic economy, it therefore makes the Romer (1990) endogenous growth model to be more relevant as a determining factor of economic growth. Romer (1990) endogenous growth model is therefore more relevant and gives an explanation as to why countries involved in Foreign Direct Investment experience growth. The main conclusion here is that the Neoclassical growth model suggested that Foreign Direct Investment and economic growth have a positive relationship since the presence of Foreign Direct Investment causes the domestic country's economic growth to increase. Based on this argument, the Romer (1990) endogenous growth model receives precedence over the Neoclassical growth model and as a result, the current study will employ the Romer (1990) endogenous growth model due to its efficient growth aspects.

3.3 Empirical Literature Review

This section of the study will examine the empirical studies that were done previously in various countries as well as in South Africa in order to determine the relationship between Foreign Direct Investment and economic growth.

3.3.1 Empirical Studies Focusing on Other Developing Countries

Flexner (2000) studied the relationship between Foreign Direct Investment and economic growth in Bolivia over the period of 1990-1998 with quarterly data being employed in the study. The relationship between Foreign Direct Investment and economic growth in Bolivia was tested by employing the Ordinary Least Squares (OLS) estimation method. The study employed the following variables: real gross domestic product per capita, ratio of real Foreign Direct Investment to real gross domestic product, real effective multilateral exchange rate, terms of trade which represents the ratio of export prices to import prices, ratio of real private domestic credit to real gross domestic product, ratio of real external debt to real gross domestic product, ratio of real government spending to real gross domestic product, inflation to represent the macroeconomic stability and a dummy variable designed to measure the effect of capitalization inflows of Foreign Direct Investment. The findings of the study suggest that there is a positive significant relationship between Foreign Direct Investment and economic growth in Bolivia and that the presence of Foreign Direct Investment brings technological spillovers and new management techniques. The findings of this study agree with the Romer (1990) endogenous growth model.

In a study done by Obwona (2001) on the relationship between Foreign Direct Investment and economic growth in Uganda with times series data being used over a period of 1981-1995, the empirical results suggest that there is a positive relationship between Foreign Direct Investment and economic growth in Uganda. The study employed the following variables: gross domestic product, Foreign Direct Investment, annual growth rate of gross domestic product, trade account balance, inflation rate, proportion of public expenditure to gross domestic product, domestic savings rate, external debt service as a proportion of gross domestic product, gross domestic savings as a proportion of gross domestic product, rate of growth of real exports, net current transfers to government plus official long-term borrowing and other capital inflows. The study employed the two-stage least squares (2SLS) method of estimation to test the relationship between Foreign Direct Investment and economic growth in Uganda. According to the empirical results of the study, there is a positive relationship between Foreign Direct Investment and economic growth. The results also suggest that Foreign Direct Investment transfers managerial knowledge, skills and technology from developed to developing economies and that Uganda should implement policies that will enhance more inward Foreign Direct Investment. The findings of the study are in line with the Romer (1990) endogenous growth theory.

Chakraborty and Basu (2002) employed the Vector Error Correction Model in order to test the relationship between Foreign Direct Investment and economic growth in India. The study was performed over the period of 1974-1996 with annual data being employed. Cointegration between the two variables was tested by employing the Johansen and Juselius tests. The following variables were employed in the study: real gross domestic product, Foreign Direct Investment, unit cost of labour and import duties in the tax revenue. The empirical results of the study confirmed a positive long-run relationship between Foreign Direct Investment and economic growth in India. The results of the causality imply that there is bidirectional relationship between Foreign Direct Investment and economic growth in India. According to the results of the study Foreign Direct Investment leads to technological change and human capital accumulation. These findings are in line with an endogenous growth theory specifically the Lucas (1988) model because according to this model Foreign Direct Investment enhances economic growth through human capital and technological spillovers.

Athukorala (2003) performed an empirical study on the relationship between Foreign Direct Investment and economic growth in Sri Lanka over the period of 1959-2002 with an annual data being employed in the study. The relationship between Foreign Direct Investment and economic growth was tested by employing the simple Ordinary Least Squares (OLS), Vector Autoregressive Regression (VAR) and Vector Error Correction Model (VECM). The study employed the following variables: real gross domestic product, real Foreign Direct Investment, real domestic investment and trade liberalization. According to the empirical results of the study there is uni-directional or one-way causality between Foreign Direct Investment and economic growth in Sri Lankan and the direction of causality goes from economic growth to Foreign Direct Investment only and not from Foreign Direct Investment to economic growth. This implies that in order for there to be growth in Foreign Direct Investment, there should first be growth in the economy in order to attract more Foreign Direct Investment inflows. The empirical results of this study suggest that there is no direct connection between Foreign Direct Investment and economic growth in Sri Lanka. These findings agree with the dependency theory such as the Dixon and Boswell (1996) dependency theory.

Akinlo (2004) performed an empirical study on the relationship between Foreign Direct Investment and economic growth in Nigeria over the period of 1970-2001 by employing the Error Correction Model (ECM). The study used the following variables: real gross domestic product as a proxy for economic growth, private capital stock, human capital measured as share of university, polytechnics and colleges of education students in the population, economically active labour force, real exports, government budget deficit balance over gross domestic product, real government consumption and financial development measured as a ratio of money supply. The findings of the study suggest that Foreign Direct Investment has a small and statistically insignificant impact on economic in Nigeria meaning there is a positive relationship between Foreign Direct Investment and economic growth in Nigeria but, the relationship is statistically insignificant. The results of the study agree with the model developed by Findlay (1978).

Zhang (2006) performed an empirical study in order to test the relationship between Foreign Direct Investment and economic growth in China and in his study he employed annual data over the period of 1992-2004. The aggregate production function was employed in the study to empirically determine the relationship between Foreign Direct Investment and economic growth. The following variables were employed: growth rate of real gross domestic product as the proxy for economic growth, growth rate of population, human capital being measured by shares of secondary schools enrolments in total production, domestic investment-output ratio, Foreign Direct Investment-output ratio, real gross domestic product per capita and a dummy variable. The findings of the study conclude that Foreign Direct Investment increases income growth in China and that the more Foreign Direct Investment flows into the Chinese economy, the further their income growth increases. The findings also suggest that Foreign Direct Investment has two ways by which it contributes to Chinese economic growth and those are: direct impact where Foreign Direct Investment causes export promotion and through positive externality impact whereby technology is disseminated, strengthening development. These empirical results confirm that there is a positive relationship between Foreign Direct Investment and economic growth in China. The theory that the study is in line with is the Findlay (1978) model.

Frimpong and Oteng-Abayie (2006) performed an empirical study on the relationship between Foreign Direct Investment and economic growth in Ghana with an annual time series data covering the period of 1970-2002. The Toda-Yamamoto Granger no-causality test was employed in order to empirically investigate the direction of causality between Foreign Direct Investment and economic growth in Ghana. The study employed the following variables to examine the relationship between Foreign Direct Investment and economic growth: real gross domestic product growth and Foreign Direct Investment ratio. According to the empirical results of the study, there is a positive uni-directional relationship between Foreign Direct Investment and economic growth in Ghana and the nature of causality goes from Foreign Direct

Investment to economic growth. Foreign Direct Investment is considered as investment that brings human capital spillovers to the host country. The findings of the study agree with the Lucas (1988) endogenous growth theory.

Duasa (2007) performed an empirical study on the relationship between Foreign Direct Investment and economic growth in Malaysia over the period of 1990-2002 with quarterly time series data being used in the study. The Toda Yamamoto (1995) test of non-causality was employed in order to determine the relationship between Foreign Direct Investment and economic growth in Malaysia. The study employed the following variables: gross domestic product and Foreign Direct Investment with both variables expressed in real terms. The empirical findings of the study prove that there is no causal relationship between Foreign Direct Investment and economic growth in Malaysia. This implies that Foreign Direct Investment does not cause economic growth and economic growth does not cause Foreign Direct Investment in Malaysia. The empirical results of the study confirm that Foreign Direct Investment is not vital for the Malaysian economic growth as it does not have any effect on economic growth. The findings of the study agree with the Dixon and Boswell (1996) dependency theory.

Tvaronavičienė and Grybaitė (2007) tested the relationship between Foreign Direct Investment and economic growth in Lithuania over the period of 2000-2006 with quarterly data being employed in the study. The correlation-regression analysis was employed in the study to empirically examine the relationship between Foreign Direct Investment and economic growth in Lithuania. The following variables were employed in the study: Foreign Direct Investment stock, gross domestic product and the ratio of Foreign Direct Investment ratio. The empirical results of the study suggest that the relationship between Foreign Direct Investment and economic growth in Lithuania is positive and strong. The results suggest that increasing amounts of Foreign Direct Investment stock cause the Lithuanian economic growth to increase as well. According to findings of the study, Foreign Direct Investment enhances the transfer of technology from foreign firms to domestic firms leading to an increase in domestic economy's growth. The findings of the study agree with the Findlay (1978) model.

Falki (2009) conducted an empirical study on the relationship between Foreign Direct Investment and economic growth in Pakistan over the period of 1980-2006 using Production Function in order to test the relationship between Foreign Direct Investment and economic growth. The following variables were used in the study: real gross domestic product being the proxy for economic growth, Foreign Direct Investment inflows, trade measured as exports of goods and services, economically active labour force and domestic capital investment. The Augmented Dickey-Fuller (ADF) test was employed in the study to empirically examine the stationarity of the variables. The model that the study employed is based on the endogenous growth theory and the assumption of the model is that Foreign Direct Investment contributes directly to economic growth through new technologies and other inputs and also indirectly through human capital, infrastructural and institutional improvement. According to the empirical results of the study, there is a negative and statistically insignificant relationship between Foreign Direct Investment and economic growth in Pakistan. The findings of the study provide an inference that the extent to which Foreign Direct Investment increases economic growth depends on which degree Foreign Direct Investment and domestic investment are complimentary. The results obtained in this study are in line with dependency theory such as Dixon and Boswell (1996) theory and this theory suggests that the presence of Foreign Direct Investment in the domestic country distorts the domestic economy's growth.

Forgha (2009) examined the relationship between Foreign Direct Investment and economic growth in Cameroon over the period of 1970-2007 by employing the Ordinary Least Squares (OLS) method of estimation. Stationarity was tested by using the Phillips Perron and Augmented Dickey-Fuller tests. The study employed the following variables: gross domestic product as a proxy for economic growth, Foreign Direct Investment, technological progress, fiscal deficit as gross domestic product ratio, expected rate of inflation and foreign reserves as a proxy for in measuring foreign exchange earnings. The findings of the study suggest that there is a positive relationship between Foreign Direct Investment and economic growth in Cameroon and that Foreign Direct Investment should be encouraged through political stability; encouragement of industrialization; demand factors; guided trade protection; industrial promotion acts; quantitative and qualitative manpower training. Since Foreign Direct Investment increases the domestic country's stock of capital in order to increase the domestic country's economic growth, the findings of the study agree with the neo-classical accelerator investment model.

Nyamwange (2009) performed an empirical study on the relationship between Foreign Direct Investment and economic growth in Kenya over the period of 1980-2006 with annual time series being employed in the study. The relationship between Foreign Direct Investment and economic growth in Kenya was tested by employing the Ordinary Least Squares (OLS) method. The following variables were employed in the study in order to examine the relationship between Foreign Direct Investment and economic growth in Kenya: Foreign Direct Investment inflow rate, real gross domestic product as the proxy for economic growth, trade openness being the ratio of imports and exports to gross domestic product, human skills capital stock being the ratio of secondary and tertiary enrolment over population and inflation rate. The findings of the study suggest that there is a positive relationship between Foreign Direct Investment and economic growth in Kenya and that Foreign Direct Investment should be encouraged. According to findings of the study, Foreign Direct Investment increases economic growth through efficiency gains and productivity that the domestic firms experience on the presence of Foreign Direct Investment. The results of the study agree with the Harrod-Domar theory.

Arisoy (2012) tested the relationship between Foreign Direct Investment and economic growth in Turkey over the period of 1960-2005 by employing the aggregate production and the annual data used in the study. The following variables were employed in the study to determine the relationship between Foreign Direct Investment and economic growth: real gross domestic product, Foreign Direct Investment stock and total factor productivity. The findings of the study suggest that Foreign Direct Investment and economic growth are positively related and that Foreign Direct Investment contributes positively in Turkey's economy through technological spillovers and physical capital accumulation. According to the findings of the study, Foreign Direct Investment increases economic growth through knowledge and technological spillovers, therefore the presence of Foreign Direct Investment brings technology and knowledge spillovers resulting in an increase in domestic country's economic growth. The results of the study agree with the Romer (1990) endogenous growth theory.

Chang and Kassymbekova (2012) performed an empirical study on the relationship between Foreign Direct Investment and economic growth in Kazakhstan over the period of 1992-2009 with annual data being employed in the study. The multiple linear regression and time series analysis were employed in order to examine the relationship between Foreign Direct Investment and economic growth in Kazakhstan. The following variables were employed in order to test the relationship between Foreign Direct Investment and economic growth in Kazakhstan: Foreign Direct Investment, gross domestic product which measures the country's market size, natural resources, fuel exports, gross capital formation, current account balance, economic freedom index, corruption perception index and inflation rate. The findings of the study suggest that Foreign Direct Investment and economic growth have a positive relationship in Kazakhstan. Granger causality test was used in order to test for causality between the two variables. The nature of causality according to Granger causality test is bi-directional with the direction of causality going from Foreign Direct Investment to economic growth and from economic growth to Foreign Direct Investment. According to the results of the study, the technological spillovers brought into the domestic country by the presence of Foreign Direct Investment result in an increase in the domestic economy's growth. The theory which the findings of this study agree with is the Romer (1990) endogenous growth model.

3.3.2 Empirical Studies Focusing on South Africa

Fedderke and Romm (2004) performed an empirical study on the relationship between Foreign Direct Investment and economic growth in South Africa over the period 1960-2002 with an annual time series data being employed in the study. The relationship between Foreign Direct Investment and economic growth was tested by employing the Vector Error Correction Model (VECM). The study employed the following variables: real gross domestic product, Foreign Direct Investment, total employment, private sector fixed capital stock, real Foreign Direct Investment liabilities (stock), corporate tax rate, labour capital ratio, average wage rate, property rights index, political rights index, political instability, exports as a percentage of gross domestic investment and imports as a percentage of gross domestic investment. The findings of the study suggest that Foreign Direct Investment has positive spill-overs on capital and labour and therefore on output in the long run. In this manner, Foreign Direct Investment closes the gap in human capital as well as in knowledge accumulation. According to the results of the study, Foreign Direct Investment contributes positively to economic growth through human capital, technology and knowledge spillovers. The findings of the study confirm a positive relationship between Foreign Direct Investment and economic growth in South Africa. The theory which these findings agree with is the Romer model.

Moolman *et al* (2006) studied the relationship between Foreign Direct Investment and economic growth in South Africa over the period of 1970-2003 with time-series data being employed in their study. The study employed the Vector Error Correction Model (VECM) to test the relationship between Foreign Direct Investment and economic growth. Stationarity was tested using the Phillips Peron (PP) and Augmented Dickey-Fuller (ADF) tests. The study employed the following variables to determine the relationship between Foreign Direct Investment and economic growth: Foreign Direct Investment, portfolio investment, gross fixed capital formation, openness, market size, infrastructure and exchange rate. The findings of the study suggest that Foreign Direct Investment helps create jobs locally causing employment rate to increase; increase product variety (bridging the ideas gap); technology transfer from developed to developing economies thereby causing economic growth to increase. These findings entail a positive relationship between Foreign Direct Investment and economic growth in South Africa. The results of the study agree with the Romer endogenous growth model.

Mazenda (2012) examined the relationship between Foreign Direct Investment and economic growth in South Africa over the period of 1980-2010. The study employed the Vector Error Correction Model (VECM) to test the relationship between Foreign Direct Investment and economic growth in South Africa. The Phillips-Perron and Dickey-Fuller tests were employed in order to test for stationarity of the variables that the study employed. The following variables were employed in the study: real gross domestic product, Foreign Direct Investment, domestic investment, real exchange rate and foreign debt. The empirical results suggest that there is a negative relationship between Foreign Direct Investment and economic growth in South Africa. These empirical findings agree with the Dixon and Boswell dependency theory.

3.4 Assessment of Literature

The current study examined the Romer (1990) endogenous growth theory, the Neoclassical growth theory as well as the empirical studies that looked at the relationship between Foreign Direct Investment and economic growth. These theories and empirical findings looked at a number of factors affecting the relationship between Foreign Direct Investment and economic growth. The shortcoming of the Neoclassical growth theory is that it assumes diminishing returns to inputs of capital which then cause Foreign Direct Investment to affect economic growth only in the short-run leaving the long-run state unchanged or constant (Mabrouk, 2004). In this manner, Foreign Direct Investment has a limited effect on economic growth under the Neoclassical growth theory because the presence of diminishing returns to inputs causes the economy to go back to its steady state causing Foreign Direct Investment to only affect the economic growth only in the short-run and leaving the long-run growth unaffected.

Shaaf (2008) argues that one of the main criticisms of the Neoclassical growth model is that technology being the only permanent basis of economic growth is exogenous which means that technology arises from outside the system rather than within the system. In the Neoclassical growth model Foreign Direct Investment affects economic growth only to a restricted point because when there are diminishing returns to physical capital, only the short-run level of income is affected by Foreign Direct Investment which then leaves the long-run rate of growth unaffected (de Mello, 1997). This means that under the Neoclassical growth model Foreign Direct Investment affects the growth rate only in the short-run and not in the long-run.

Hamilton and Monteagudo (1998) criticize the Neoclassical growth model with the argument that investment in physical capital is crucial for the country's growth enhancement, but the Neoclassical growth model does not fully capture the reasons of the importance of the Solow growth model. Another criticism of the Neoclassical growth model is that it omits the human capital accumulation which can be a problem as it will result in the estimation of population growth as well as saving's coefficient being biased (Khaliq & Noy, 2007). Even though the Neoclassical growth model omits the human capital accumulation, there is still a positive relationship between Foreign Direct Investment and economic growth under this growth model. However, because the Neoclassical growth model omits the human capital accumulation, there will therefore be a positive short-run relationship between Foreign Direct Investment and economic growth when human capital accumulation is omitted.

Furthermore, another problem with the exogenous growth models is that technology is determined outside the model whereas under the endogenous growth models technology is determined inside the model. In this manner, Foreign Direct Investment affects economic growth inside the model since it yields increasing returns in the production through efficiency spillovers and externalities (de Mello, 1997).. Even though the Romer (1986) is also an endogenous growth model like the Romer (1990), the criticism of the former model is its failure to incorporate technology in its model as it excludes technology. Therefore, one of the reasons for employing the Romer (1990) endogenous growth theory is that it also includes technology in its model and technology is regarded as one of the crucial engines in enhancing the economic growth. Since Foreign Direct Investment leads to technological progress, it therefore becomes relevant for the current study to employ the Romer (1990) endogenous growth model to determine the relationship between Foreign Direct Investment and economic growth as technology in the Romer (1990) endogenous growth model is one of the crucial inputs needed in order to obtain increased economic growth.

When analysing the empirical literature, it can be seen that there is conflicting evidence on the relationship between Foreign Direct Investment and economic growth with some studies suggesting a positive relationship, others suggesting that there is a negative relationship while others argue that there is no relationship between Foreign Direct Investment and economic growth. For instance, Athukorala (2003) examined the relationship between Foreign Direct Investment and economic growth in Sri Lanka and concluded that there is no direct link between Foreign Direct Investment and economic growth in Sri Lanka. However, the majority of empirical studies that were examined in the current study suggested a positive relationship between Foreign Direct Investment and economic growth with fewer studies suggesting a negative relationship as well as no relationship between Foreign Direct Investment and economic growth.

Since some of the variables that the current study has employed are similar to the ones employed by other empirical studies on the relationship between Foreign Direct Investment and economic growth, Foreign Direct Investment might therefore possibly have a positive relationship with economic growth in South Africa. With regards to the current study, the limitations concerning the variables employed is that Foreign Direct Investment was not available in a quarterly form but rather in an annual form and the quadratic match sum method was employed in order to convert the data from annual to quarterly. Another limitation is that the variables employed in the current study only covered the period of 1990-2012 leaving other periods unexamined.

Chapter 4

Research Methodology and Analytical Framework

4.1 Introduction

This section of the study will look at econometric methods that will be employed in the study to test the relationship between Foreign Direct Investment and economic growth. The study will either employ the Vector auto-regressive (VAR) or Vector Error Correction Model (VECM) depending on the presence of cointegration. The Johansen cointegration test will be employed to test the long term relationship between Foreign Direct Investment and economic growth. If there is no cointegration in the variables used in the study, the VAR model will be employed. However, if cointegration is found to exist, the VECM will be employed. The dependent and independent variables employed in the study will be defined in order to give their clear understanding. All data for the variables employed in the study will be obtained from the South African Reserve Bank and the data are time series data in a quarterly form.

4.2 Model Specification

The main objective of the study is to determine the relationship between Foreign Direct Investment and economic growth. This section will therefore specify the model that will be employed in order to examine the relationship between Foreign Direct Investment and economic growth. The model employed in the study is based on the Romer (1990) endogenous growth model and it is the development of the model employed in the empirical study of Kornecki and Borodulin (2011). The model that Kornecki and Borodulin (2011) employed consisted of the following variables: real gross domestic product, state of environment, fixed capital formation, labour force, exports and inward Foreign Direct Investment. Therefore, the model of the current study will be developed to contain: real gross domestic product, real Foreign Direct Investment, real imports of goods and services and real exports of goods and services. The model will first be specified in a functional form and then be re-specified in a logged linear form.

The following functional form will be employed to determine the relationship between Foreign Direct Investment and economic growth and this is given by:

$$RGDP= F\ (RFDI,\ RIMP,\ REX,) \quad (4.1)$$

According to Li *et al* (2010), logging variables removes heteroskedasticity of the time series therefore, it is crucial to log variables in order to avoid violation of the Classical Linear Regression Model (CLRM) assumptions. When the above functional equation is expressed in a linear logarithmic form the following equation is obtained:

$$LRGDP = \beta_0 + \beta_1 LRFDI + \beta_2 LRIMP + \beta_3 LREX + U_t \quad (4.2)$$

Where:

LRGDP is Logged Real Gross Domestic Product

LRFDI is Logged Real Foreign Direct Investment

LRIMP is Logged Real Imports of goods and services

LREX is Logged Real Exports of goods and services

U_t is the Error or disturbance term.

In equation (4.2) above, β_0, β_1, β_2 and β_3, are the coefficients to be estimated with β_0 being the intercept or constant. The coefficients to be estimated are also referred to as explanatory variables then the dependent variable (real gross domestic product) is referred to as an explained variable. The real gross domestic product is the total value of goods produced in the domestic economy and it measures the domestic country's economic growth. The real gross domestic product accounts for price changes in order to give an accurate figure which has taken inflation into consideration. The study employs the real gross domestic product as a variable because real gross domestic product measures the country's economic growth of which the impact that Foreign Direct Investment has on a domestic economy's growth is vital in order to see whether or not it enhances or deteriorates the domestic country's economic growth.

The real Foreign Direct Investment is the independent variable in the model and it represents direct investments made by foreign companies in South Africa's firms and it is in real prices as it has taken inflation into account. Foreign Direct Investment occurs when foreign companies acquire a certain percentage of ownership (usually 10 percent) in other countries' industries in order to develop those countries' industries and in order to make profits for themselves (Moosa, 2002).

The real imports of goods and services are imports of goods and services that have been adjusted for inflation (Abou-Stait, 2005). The real imports of goods and services are goods and services that have been produced by other foreign countries and sold to South Africa firms and individuals. In this manner, the foreign country is the seller and South Africa is the buyer. Real imports of goods and services involve outflow of money or funds from South Africa to other foreign countries causing reduction in real gross domestic product. However, there are products which the domestic economy imports in order to utilize them in the production process so that the semi-finished goods are produced into finished goods.

The real exports of goods and services are exports of goods and services which have been adjusted for inflation (Abou-Stait, 2005). The real exports of goods and services are goods and services that have been produced in the domestic economy and sold in the foreign markets and their value has been adjusted for inflation. The exports and imports of goods and services have been separated in order to examine the impact that each variable has on economic growth or rather to determine how these variables individually affect economic growth.

4.3 The *a Priori* Expectations

According to the Romer (1990) endogenous growth theory, Foreign Direct Investment leads to technological progess which then increases economic growth. Therefore, the *a priori* expectation of the relationship between Foreign Direct Investment and economic growth is positive because when foreign companies directly invest in domestic country's firms, they bring with them their knowledge, innovative technology, human capital spillovers, expertise and other resources that were previously unavailable in the domestic country which then leads to an increase in the domestic country's economic growth (Hymer, 1960). This suggests that when the domestic country receives more Foreign Direct Investment the amount of Foreign Direct Investment that the domestic country receives increases leading to an increased economic growth. Therefore, the sign of Foreign Direct Investment is expected to be positive. Looking at the real imports of goods and services, the *a priori* expectation for real imports of goods and services is negative since imports involve the outflow of funds from the domestic country to the foreign markets. When the domestic country imports from foreign countries it means that it uses its currency to buy those goods and services from other foreign countries. This then suggests that the specific foreign country whose goods and services are bought by the domestic country benefits more than the domestic country that is purchasing from such a foreign country. The *a priori* expectation for real exports of goods and services is positive because when the domestic country produces and sells goods and services in the foreign markets, it receives money which means more money is flowing into South Africa contributing positively to the real gross domestic product.

4.4 Data Source

All data employed in the study are quarterly data for the period of 1990-2012 and have been obtained from the South African Reserve Bank and World Bank websites. The data for Foreign Direct Investment was available in the nominal annual form and the study employed the CPI index constant at 2005 prices to deflate it as well as the quadratic-match sum method available on EViews 8 to convert it to a quarterly form. The current study covers the period of 1990-2012 to examine the relationship between Foreign Direct Investment and economic growth before and during the period that South Africa. The real gross domestic product, real imports of goods and services and the real exports of goods and services were taken at constant 2005 prices seasonally adjusted and have taken inflation into account. The reason for employing the seasonally adjusted data for real gross domestic product, real imports of goods and services and real exports of goods and services is because these variables are sensitive to seasonal changes thus they change with seasons. Since the study looks at the relationship between Foreign Direct Investment and economic growth on a quarterly basis, only the quarterly data will be employed in the study.

4.5 Review of Estimation Techniques

The different econometric techniques that will be employed in order to test the relationship between Foreign Direct Investment and economic growth in South Africa will be examined. It is crucial that stationarity of the variables be critically examined because if stationarity of the variables is not tested for, that may result to spurious results. According to Athukorala (2003) "...most economic variables are non-stationary (integrated) in their level form, these non-stationary time series may result to spurious regressions." In order to avoid the problem of running spurious regressions, the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests will be employed to test for the presence of unit root in order to see whether the variables in the study are stationary or non-stationary and these tests are formal tests. The study will informally test for the presence of a unit root by plotting graphs in order to see whether the variables move along the mean (stationary) or farther from the mean (non-stationary). Formal testing of stationarity will be done by employing the Augmented Dickey-Fuller test as well as the Phillips-Perron test.

The study will either employ VAR/VECM estimation techniques depending on whether there is presence of cointegration or not. Cointegration will be tested using the Johansen test. If there is cointegration in the variables used, then the study will employ VECM. However, if there is no cointegration the study will employ VAR with variables in difference form. White test will be run in order to test for heteroskedasticity in the variables that the study has employed. Autocorrelation will be tested by employing the LM (Lagrange Multiplier) test. Normality will also be tested in the study by employing the Jarque-Bera test in order to check whether the variables in the study are normally distributed.

4.5.1 The Augmented Dickey-Fuller (ADF) Test of Stationarity

Asteriou and Hall (2011) suggest that Dickey and Fuller made an extension of the Dickey-Fuller unit root test and they augmented it so that the dependent variable has extra lagged terms included in order to ensure the removal of autocorrelation. This implies that the ADF test adds lagged differenced terms on the right hand side of the equation in order to ensure that the autocorrelation is eliminated. The ADF test determines the order of integration between the variables employed in the study. Unlike the Dickey-Fuller test, the Augmented Dickey-Fuller test eliminates the autocorrelation. The null hypothesis suggests that there is a unit root (variables are non-stationarity) whereas the alternative hypothesis suggests that there is no unit root (variables are stationary). The Augmented Dickey-Fuller (ADF) test is given by the following equation:

$$\Delta y_t = a_0 + \gamma y_{t-1} + a_2 t + \sum_{i=1}^{p} \beta_i \Delta y_{t-i} + u_t \quad \text{...} \quad (4.3)$$

Where: Δ represents the first difference operator which is employed to make the variable stationary, y_t is the dependent variable also known as the explained variable, a_0 and a_2t are the deterministic elements then u_t is the white noise disturbance term. The significance of the coefficient y_{t-1} is tested by employing the Augmented Dickey-Fuller test. The study will employ the values obtained at first difference as well as interpret the results obtained at first difference because when variables are stationary at first difference, there is no need to test stationarity of the variables at second difference as they are already stationary at first difference. According to Mabrouk (2004), when a series is non-stationary, it is integrated of order zero, but if a series is stationary then it is integrated of order one.

4.5.2 The Phillips-Perron (PP) Test of Stationarity

Phillips and Perron (1988) developed the Phillips-Perron test of stationarity which is similar to the Augmented Dickey-Fuller test, but differs in the sense that it corrects the *t*-statistic of the coefficient γ in order to take into consideration the autocorrelation in the error or disturbance term with the nature of the error process being less restrictive (Brooks, 2008). The Phillips-Perron (PP) test is the AR (1) process and it is given by:

$$\Delta y_{t-1} = a_0 + \gamma y_{t-1} + e_t \quad \text{.......} \quad (4.4)$$

Where: Δy represents the first difference of the dependent variable, a_0 and γ are the explanatory variables or parameters to be estimated and e_t is the white noise disturbance term. The Phillips-Perron test modifies the ADF *t*-statistics and the results are the Phillips-Perron statistics. In this manner, in order to obtain the Phillips-Perron statistic the ADF statistics should be modified. The Phillips-Perron test assists in correcting the heteroskedasticity as well as the serial correlation that might be present in the error terms (Brooks, 2008). The null hypothesis under the Phillips-Perron test is the same as the null under the Augmented Dickey-Fuller test because under both tests, the distributions are the same and they are asymptotic.

The null hypothesis suggest that the time series is non-stationary meaning there is presence of a unit root whereas the alternative hypothesis suggests that the time series is stationary (meaning there is no presence of a unit root). In the event of structural breaks in the time series, it is therefore preferable to employ the Phillips-Perron test in order to test for the presence of a unit root as the ADF test is likely to not reject the null hypothesis (Chimobi & Uche, 2010). This suggests that the when it comes to presence of structural breaks, the ADF test is unreliable hence the Phillips-Perron test of stationarity has more power than the ADF test of stationarity.

4.5.3 The Johansen Cointegration Approach

The Johansen approach is an approach that the study will employ in order to test for the long-run relationship between the variables employed in the study. Before cointegration can be tested, it is crucial to start by determining the order cointegration in order to check if the variables are integrated of the same order or of different orders. When variables are integrated of different orders, then the problem of obtaining spurious results might occur. According to Asteriou and Hall (2011), there are six steps that have to be followed when testing for cointegration.

4.5.3.1 Determining the Order of Integration

The first step that has to be followed in determining cointegration according to the Johansen test is to determine the order of cointegration of the variables that are examined in the study. Asteriou and Hall (2011) argue that when variables are integrated of different orders (for example if one variable is I (0), the other is I (1) and there is also one that is 1(2)), the situation becomes complicated. However, one can estimate an equation or test cointegration with variables of different orders provided that certain conditions are met. The Johansen cointegration test assists in determining the number of cointegrating relationships between the variables that the study has employed. In most cases, the variables employed in studies are integrated of order one I (1) since most variables are stationary at first difference without even going to the second difference I (2).

4.5.3.2 Determining the Optimal Lag Length

The second step to be followed in the process of testing for cointegration under the Johansen cointegration approach is to find the appropriate lag length. Not setting the value of the lag length might result in violation of the Classical Linear Regression Model leading to spurious regressions being run as well as spurious results being obtained. In order to have Gaussian error terms, the appropriate lag length should be selected according to the lag length criteria (Asteriou & Hall, 2011). The lag length that the study will employ will be selected according to the lag length criteria. If the lag lengths are long, that will result in degrees of freedom being reduced leading to problems.

The maximum lag length that EViews can take is up to 8 lags and employment of lags beyond 8 will result in spurious results being obtained. Lütkepohl (1993) points out that when the lag length that is selected is higher than the one that is true, the mean square forecast errors of the VAR will increase and alternatively if the lag length that is selected is less than the one that is true, the errors will be autocorrelated meaning there will be presence of autocorrelation. The values of the sequential modified LR test, Final prediction error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC) and Hannan-Quinn information criterion (HQ) are employed in order to determine the optimal lag structure as well as the diagnostic which test for: autocorrelation, heteroskedasticity and normality of the residuals. Gutiérrez (2007) points out that the Akaike Information Criterion selects more repeatedly lag-rank for 100 and 200.

The model that is chosen as having an optimal lag length is the one that minimizes AIC and SC and this model is required to pass all the diagnostic tests (Asteriou & Hall, 2011). If the optimal lag length is not employed then there might be presence of non-normality, autocorrelation and heteroskedasticity. If the lag specifications are very short the results would be spurious results that consist of autocorrelation, heteroskedasticity and non-normality resulting in misspecification of the model with disturbance terms not being white noise disturbance terms. The stability of the model will be determined by estimating the model at the lag length that has been selected according to the VAR Lag Order Selection Criterion. If there are no roots outside the unit circle, then it implies that the model is stable and that there will be no spurious results obtained. Contrary to that, if there is at least one root that lies outside the unit circle then it means that the model is not stable and the results obtained might be spurious. In order to ensure that the model is correctly specified, the correct lag length has to be selected. The roots of characteristic polynomial table will be analysed as well in order to determine any roots that might be lying outside the unit circle. The inverse roots of AR characteristic polynomial will also be analysed in order to examine if the model is stable or not and stability of the model depends on whether the roots are lying inside or outside of the unit circle.

4.5.3.3 The Correct Deterministic Model, Cointegrating Rank and the Pantula Principle

In the event that there is no evidence of cointegration, the VAR will be estimated in difference form, but if cointegration exists, the VECM will be estimated at difference form. Asteriou and Hall (2011) state that the third step in testing for cointegration is to choose the model that is appropriate in terms of the deterministic components in the multi-variate system and it is given by the following equation:

$$\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \ldots + \Gamma_{k-1} \Delta Z_{t-k-1} + \alpha\ (\beta Z_{t-1} \quad \mu_1 1 \quad \delta_1 t) + \mu_2 + \delta_2 t + u_t \ldots\ldots\ldots\ldots\ldots\ldots (4.5)$$

Equation (4.5) depicts that there can be a constant coefficient μ_1 and /or a trend which has a coefficient δ_1 in the long-run model as well as the constant with coefficient μ_2 and or/ a trend that contains a coefficient δ_2 in the short-run VAR model. In order to estimate the Johansen cointegration test, the correct deterministic model has to be determined by employing the Pantula principle. The Pantula principle examines both the trace and maximum eigenvalue statistics and these statistics are based on the eigenvalues also known as the characteristics roots (Rammadhan & Naseeb, 2008). The Pantula principle involves numerous steps which have to be followed in order to conclude which deterministic trend assumption should be selected. In order to choose the most appropriate model, the trace statistics for models 2, 3 and 5 are all put in one table in order to compare them.

In order to determine which model to select, the rank and the deterministic components are determined simultaneously. Another test that is employed in the study in order to determine the number of cointegrating vectors is the Maximum Eigenvalue. The Pantula principle involves simultaneously testing the hypothesis of both the rank order and deterministic components. According to Rammadhan and Naseeb (2008), the cases of the deterministic trend assumption of test are: (1) No intercept and trend (2) Restricted intercept and no trend (3) Unrestricted intercept and no trend (4) Unrestricted intercept and restricted trend (5) Unrestricted intercept and trend. According to Xu and Sun (2010), models 1 and 5 are unrealistic and are hardly used in practice and that model 1 occurs mostly when the mean of all the financial series is zero. Since models 1 and 5 are unrealistic and hardly applicable in reality, the study will therefore either employ model 2, 3 and 4 depending on the Pantula results.

The Pantula principle estimates models 2, 3 and 4 and the results are presented from the most restrictive model to the least restrictive model. Under the Pantula principle, the trace statistic and maximum eigenvalue statistic are collected in order to determine the number of cointegrating vectors under both test statistics. The study will therefore start testing the null hypothesis from Model 2 to Model 4 and leave out Models 1 and 5 as they rarely occur in economic theory (Ahking, 2002). If the null hypothesis in model 2 is rejected, then we will move to Model 3 and test the null hypothesis. The testing of the null hypothesis will occur up until the null hypothesis cannot be rejected and the model whose null hypothesis cannot be rejected is the model that will be chosen to test for cointegration (Rammadhan & Naseeb, 2008). When the null hypothesis is not rejected for the first time, then the test is finalized. According to Umoh *et al* (2012), if the trace statistic is less than the critical value at 5%, then we cannot reject the null hypothesis and the testing end where the null hypothesis cannot be rejected.

The fourth step in testing for cointegration is to determine the number of cointegrating vectors or the rank of the matrix Π. Johansen and Juselius (1990) outline two methods which are employed in determining the number of cointegrating relations and in these two methods there is an estimation of the matrix Π. These methods are namely maximum eigenvalue and the trace test. On the first method the null hypothesis tested states that $Rank\ (\Pi) = r$ whereas the alternative hypothesis states that $Rank\ (\Pi) = r + 1$. The null hypothesis suggests that there is presence of cointegrating vectors and the number of cointegrating relationships run up to r whereas the alternative hypothesis concludes that there are $r + 1$ cointegrating vectors. The test statistics under the maximum eigenvalue method are obtained from the procedure that is employed for estimation and these test statistics are based on the eigenvalues. When employing the maximal eigenvalue test in order to determine the number of cointegrating vectors, the largest eigenvalues are arranged in descending order and they are determined whether they are significantly different from zero (Brooks, 2008). The rank of Π is zero as well as all characteristics roots if the variables examined in the study are not cointegrated. Non-cointegration of variables implies that there is no long-run relationship between these variables. The maximal eigenvalue statistic is employed in order to determine the number of eigenvalues or characteristic roots that are significantly different from zero and the statistic is given by:

$$\lambda_{max}(r, r+1) = -T\ln(1-\lambda) \qquad (4.6)$$

In equation (4.6) above λ_{max} denotes the maximal eigenvalue statistic because the test statistic is based on the maximum eigenvalue. The second method employed in determining the number of cointegrating vectors is the trace statistic. The trace statistic is grounded on the likelihood ratio test for the matrix's trace. Under the trace statistic it is reflected whether the trace is augmented by adding more eigenvalues beyond the *rth* eigenvalue. The null hypothesis under the trace statistic suggests that the number of cointegrating vectors is smaller than or equal to r (Rammadhan & Naseeb, 2008). In the event that $\lambda_i = 0$ then the trace statistic will equal to zero. Alternatively, when the characteristic roots are closer to unity, the $\ln(1-\lambda_i)$ term becomes more negative leading to a larger trace statistic. The trace statistic is determined as follows:

$$\lambda_{trace}(r) = -T\sum_{i=r+1}^{n} \ln(1-\lambda_{r+1}) \qquad (4.7)$$

The process in determining the presence of cointegration involves working downwards and stopping at the value of r and this is done by looking at the test statistic which is greater than the critical value listed on the table (Brooks, 2008).

4.5.4 The Vector Error Correction Model (VECM)

After determining the number of cointegrating vectors, the next step is to estimate the Vector Error Correction Model. When variables are found to be cointegrated, then the VECM is estimated. The VECM simultaneously determines the long-run and short-run relationships between variables but it also look at the short-run relationship between the variables employed in the study. The VECM approach looks at the variables' short-run adjustments and it also considers the coefficients' speed of adjustment. According to Brooks (2008), the Vector Error Correction Model measures the speed at which the dependent variable, which is the real gross domestic product in this study, returns to equilibrium after a short-run shock that occurred in the independent variables. According to Asteriou and Hall (2011), the error correction terms explain the speed of adjustment when the variables are in disequilibrium. When the variables are in equilibrium the following equation is obtained:

$$Y_{t-1} - \beta_0 - \beta_1 X_{t-1} = 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.8)$$

When there is disequilibrium the error correction term changes and it is no longer zero and it measures how far or close the system is to the equilibrium (Asteriou & Hall, 2011). The VECM determines the speed it takes for variables to return to their long-run equilibrium. In the VECM, the maximum likelihood estimation is applied to VAR in order to simultaneously determine short-run and long-run determinants of the dependant variable in the model. Equation 4.8 above is then revised and all the explanatory variables - β_0 and - $\beta_1 X_{t-1}$ are taken to the right hand side of the equation. After all the explanatory variables have been taken to the right hand side the following equation is obtained:

$$Y_{t-1} = \beta_0 + \beta_1 X_{t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.9)$$

Moving from equation 4.8 to equation 4.9 above, any negative coefficients that have been statistically generated are then interpreted as being positive and any positive coefficients are interpreted as being negative.

The specification of the Vector Error Correction Model is given by:

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{k} \Gamma_i \Delta_i y_{t-1} + u_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.10)$$

Where: Δ is the first difference operator, $y_t = (y_t, \ldots, y_{pt})$ is the 5x1 vector, Δy_t is $I(0)$, Γ_i are the 5x5 matrices of the parameters then u_t is the 5x1 Gaussian error terms (also known as the white noise vector) which are normally and independently distributed. Asari *et al* (2011) argue that when the sign of the error correction model is negative and significant, it implies that any short-run fluctuations that are occurring between the dependent variable and independent variables will result in a steady long-run relation between the variables.

4.5.5 The Vector Autoregressive Model (VAR)

In the event that no cointegration has been found, the study will employ the Vector Autoregressive model to determine the relationship between Foreign Direct Investment and economic growth in South Africa. The Vector Autoregressive model is employed in cases where there are models which contain variables that are interdependent meaning that those variables do not only explain the dependent variable but are also explained by the dependent variable (Asteriou & Hall, 2011). Therefore, the VAR model is employed where the explanatory variables explain the dependent variable and are in turn explained by the dependent variables resulting in interdependency between the explained and explanatory variables. According to Asteriou and Hall (2011) the VAR model is given by:

$$y_t = a_{10} + a_{11}y_{t-1} + a_{12}x_{t-1} + e_{1t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.11)$$

$$x_t = a_{20} + a_{21}y_{t-1} + a_{22}x_{t-1} + e_{2t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.12)$$

In equations (4.11) and (4.12) above the letters *a, y* and *x* are parameters to be estimated under the Vector Autoregressive model. Brooks (2008) argues that with the VAR model all variables are regarded as being endogenous and therefore there is no need to indicate which variables are exogenous and which ones are endogenous.

4.5.6 The Diagnostic Tests

The diagnostic tests that will be performed in the current study are: Autocorrelation, Normality and Heteroskedasticity tests and these tests will be employed under the VECM if there is cointegration between the variables. However, if there is no cointegration between the variables employed in the study, then the study will perform the VAR in order to ensure that the variables and error terms comply with the Classical Linear Regression Model. The diagnostic tests are applied in order to test for the goodness of fit of the model which complies with the Classical Linear Regression Model (Gujarati, 1999). The study will employ the Autocorrelation LM test results to test for autocorrelation, the White Test (without cross) results to test for heteroskedasticity and skewness results to test for normality of the residuals.

4.5.6.1 Autocorrelation LM Test (Also known as Serial Correlation)

Lütkepohl and Krätzig (2004), argue that according to assumption number six of Classical Linear Regression Model (CLRM), the different error terms' (u_t, and u_s) covariances and correlations are equal to zero and this is given by:

$$Cov\ (u_t, u_s) = 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.13)$$

When error terms are not autocorrelated it means that an error term in period t is not correlated with an error term in period s, but instead they are independent of each other. The presence of autocorrelation results in assumption number six being violated meaning that the error terms are no longer independent, but rather are autocorrelated and this is given by:

$$Cov\ (u_t, u_s) \neq 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.14)$$

If error terms are autocorrelated it then means that an error term in period t has a correlation with an error term in period s and that they depend on each other and are no longer independent. According to Wooldridge (2013), autocorrelation or serial correlation occurs when there are variables which have been omitted, model misspecification and when there were systematic errors during the time that the measurement was undertaken. There are two techniques through which the serial correlation can be detected and such ways include: informal technique done through plotting the graphs and the formal technique which is done through employing the Autocorrelation LM test. This study will therefore employ the Lagrange Multiplier (LM) test in order to detect the presence of autocorrelation. The LM test is a multivariate test statistic employed to detect autocorrelation of the error terms up to the specified lag order (Brooks, 2008). The null hypothesis proposes that there is no autocorrelation whereas the alternative hypothesis proposes that there is autocorrelation. Therefore, if the probability is greater than 0.05, the null hypothesis is not rejected with the conclusion that there is no presence of autocorrelation. However, if the probability is less than 0.05, then the null hypothesis is rejected with the conclusion that there is presence of autocorrelation.

4.5.6.2 The Normality Test

In order to test for normality of the dataset, the Cholesky of covariance (Lutkepohl) option will be selected. The normality test is employed in order to test whether the dataset employed in the study is normally distributed. The dataset that is normally distributed will have a mean that is equal to zero as well as a constant variance and this is one of the assumptions of CLRM (Pindyck & Rubinfeld, 1998). The violation of this assumption will lead to spurious regressions being run which means spurious results will be obtained. The null hypothesis of the normality test states that the dataset is normally distributed whereas the alternative hypothesis states that the dataset is not normally. If the probability value is less than 0.05 then we reject the null hypothesis and we conclude that the dataset is not normally distributed, but if the probability value is greater than 0.05 then we fail to reject the null and we conclude that the dataset is normally distributed (Asteriou and Hall, 2011). When there is a difference when testing the normality test, then it means one distribution is not the same as the other distribution.

The skewness results will be employed in order to test whether the variables are normally distributed or not normally distributed.

4.5.6.3 Heteroskedasticity

Lütkepohl and Krätzig (2004) define heteroskedasticity as unequal variances and that the unequal variances violate the assumption that states that there should be constant variances in the error terms. When variances of the error terms are homoskedastic, it means that they have an equal spread or equal variance. There are two methods that can be employed in order to detect heteroskedasticity and these include: informal technique as well as formal technique. The informal technique involves inspecting different graphs in order to see if there is heteroskedasticity or homoscedasticity whereas the informal technique involves running the tests such as: Breusch-Pagan Glesjer test, Harvey-Godfrey test, Park test, Goldfield-Quandt test and White's test (Pindyck & Rubinfeld, 1998).

However, this study will employ the White's test without a cross which is a formal technique of detecting heteroskedasticity. If the probability under the White's heteroskedasticity test is less than 0.05, we reject the null and conclude that there is presence of heteroskedasticity whereas if the probability is greater than 0.05 we fail to reject the null and we conclude that there is no presence of heteroskedasticity in the variables that the study has employed (Brooks, 2008). Failure to reject the null hypothesis implies that the model is correctly specified and that the Classical Linear Regression Model (CLRM) assumptions are not violated.

4.6 Conclusion

The chapter looked at the estimation techniques that the study will employ in order to examine the relationship between Foreign Direct Investment and economic growth in South Africa. This chapter also specified the model employed in determining the relationship between Foreign Direct Investment and economic growth in South Africa. The informal and formal stationarity tests that the study will employ in order to assess the stationarity of the variables were explained with informal tests being in the form of graphical presentations and formal tests being the Augmented Dickey-Fuller and Phillips-Perron stationarity tests. The variables employed in the current study were defined in order to determine the relationship between Foreign Direct Investment and economic growth and to ensure that they are clearly understood. The *a priori* expectations of the variables that the study employed were also examined and each variable was analysed on how it is expected to contribute towards the real gross domestic product. The steps involved in testing cointegration as well as the Johansen cointegration test have been explained.

The Vector Error Correction Model (VECM) was specified in order to assess how the explanatory variables affect the explained variable as well as to determine the short-run and long-run relationship between these variables if cointegration between the variables has been found. However, the Vector Autoregressive (VAR) model was also specified in order to examine the relationship between Foreign Direct Investment and economic growth in circumstances where there is no cointegration between these variables. Chapter 5 will display the empirical findings of the study on the relationship between Foreign Direct Investment and economic growth in South Africa over the period of 1990-2012.

Chapter 5

Estimation Results

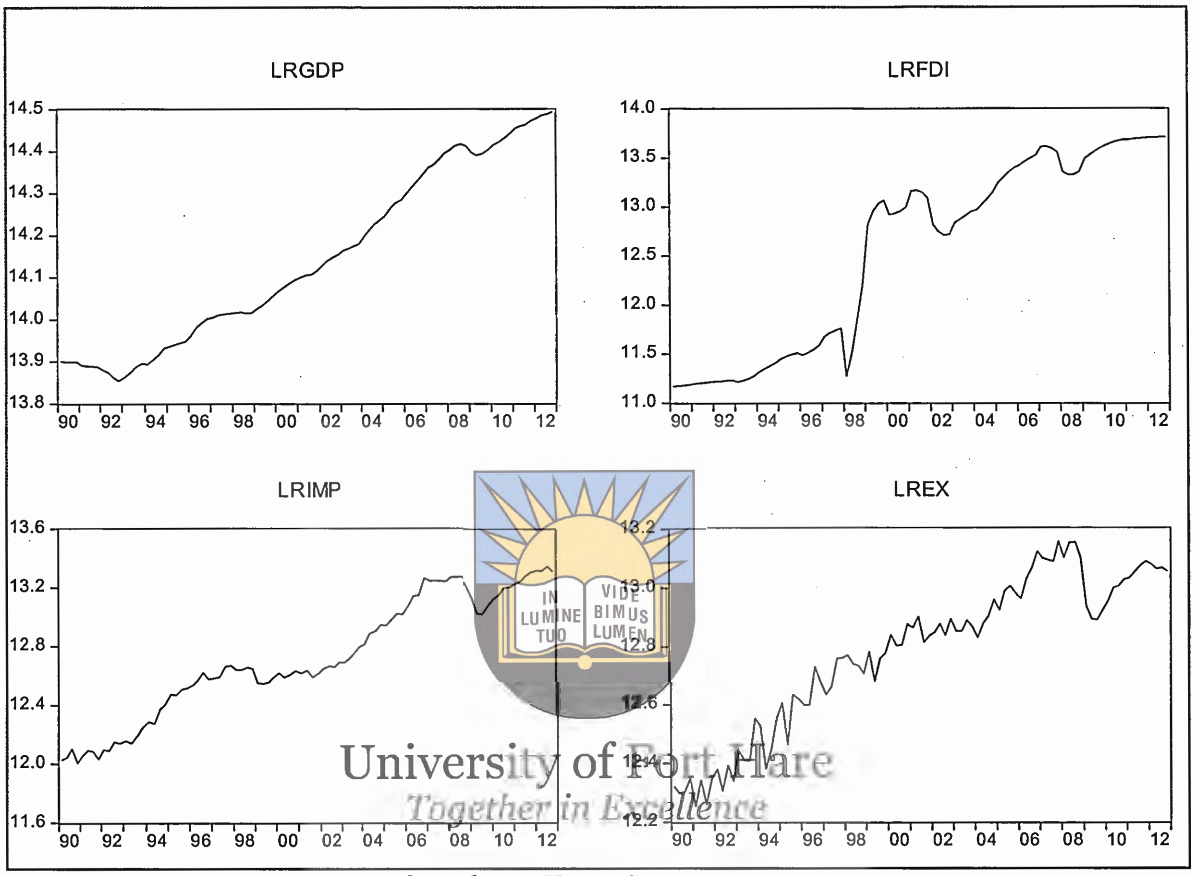
5.1 Introduction

This chapter will examine the empirical findings on the relationship between Foreign Direct Investment and economic growth in South Africa over the period of 1990-2012. Stationarity will be tested by employing the Augmented Dickey-Fuller (ADF) test as well as Phillips Perron. When variables are stationary it means they move along the mean, but if they are non-stationary it means the variables move further away from the mean (Brooks, 2008). Before the long-run relationship between Foreign Direct Investment and economic growth can be estimated, it is crucial to determine the order of integration in the variables employed in the study. Johansen test of co-integration will be employed in the study in order to test if there is a long-run relationship between Foreign Direct Investment and economic growth in South Africa. If cointegration is found to exist in the variables that the study employed, the Vector Error Correction Model will be estimated, but if there is no cointegration found in the variables employed in the study, then the Vector Autoregressive model will be estimated with variables in difference form.

5.2 The Stationarity Results

Graphical analysis will be performed in order to conduct informal testing for stationarity. The formal testing of stationarity will be performed through the Augmented Dickey-Fuller and Phillips-Perron unit root tests and the interpretation of the results obtained under both stationarity tests will be provided. Figure 5.1 is the graphical presentation of stationarity testing at levels while figure 5.2 is the graphical presentation of stationarity testing at first differences. These graphical presentations will determine the stationarity of all the variables that the study has employed.

Figure 5.1 Graphical Presentations of the Variables at Levels

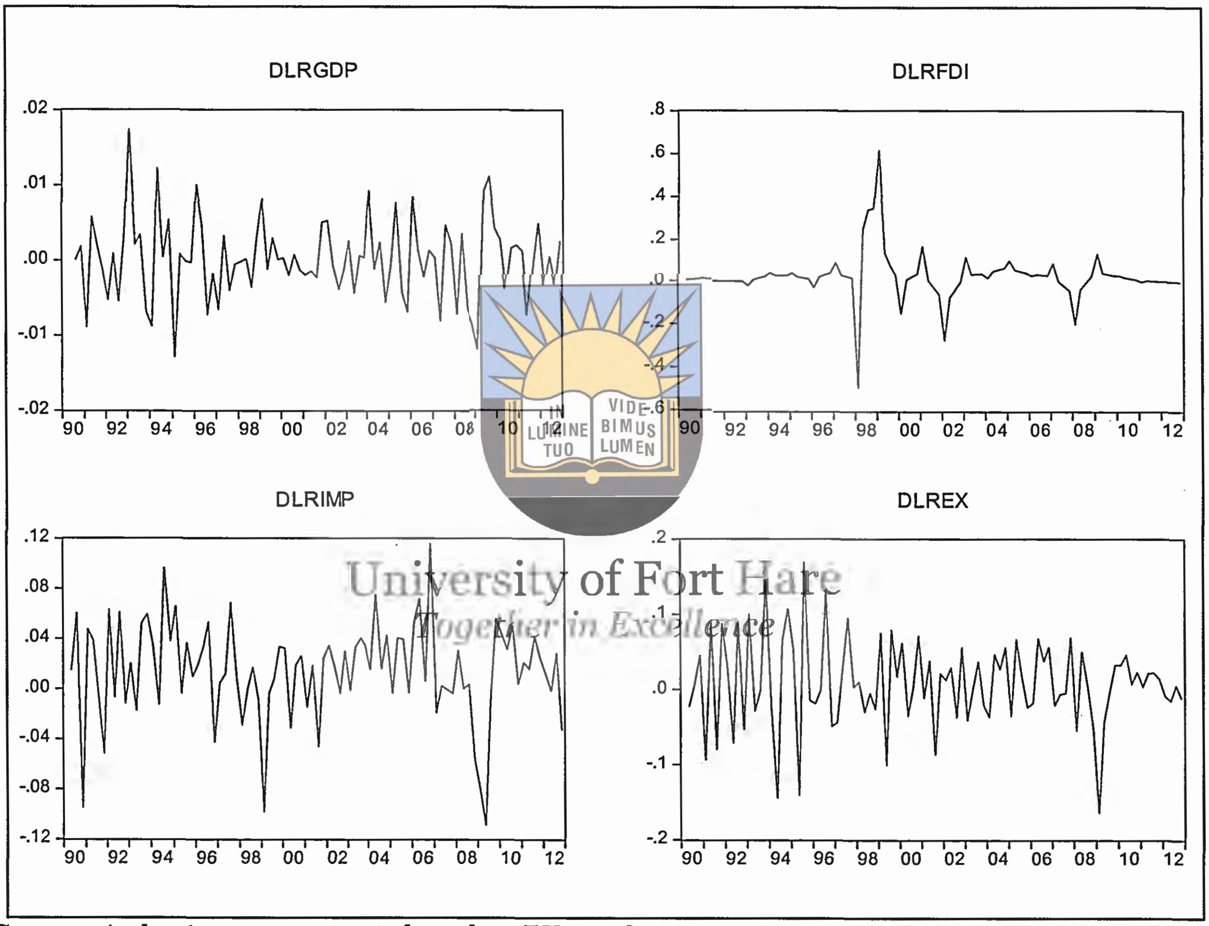


Source: Author's computation is based on EViews 8

Figure 5.1 depicts the logged values of the variables employed in the study in order to determine whether the variables employed in the study are stationarity or not. Figure 5.1 suggests that the log of real gross domestic product, log of real Foreign Direct Investment, log of real imports of goods and services and log of real exports of goods and services are non-stationary at levels because they move further away from the mean and do not fluctuate around the mean. Therefore, the graphical analysis provides evidence that the variables do not show a constant mean and variance because they show an upward trend and as a result these variables are considered to be non-stationary at levels. Analyzing figure 5.1 above, it can be concluded that all the variables employed in the study are non-stationary at levels and they need to be differenced in order for them to be stationary. As a result, when these variables are differenced once in order for them to be stationary, then they are integrated of order one I (1). However, the log of real Foreign Direct Investment and the log of real imports of goods and services might be stationary at levels, but with a deterministic trend. From figure 5.1 it can be deduced that the log of real gross domestic product is showing an upward trend from 1993-2012. The log of real Foreign Direct Investment shows a downward trend in 1998 meaning it decreased.

This decrease in log of Foreign Direct Investment was due to the economic crisis that occurred during the period 1997/1998. In conclusion, all the variables are stationary when differenced and figure 5.2 below displays the informal graphical results at first difference.

Figure 5.2 Graphical Presentations of the Variables at First Differences



Source: Author's computation is based on EViews 8

Figure 5.2 depicts the first difference values of log of real gross domestic product, log of real Foreign Direct Investment, log of real imports of goods and services and log of real exports of goods and services. The variables which are non-stationary and need to be differenced first are integrated of order one (I (1)) and they move further away from the mean whereas the ones that are stationary are integrated of order zero (I (0)) and they move along the mean. Employing non-stationary variables leads to spurious results being obtained (Brooks, 2008). In order to avoid the problem of obtaining spurious results, the variables should be checked for stationarity and non-stationary variables should not be employed but rather should be differenced up until they become stationary (Asteriou & Hall, 2011). The log of real Foreign Direct Investment and log of real imports of goods and services are stationary at levels and they are integrated of order zero I (0). The log of real gross domestic product and log of real exports of goods and services are all stationary at first difference because they all show a constant mean and variance. Since these variables are all stationary at first difference, they are integrated of the same order (which is I (1) in this case). However, it is crucial to also run the formal tests of stationarity in order to clearly see whether the variables are stationary at levels, first or at second difference as we cannot only rely on the graphical presentations.

5.2.1 The Augmented Dickey-Fuller and Phillips-Perron Unit Root Tests (Formal)

Table 5.1 displays the results of the Augmented Dickey-Fuller and Phillips-Perron test statistics on the variables employed in the study. Both tests reveal that all variables are stationary at first difference.

Table 5.1 The ADF and Phillips Perron Test Statistics Stationarity Results

Variable	Model	Lags	ADF Test	PP Test
			t-statistic	t-statistic
LRGDP	Trend	1	-3.281654*	-3.185193*
	Intercept	1	0.454646	1.152325
	None	1	2.881362	5.155918
DLRGDP	Trend	0	-4.131068***	-4.054267**
	Intercept	0	-4.023871***	-3.876767***
	None	0	-2.713209***	-2.485048**
LRFDI	Trend	5	-1.965324	-2.112322*
	Intercept	5	-1.026697	-0.934546
	None	5	1.688278	1.751381
DLRFDI	Trend	4	-4.001399**	-6.170219***
	Intercept	4	-3.994533***	-6.199388***
	None	4	-3.528217***	-6.009055***
LRIMP	Trend	1	-1.922443	-2.037265*
	Intercept	0	-0.923315	-0.926666
	None	0	3.410919	3.150410
DLRIMP	Trend	0	-8.727257***	-8.724613***
	Intercept	0	-8.755439***	-8.752333***
	None	0	-7.894405***	-8.016776***
LREX	Trend	0	-3.168429*	-2.890131
	Intercept	0	-1.569570	-1.468165
	None	1	1.771529	2.711347
DLREX	Trend	1	-9.105038***	-16.19233***
	Intercept	0	-12.98273***	-14.56493***

	None	0	-12.69713***	-12.99899***

Source: Author's computation based on EViews 8

**** Rejection of a null hypothesis of the presence of a unit root at 1% significance level*
*** Rejection of a null hypothesis of the presence of a unit root at 5% significance level*
** Rejection of a null hypothesis of the presence of a unit root at 10% significance level*

Table 5.1 above displays the stationarity results obtained by employing the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests. According to the results obtained in table 5.1, all variables except for real Foreign Direct Investment and real imports of goods and services are integrated of order one I (1) and are stationary at first difference. However, the real Foreign Direct Investment and the real imports of goods and services are stationary at levels with a deterministic trend. The empirical results of stationarity according to the Augmented Dickey-Fuller (ADF) test of stationarity suggest that real gross domestic product and real exports of goods and services are all non-stationary at levels because they do not move along the mean. Even so, the real Foreign Direct Investment and real imports of goods and services are stationary at levels with a deterministic trend and are integrated of order zero I (0).

The ADF stationarity results suggest that when the variables are differenced, they become stationary which means they move along the mean and they have a constant variance. The Phillips-Perron (PP) also suggests that the variables that the study has employed are all non-stationary at levels and they need to be differenced in order to be stationary or to move around the mean. The empirical findings of the ADF test agree with the empirical findings of the PP test since under both tests the variables are non-stationary at levels but when they are differenced they become stationary. Since all the variables under both the ADF and PP tests are stationary, they can be employed when estimating either VAR or VECM.

5.2.2 The Optimal Lag Length Determination

Asteriou and Hall (2011) argue that it is crucial to determine the optimal lag length in order to ensure the presence of Gaussian error terms as well as to ensure that such error terms are free from heteroskedasticity, autocorrelation and non-normality. The VAR lag order is selected according to the information criterion approach and such approach includes: Likelihood ratio (LR), Final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC) and Hannan-Quinn information criterion (HQ). Table 5.2 below depicts the VAR Lag Order Selection Criteria which determines the number of lags that the study will employ when running the econometric tests for determining the relationship between Foreign Direct Investment and economic growth in South Africa.

Table 5.2 Results of the VAR Lag Order Selection Criteria

VAR Lag Order Selection Criteria
Endogenous variables: LRGDP LRFDI LRIMP LREX
Exogenous variables: C
Date: 08/14/14 Time: 12:40
Sample: 1990Q1 2012Q4
Included observations: 84

Lag	LogL	LR	FPE	AIC	SC	HQ
0	199.9197	NA	1.11e-07	-4.664755	-4.549002	-4.618223
1	699.1125	938.9578	1.12e-12	-16.16934	-15.59058	-15.93669
2	747.2814	86.01598	5.21e-13	-16.93527	**-15.89349***	-16.51649*
3	757.4008	17.10656	6.03e-13	-16.79526	-15.29047	-16.19034
4	769.1810	18.79222	6.75e-13	-16.69479	-14.72698	-15.90374
5	800.2826	46.65240	4.81e-13	-17.05435	-14.62353	-16.07718
6	820.2427	28.03915*	4.52e-13*	-17.14863	-14.25481	-15.98534
7	835.1531	19.52552	4.84e-13	-17.12269	-13.76585	-15.77327
8	852.7581	21.37752	4.95e-13	-17.16091*	-13.34105	-15.62536

* 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

Source: Author's computation based on EViews 8

According to Table 5.2 above, the Schwarz information criterion (SC) and Hannan-Quinn information criterion (HQ) suggest that the study should employ 2 lags whereas the Likelihood Ratio (LR) test statistic and Final prediction error (FPE) indicate that the lags that should be employed in the study are 6 lags. However, the Akaike information criterion (AIC) suggests that the study should employ 8 lags. However, according to Ivanov and Kilian (2005), the lag length criterion that should be selected is the Schwarz information criterion (SC) because it gives more accurate results for all realistic sample sizes when the quarterly data is employed. Therefore, the Schwarz information criterion (SC) should be selected as the current study is employing quarterly data. As a result, the 2 lags provided by the Schwarz information criterion (SC) have been confirmed to be the optimal lag length that will be selected to examine the relationship between Foreign Direct Investment and economic growth. Lütkepohl (1993) explains that selecting a lag length that is higher than the true lag length causes the mean square forecast errors of the VAR to increase and also selecting a lag length that is less than the true one results in autocorrelated error terms. At 2 lags there is no root that lies outside the unit circle and this implies that the model is indeed stable at 2 lags.

5.2.3 The Stability Check

The roots of characteristic polynomial and the inverse roots of AR characteristic polynomial as per appendix 1 reveal that all the roots are lying inside the unit circle. These results suggest the VAR satisfies the stability check and as a result 2 lags are the correct lags that the study should employ as the model is stable at 2 lags.

5.2.4 Determination of the Correct Cointegrating Model: The Pantula Principle

In order to determine which deterministic trend assumption of test to employ, it is crucial to first follow the Pantula principle developed by Hansen and Juselius (1995). The Pantula principle acts as a guideline to selecting the correct deterministic trend assumption in order to determine if there is cointegration between the variables or not. The Pantula test involves arranging the models from the most restrictive to the least restrictive model. This study will therefore test from model 2 to 4 and the testing process will stop when the null cannot be rejected for the first time. Table 5.4 below displays the Pantula Principle results. The reason for leaving out models 1 and 5 it is because in the economic theory these models are non-realistic.

Table 5.3 The Pantula Principle test results –Trace Statistics

R	n-r	Model 2		Model 3		Model 4	
		Trace Statistic	Critical Values (0.05)	Trace Statistic	Critical Values (0.05)	Trace Statistic	Critical Values (0.05)
0	4	68.08957	54.07904	58.72576	47.85613	72.71299	63.87610
1	3	37.39797	35.19275	**28.28373***	29.79707	41.09523	42.91525
2	2	12.07724	20.26184	6.168235	15.49471	18.43386	25.87211
3	1	4.577109	9.164546	0.196887	3.841466	5.062273	12.51798

Source: Author's computation based on EViews 8

** Denotes the first time the null hypothesis of no cointegrating vector cannot be rejected*

Table 5.4 The Pantula principle test results –Max- Eigenvalue Statistics

r	n-r	Model 2		Model 3		Model 4	
		Max-Eigen Statistic	**Critical Values (0.05)**	**Max-Eigen Statistic**	**Critical Values (0.05)**	**Max-Eigenvalue Statistic**	**Critical Values (0.05)**
0	4	30.69160	28.58808	30.44203	27.58434	31.61776	32.11832
1	3	25.32074	22.29962	22.11549	21.13162	22.66138	25.82321
2	2	7.500128	15.89210	5.971348	14.26460	13.37158	19.38704
3	1	4.577109	9.164546	0.196887	3.841466	5.062273	12.51798

Source: Author's computation based on EViews 8

* *Denotes the first time the null hypothesis of no cointegrating vector cannot be rejected.*

Starting with the most restrictive model which is model 2, the trace statistic is 68.08957 at rank 0 and it is greater than the critical value 54.07904. Therefore, the null hypothesis of no cointegrating vector for model 2 at rank 0 is rejected with 95% confidence of it being true (rejected at 5% level of significance). Sørensen (1997) argues that if the rank (Π) is zero then there is no cointegration between the variables employed in the study. At rank 1 under model 2 the trace statistic is 37.39797 and it is greater than the critical value 35.19275. Therefore, the null hypothesis of no cointegrating vector is rejected with 95% confidence of it being true. The trace statistics at rank 3 for model 2 is 12.07724 and it is less than the critical value 20.26184. As a result, the null hypothesis of no cointegrating vector cannot be rejected and the testing stops here. The maximum eigenvalue statistic 30.69160 for model 2 at rank 0 is greater than the critical value 28.58808 and as a result the null hypothesis of no cointegrating vector is rejected with 95% confidence of it being true (rejected at 5% level of significance).

Moving to rank 1 under model 2, the maximum eigenvalue statistic which is 25.32074 is greater than the critical value 22.29962; therefore the null hypothesis of no cointegrating vector is rejected. At rank 2 under model 2 the maximum eigenvalue statistic 7.500128 is less than the critical value 15.89210. Therefore, the null hypothesis of no cointegrating vector is rejected. Since the maximum eigenvalue is less than the critical value at rank 2 under model 2, the testing process stops here. Now, moving to model 3 under the trace test, the trace statistic at rank 0 is 58.72576 and it is greater than the critical value 47.85613. As a result, the null hypothesis of no cointegrating vector is rejected with 95% level of confidence of it being true.

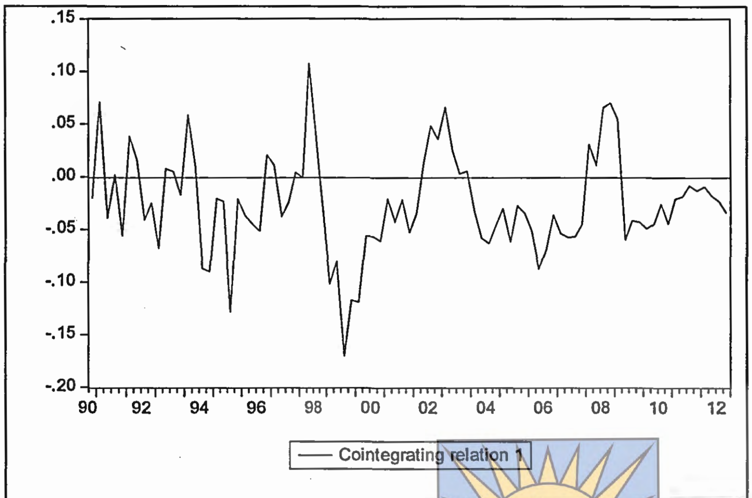
However, moving from rank 0 to rank 1 it should be noted that the trace statistic 28.28373 is less than the critical value 29.79707. Therefore, the null hypothesis at rank 1 under model 3 cannot be rejected and the testing process ends here. According to the Pantula Principle, model 3 at rank 1 under the trace test is selected as the correct model that the study should employ in order to test the relationship between Foreign Direct Investment and economic growth in South Africa. The reason for selecting the trace test results it is because trace test is regarded as having more power than the maximum eigenvalue test because it produces good results compared to the maximum eigenvalue test.

5.2.5 The Johansen Test of Cointegration

According to the Pantula Principle results, cointegration has been found to exist between Foreign Direct Investment and economic growth. What these empirical results imply is that there is a long-run relationship between Foreign Direct Investment and economic growth. Table 5.5 in appendix 3b displays the results of the Johansen cointegration test which suggest that there is presence of cointegration between the variables employed in the study. Lütkepohl *et al* (2001) suggest that the trace test is more superior to the maximum eigenvalue test and that it is recommended that the empirical studies [illegible] trace tests as they provide good results. Since the trace test is regarded to be more powerful than the maximum eigenvalue test then it implies that model 3 is the correct model to be employed in the study. According to the results obtained in model 3 when the trace test is employed, there is one cointegrating vector. This then suggests that there is a long-run relationship between Foreign Direct Investment and economic growth in South Africa over the period of 1990-2012.

As per table 5.5 in appendix 3b, the number of cointegrating equations that should be selected in determining the long-run relationship between the variables employed in the study is chosen by looking at either the trace statistic or the maximum eigenvalue statistic and comparing them to the critical values obtained under both tests (Brooks, 2008). The trace and maximum eigenvalue statistics are greater than the critical values at rank 0 and it means that the null hypothesis of no cointegrating vectors can be rejected with 95% confidence of it being true (5% level of significance). The trace statistic suggests that there is only one cointegrating vector at 5% significance level whereas the maximum eigenvalue statistic suggests that there are two cointegrating vectors at 5% level of significance. Since the trace test is regarded as being more powerful than the maximum eigenvalue test, it can therefore be concluded that there is one cointegrating equation at 5% level of significance.

Figure 5.3 The Cointegration Relationship Graph



Source: Author's computation based on EViews 8

Figure 5.3 displays the long-run relationship between the variables employed in the study and it also displays the number of cointegrating relations that the variables have. According to the cointegration results obtained in figure 5.3, there is one cointegrating relation. The variables have a constant variance and their movement is along the mean. The movement along the mean implies that there is a long-run relationship between the variables employed in the study. However, the study cannot only rely on the long-run results, but it has to also look at the short-run relationship between the variables employed in the study.

Some of the empirical studies that the current study has analyzed have only looked at the long-run relationship between Foreign Direct Investment and economic growth and left out the short-run relationship. The variables could have a positive relationship in the long-run, but in the short-run they could have a negative relationship. Therefore, it is crucial to analyze both the long-run as well as the short-run relationship between the variables. The determination of a long-run as well as a short-run relationship between the variables will be undertaken by estimating the Vector Error Correction Model which is a model that tests both the long-run and short-run relationship between variables employed in the study. In this manner, the estimation of VECM will give a clear understanding of the existence of the relationship between Foreign Direct Investment and economic growth when the variables are in the short-run as well as in the long-run. The next section of the study will therefore determine the long-run and short-run relationship between Foreign Direct Investment and economic growth.

5.3 The Vector Error Corrected Model

According to the results of the study, cointegration between the variables was found to exist and these results suggest that there is a long-run relationship between the variables employed in the study. Since the variables are cointegrated, the VECM will now be estimated. The Vector Error Correction Model does not only look at the long-run relationship between variables, but it also looks at the short-run relationship between the variables employed in the study. Table 5.6 depicts the long-run relationship between variables employed in the study.

Table 5.6 The Vector Error Correction Model Results

Dependent Variable: DLRGDP			
Variables	**Coefficient**	**SE**	**T-statistics**
DLRGDP	1.000000	-	-
DLRFDI (-1)	0.169229	0.01634	-10.3561***
DLRIMP (-1)	0.606397	0.05484	-11.0568***
DLREX (-1)	-0.761078	0.11165	6.81662***
C	14.05241	0.78516	-17.8975***
R^2	0.607140	Adjusted R^2	0.567855

Source: Author's computation based on EViews 8

**** Statistically significant at 1% level of significance*
*** Statistically significant at 5% level of significance*
** Statistically significant at 10% level of significance*

Table 5.6 above displays the results of the Vector Error Correction Model over the long-run. The long-run regression equation is given by:

$$DLRGDP = 14.05241 + 0.169229LRFDI + 0.606397LRIMP - 0.761078LREX + U_t \ldots\ldots\ldots (5.1)$$

()[1]	(0.78516)	(0.01634)	(0.05484)	(0.11165)
[ ][2]	[-17.8975]	[-10.3561]	[-11.0568]	[6.81662]

[1]Standard errors
[2] T-statistics

In the long-run, the empirical findings suggest that a 1% increase in real Foreign Direct Investment will cause real gross domestic product to increase by 16.92%. The empirical findings are statistically significant at 1% level of significance. According to the empirical results, in the long run there is a positive and statistically significant relationship between Foreign Direct Investment and economic growth in South Africa. These empirical findings suggest that Foreign Direct Investment has a major contribution towards economic growth in the long-run which means that if a country wants to experience a long-run sustained increase in growth it should consider promoting more Foreign Direct Investment inflows. The empirical findings of this study agree with the theory as well as the *a priori* expectation.

There is a positive significant relationship between real imports of goods and services and the real gross domestic product. According to the empirical results of the study displayed in table 5.6, when there is a 1% increase in real imports of goods and services, the real gross domestic product will increase by 60.64%. The empirical findings are statistically significant at 1% level of significance. Any positive changes in real imports of goods and services will cause the real gross domestic product to increase. However, the findings of this study do not agree with the *a priori* expectation. The current study has employed aggregate imports and total imports consist mainly of factor inputs and as a result, real imports of goods and services have a positive contribution towards economic growth. In addition, this could be explored in future studies.

An example would be when a domestic country imports some parts of a computer or computer software that will make the domestic country's business to be efficient in producing the output. Another reason why real imports of goods of services have a positive significant contribution towards the domestic economy's growth it is because the domestic economy exports small commodities and imports large commodities such as components employed in the automotive industry to produce automobiles. Cronje (2014) explained that about 70% of components (such as engines) utilized in the production process of Mercedes-Benz C-class cars are imported from Germany. Therefore, since the automotive industry is one of the great contributors towards Foreign Direct Investment, the 70% of components imported from Germany are the cause of a positive effect that the real imports of goods and services have on the domestic economy's growth. Again, Mercedes-Benz South Africa only produces and exports the Mercedes-Benz C-class cars and the other models and classes of Mercedes-Benz cars are imported (Cronje, 2014). As a result, imports of goods and services have a positive contribution towards real gross domestic product.

The empirical findings of the current study suggest that a 1% increase in real exports of goods and services will cause real gross domestic product to decrease by 60.64%. As a result, in the long-run the contribution that the real exports of goods and services have on economic growth is negative and statistically significant. The empirical results are statistically significant at 1% level of significance. The reason why the real exports of goods and services contribute negatively towards real gross domestic product is that South Africa's exports are relatively small and thus, have a little impact on economic growth. Also, since imports were shown to have a positive impact, this suggests that South Africa relies heavily on factor imports and these are having a greater impact on production and growth than exports.

According to Cronje (2014), only the Mercedes-Benz C-class cars are produced locally and sold abroad. These empirical results do not agree with the *a* priori expectation. The negative contribution of real exports of goods and services towards the economic growth can also be justified by the fact that in the automotive industry (a major participant in the Foreign Direct Investment activities) few commodities are exported and large amounts of commodities as well as components are imported. Lee and Huang (2002) support the existence of the negative relationship between real exports of goods and services and real gross domestic product with the argument that when exports increase because of Foreign Direct Investment inflows, the growth in exports will cause domestic country's growth to fall due to different distortions. Such distortions would include the policies that the domestic economy imposes as well as the nature of market imperfections (Bhagwati, 1979).

The adjusted R^2 of the VECM model reveals that about 56.79% of total variation in real gross domestic product is explained by real Foreign Direct Investment, real imports of goods and services and real exports of goods and services. In the long-run the real imports of goods and services have the greatest impact on real gross domestic product compared to other independent variables followed by real Foreign Direct Investment and then the real exports of goods and services. Table 5.7 below displays the short-run relationship between the variables employed in the study.

Table 5.7 The Short-run Vector Error Correction Model Results

Dependent Variable: DLRGDP			
Variables	**Coefficient**	**SE**	**T-statistics**
C	-	-	-
ECM (-1)	-0.054953	0.01575	3.48912
DLRFDI(-1)	0.004554	0.00493	-0.92287
DLRFDI(-2)	0.000577	0.00554	-0.10413
DLRIMP (-1)	-0.018736	0.01650	1.13549
DLRIMP (-2)	0.014144	0.01531	-0.92384
DLREX (-1)	0.005494	0.01241	-0.44276
DLREX (-2)	-0.005665	0.01086	0.52187

Source: Author's computation based on EViews 8

****Statistically significant at 1% level of significance*

*** Statistically significant at 5% level of significance*

** Statistically significant at 10% level of significance*

Table 5.7 depicts the short-run results of the variables employed in the study. The coefficient of the speed of adjustment for real gross domestic product as per table 5.7 is (-0.054953) and it is statistically significant at 1% level of significance. The sign of the coefficient of the speed of adjustment suggests that about 0.055% of disequilibrium is corrected. These empirical findings on the speed of adjustment imply that the real gross domestic product converges to the equilibrium. However, the speed of adjustment is relatively slow because only 0.055% of the adjustment is made to equilibrium. Thus, given any short-run shock, the economy will take longer to adjust to equilibrium. In the short-run at 1 lag the effect that the Foreign Direct Investment has on economic growth is statistically insignificant. As a result, there is no credible evidence of the contribution of Foreign Direct Investment towards real gross domestic product. It can therefore be concluded that in the short-run at 1 lag Foreign Direct Investment and economic growth do not have a relationship. Moving to 2 lags, the coefficient of real Foreign Direct Investment is insignificant which means that Foreign Direct Investment there is no credible evidence that Foreign Direct Investment contributes towards real gross domestic product.

Since these empirical results on the effect that Foreign Direct Investment has on economic growth are insignificant, it can therefore be concluded that Foreign Direct Investment at 2 lags in the short-run does not have a contribution towards economic growth. As a result, there is no relationship between Foreign Direct Investment and economic growth in the short-run at 2 lags. This could be because there has to be a long period in which business structures, for example, are constructed as well as the change of ownership when foreign firms acquire a 10 percent interest or more in the domestic economy's firms and it might take a while for Foreign Direct Investment to have a contribution towards the domestic economy's growth.

The coefficient of real imports of goods and services is statistically insignificant at 1 and 2 lags. As a result, in the short run there is no contribution of real imports of goods and services towards the real gross domestic product. These empirical findings suggest that in the short run there is no link between real imports of goods and services and real gross domestic product. Again, at both 1 and 2 lags in the short run the coefficient of real exports of goods and services is statistically insignificant. The statistical insignificance of the empirical results suggest that real exports of goods and services do not have a contribution towards real gross domestic product in the short run. This implies that South Africa as the domestic economy has not been exporting more.

Looking at the overall contribution that each independent variables has on the dependent variable in the short-run, it can be concluded that real Foreign Direct Investment, real imports of goods and services as well as the real exports of goods and services do not have any contribution towards the real gross domestic product. However, in the long run all the independent variables are statistically significant which implies that they have a contribution towards the real gross domestic product. Therefore, in the long run there is a positive statistically significant relationship between Foreign Direct Investment and economic growth whereas in the short run there is no relationship between these two variables.

5.4 Diagnostic Tests

The diagnostic tests are performed in order to ensure that the specified model is robust and that the classical linear regression model assumptions are not violated. The model that is robust is the one that correctly specified and has goodness of fit. The study tests the robustness of the model by employing the Autocorrelation LM test, White heteroskedasticity test (no cross) and Normality which will be based on the Jarque-Bera.

Table 5.8 The Results of the Diagnostic Tests

Tests	Statistic	DF	P-value
Autocorrelation LM test	LM-stat: 22.11325	16	0.1396
White Heteroskedasticity test	Chi-sq: 199.3714	180	0.1536
Normality test (Skewness)	Chi-sq: 2.300823	4	0.6806

Source: Author's computation based on EViews 8

Table 5.8 above displays the empirical findings on the diagnostic tests. The null hypothesis states that there is no autocorrelation whereas the alternative hypothesis states that there is autocorrelation. If the probability is less than 0.05, then the null hypothesis is rejected with conclusion that there is autocorrelation. However, if the probability is 0.05 or more, then the study fails to reject the null and the conclusion drawn is that there is no autocorrelation. The probability value of the Autocorrelation LM (Lagrange Multiplier) test at 2 lags is 0.1396 and it is greater than 0.05. Therefore, the study fails to reject the null and the conclusion is that there is no autocorrelation between the variables employed in the study. In this manner, the error terms of periods *t* and *s* are independent of each other and they are not correlated. This implies that there are no variables that have been omitted, the model has been correctly specified and that there were no systematic errors during the times of the measurement of the variables. The probability value for White heteroskedasticity test is 0.1536 and it is greater than 0.05. The study therefore rejects the null and the conclusion is that there is no presence of heteroskedasticity. The probability of the normality test under the skewness is 0.6806 and this value is greater than 0.05. In this manner, the study fails to reject the null and the conclusion drawn is that the dataset is normally distributed and this is supported by the skewness that exceeds 0.05. Therefore, the model has passed the goodness of fit meaning that the model has been correctly specified.

5.5 Conclusion

This chapter looked at the empirical analysis of the relationship between Foreign Direct Investment and economic growth in South Africa by employing various econometric techniques to measure the relationship between such variables. Both informal and formal tests were performed in the study to test for stationarity of the variables in question. The informal tests for stationarity were undertaken by employing the Augmented Dickey-Fuller test as well as the Phillips-Perron test whereas the graphical analysis was made in order to informally examine stationarity of the variables. All the variables that the study employed were differenced once and found to be stationary at first difference suggesting that they are integrated of order one (I(1)). The lag length was selected according to the VAR Lag Order Selection Criteria and it was discovered that the model was stable at 2 lags and as a result the study employed 2 lags in order to examine the relationship between Foreign Direct Investment and economic growth.

The stability tests were also performed (both in table as well as a graph) in order to ensure that the model was correctly specified. According to the two stability tests performed, the model was found to be indeed stable at 2 lags without any roots lying outside the unit circle. The Johansen cointegration approach was then employed in order to test for the long-run relationship between the variables employed in the study and the findings suggest that there is cointegration between the variables employed in the study. The cointegration graph was also analysed to informally examine any presence of cointegration between the variables that the study employed. The model employed in order to test for the presence of cointegration was selected according to the Pantula principle. According to the cointegration results there is a long-run relationship between the variables employed in the study.

Since cointegration between the variables that the study has employed was found to exist, the Vector Error Correction Model was then estimated in order to determine both the short and long-run relationship between Foreign Direct Investment and economic growth. It was then discovered that Foreign Direct Investment only has a positive significant contribution towards economic growth in the long-run and an insignificant contribution towards economic growth in the short-run. In the long-run, these empirical results agree with the *a priori* expectation as well as the theory that the empirical study adopted. The diagnostic tests were performed in this chapter and it was discovered that there is no presence of autocorrelation, heteroskedasticity and non-normality on the error terms.

Chapter 6

Summary, Conclusions, Policy Recommendations and Limitations

6.1 Summary and Conclusions

This chapter will give summary of all the chapters that were examined in the current study on the relationship between Foreign Direct Investment and economic growth in South Africa. Conclusions will be drawn in this chapter and policies pertaining to the empirical results obtained will also be recommended. The limitations of the study will also be explored in order to examine the areas which limited the current study.

A brief distinction between Foreign Direct Investment and portfolio investment was drawn in order to provide clarity on the difference between these two forms of investment. Foreign Direct Investment was therefore found to be a more stable form of investment compared to portfolio investment. The study analysed the relationship between Foreign Direct Investment and economic growth and much emphasis was placed on Foreign Direct Investment as a contributor towards economic growth. As theory suggests that Foreign Direct Investment contributes positively towards economic growth, it was necessary to establish the relationship between the two variables. The results showed that the large portion of Foreign Direct Investment that South Africa has been receiving it is Mergers and Acquisitions. Mergers and Acquisitions therefore increased the amount of Foreign Direct Investment inflows to South Africa leading to a positive contribution towards economic growth.

It was discovered in the current study that there were more Foreign Direct Investment inflows to South Africa during the democratic period than they were in the apartheid periods. These findings suggest that the trade policies that South Africa as a host country implemented during the democratic period concerning Foreign Direct Investment and foreign trade had an excessive positive effect towards attracting other foreign countries to directly invest in the domestic economy. The change of policy from inward orientation to outward orientation also enabled the domestic economy to attract more Foreign Direct Investment and foreign trade.

Foreign Direct Investment, real exports of goods and services, real imports of goods and services and real gross domestic product trends were analysed both in a table form as well as graphically in order to examine the direction in which the two variables are moving. It was therefore discovered that in most periods between 1978 and 2012 Foreign Direct Investment and economic growth were found to be moving in the same direction suggesting a positive relationship between these two variables.

The study explored a number of theories as well as empirical studies in order to determine the relationship between Foreign Direct Investment and economic growth. The empirical studies done on the relationship between Foreign Direct Investment and economic growth on South Africa as well as other foreign countries were also reviewed. In this regard, Foreign Direct Investment and economic growth were found to have a positive link. Quarterly data was employed to empirically investigate the relationship between Foreign Direct Investment and economic growth in South Africa for the period of 1990-2012. The South African Reserve Bank and World Bank websites were utilized in order to obtain the data that the study employed to test the relationship between Foreign Direct Investment and economic growth in South Africa. The stationarity of variables was explored by employing the Augmented Dickey-Fuller (ADF) as well as the Phillips-Perron (PP) stationarity tests. The test results under both the ADF and the PP tests suggested that all the variables were stationary when they were differenced and non-stationary at their levels.

The Johansen cointegration test was employed to examine the existence of a long-run relationship between Foreign Direct Investment and economic growth and the results suggested the presence of cointegration between the variables employed in the study. According to the cointegration graph, Foreign Direct Investment and economic growth move along the mean and such movement along the mean suggests a long-run relationship between these two variables. However, the Johansen cointegration test only examined the long-run relationship between Foreign Direct Investment and economic growth leaving the short-run relationship unexplained. In this manner, the Vector Error Correction Model was estimated in order to determine the existence of both the short and long-run relationships between Foreign Direct Investment and economic growth.

The Vector Error Correction Model results suggest that there is a positive significant long-run relationship between Foreign Direct Investment and economic growth in South Africa. The empirical findings suggest that a 1% increase in real Foreign Direct Investment will cause real gross domestic product to increase by 16.92% in the long run. The empirical findings are statistically significant at 1% level of significance. Regarding the real imports of goods and services, a 1% increase in real imports of goods and services will cause the real gross domestic product to increase by 60.64%. The empirical findings are statistically significant at 1% level of significance. The empirical findings of the current study suggest that a 1% increase in real exports of goods and services will cause real gross domestic product to decrease by 60.64%. However, the short-run relationship between Foreign Direct Investment and economic growth was found to be insignificant at both one and two lags meaning that there is no relationship between the two variables in the short-run. The coefficient of real imports of goods and services is statistically insignificant at 1 and 2 lags. As a result, in the short run there is no contribution of real imports of goods and services towards the real gross domestic product. These empirical findings suggest that in the short run there is no link between real imports of goods and services and real gross domestic product. Again, at both 1 and 2 lags in the short run the coefficient of real exports of goods and services is statistically insignificant. The statistical insignificance of the empirical results suggest that real exports of goods and services do not have a contribution towards real gross domestic product in the short run. This implies that South Africa as the domestic economy has not been exporting more.

The coefficient of the speed of adjustment for real gross domestic product as per table 5.7 is (-0.054953) and it is statistically significant at 1% level of significance. The sign of the coefficient of the speed of adjustment suggests that about 0.055% of disequilibrium is corrected. These empirical findings on the speed of adjustment imply that the real gross domestic product converges to the equilibrium. However, the speed of adjustment is relatively slow because only 0.055% of the adjustment is made to equilibrium. Thus, given any short-run shock, the economy will take longer to adjust to equilibrium. In the short-run at 1 lag the effect that the Foreign Direct Investment has on economic growth is statistically insignificant. As a result, there is no credible evidence of the contribution of Foreign Direct Investment towards real gross domestic product. It can therefore be concluded that in the short-run at 1 lag Foreign Direct Investment and economic growth do not have a relationship. Moving to 2 lags, the coefficient of real Foreign Direct Investment is insignificant which means that Foreign Direct Investment there is no credible evidence that Foreign Direct Investment contributes towards real gross domestic product.

The adjusted R^2 suggests that 56.79% of the variation in real gross domestic product has been explained by real Foreign Direct Investment, real imports of goods and services and real exports of goods and services. The null hypothesis of the study can therefore be rejected and it can be concluded that there is a positive significant relationship between Foreign Direct Investment and economic growth in South Africa at 1% level of significance. The model passed all the diagnostic tests and there were no signs of autocorrelation, heteroskedasticity and non-normality of the model and this provides evidence that the model was correctly specified.

6.2 Policy Implications and Recommendations

Based on the empirical findings of the study, in the short-run Foreign Direct Investment has an insignificant contribution towards economic growth under both one and two lags. However, in the long-run Foreign Direct Investment has a very significant contribution towards economic growth. In order for South Africa to attract more Foreign Direct Investment towards the domestic country, policy makers should implement policies that will support the exhibition of Foreign Direct Investment so that people are more knowledgeable about Foreign Direct Investment, the different forms of Foreign Direct Investment as well as how the economy can be improved by being involved in Foreign Direct Investment activities. South Africa should therefore implement policies that will allow the domestic country to provide freedom and openness for Foreign Direct Investment activities to take place so that more foreign-based firms such as the multinational corporations could freely directly invest in South African firms and industries.

There should be policies aimed at stimulating Foreign Direct Investment through offering incentives such as subsidies and tax incentives that will attract more Foreign Direct Investment into the domestic economy. Policies on domestic economy's labour costs, trade barriers, burdens on corporate tax and the rate of exchange are crucial for attracting Foreign Direct Investment into the economy. Therefore, policies that will maintain a lower corporate income tax should be implemented by the government of South Africa as the host country. The foreign direct investors should also be interviewed as a tactic to obtain feedback from foreign direct investors on their experiences concerning directly investing in the domestic economy and which aspects in terms of direct investment can be improved in South Africa as a host country in order to attract more foreign direct investing firms into the domestic economy. Based on the feedback from foreign investors, the policy makers in South Africa can then analyse the findings and look at the ways that will bring positive change to the economy.

Trade policies which allow other foreign countries to easily trade with the domestic country should be implemented in order to increase Foreign Direct Investment to South Africa as a domestic country. Industries that continuously receive more Foreign Direct Investment should be given incentives to expand their operations to attract even more Foreign Direct Investment towards South Africa as a host country. In order to ensure that Foreign Direct investment also has a positive significant contribution towards economic growth even in the short-run, there should be an improvement in South Africa's infrastructure, increase in the market size as well as to determine ways through which the rand currency could be appreciated. Such policies will result in Foreign Direct Investment having a positive significant contribution towards economic growth both in the short and long-run.

Stocks which are more attractive in the financial markets can be used as the basis of attracting more Foreign Direct Investment inflows and as a result implementing policies that will promote stocks traded in the financial markets will act as a basis for attracting foreign countries to directly invest in the domestic country. Again, in order to ensure that Foreign Direct Investment has a positive significant relationship with economic growth, the advanced technology brought in from foreign countries to the South African economy should not eradicate the number of people employed. This means that people should not be substituted by the technology as well as machines which have been brought in by the foreign countries, but rather these people should be trained and still be involved in the production processes so that they all contribute towards gross domestic product.

The host country should implement policies that will stabilize the host country's political conditions as well as policies that will cause the host country to have favourable economic conditions. Since the level of education has been regarded as one of the aspects that attract more Foreign Direct Investment, a solid educational background is crucial. Policies aimed at improving the quality of education offered in the domestic economy should also be implemented. Since it is hardly achievable to lower the unit costs of labour, the policy makers should rather focus on training people in order to equip them with the relevant expertise as well as provide them with a good system of education. Policies on unit labour costs will involve policies that will set the standard in which it is specified that little unskilled labour should be employed and the majority of labour employed should be the skilled. Since there is low rate of highly educated workers in South Africa, policies that will augment the share of people who are highly educated should be implemented as well.

The domestic country's government should spend more funds on Research and Development (R&D) in order to attract more Foreign Direct Investment to South Africa. The Research and Development are one of the aspects through which Foreign Direct Investment increases the domestic country's growth. It can be concluded that the Research and Development (R&D) causes the attainment of knowledge spillovers effects. Concerning the imports and exports of goods and services, South Africa as the domestic country should implement policies that will enable the domestic economy to typically import commodities that will assist in the production processes taking place in the domestic economy so that finished goods, with the assistance of imported commodities, can be sold within the domestic economy as well as abroad. Larger items such as Mercedes-Benz engines can be imported to further produce a Mercedes-Benz automobile. However, even though such large items are imported, in order for them to contribute positively towards the domestic economy's growth they should not cause the domestic markets to be distorted. Therefore, there should be some balance between goods and services that are exported as well as goods and services that are imported to ensure that both variables contribute positively towards the domestic economy's growth.

6.3 Limitations of the Study and Areas for further Research

There are many explanatory variables that can be employed to examine the relationship between Foreign Direct Investment and economic growth, but the current study only employed three explanatory variables. Further research on this study can be done by either adding more variables to the ones that the current study employed or by making Foreign Direct Investment variable a dependent variable rather than an independent variable. The contribution of Foreign Direct Investment towards economic growth can also be examined by employing annual data as well as monthly data.

Further research studies could be conducted by looking at Foreign Direct Investment and comparing it to the growth contributors such as government expenditure and domestic investment. Additional research can also be carried out by focusing on horizontal Foreign Direct Investment rather than the vertical one and therefore examine techniques in which Foreign Direct Investment can be improved between the African countries such as the SADC (Southern African Development Community) region.

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Appendices

Appendix 1 - Data Employed to examine the Relationship between FDI and GDP

Period	RGDP	RFDI	RIMP	REX
1990Q1	1087779	70649.4723	166948	224276
1990Q2	1086881	70940.1794	169353	219085
1990Q3	1085968	71317.6508	179857	220070
1990Q4	1086976	71771.3914	163543	230174
1991Q1	1078330	72538.6396	171450	209468
1991Q2	1075896	73011.1054	178150	228862
1991Q3	1075479	73449.6689	176798	211174
1991Q4	1073629	73857.1636	167866	230292
1992Q1	1066105	74217.5083	178791	237580
1992Q2	1059566	74577.0033	177537	221161
1992Q3	1047299	74921.5103	188648	240933
1992Q4	1038400	75253.7444	186413	228430
1993Q1	1047599	74050.3218	190168	252346
1993Q2	1059090	74996.2481	186836	245096
1993Q3	1074336	76490.0226	[illegible]	244647
1993Q4	1082295	78496.0458	208864	282343
1994Q1	1080753	81929.384	210217	275258
1994Q2	1092477	84474.2726	213423	238134
1994Q3	1104765	87090.3139	234971	253990
1994Q4	1123205	89770.881	244066	282510
1995Q1	1127262	93643.9266	260606	297914
1995Q2	1132267	95965.4131	259591	258686
1995Q3	1137155	97927.0116	269256	306329
1995Q4	1141643	99540.6401	271795	301801
1996Q1	1157662	97210.2733	276780	295965
1996Q2	1179346	99697.1544	286126	295602
1996Q3	1192729	103235.62	301682	336683
1996Q4	1204041	107755.237	289102	320387
1997Q1	1207500	117911.22	290278	306435
1997Q2	1214886	122218.416	293714	314917
1997Q3	1217424	125590.302	314552	346231
1997Q4	1219262	128083.775	317273	347171
1998Q1	1220803	78575.6548	308247	350529
1998Q2	1222530	100397.174	308139	339924
1998Q3	1219850	140691.204	313398	337899
1998Q4	1221029	198762.64	310515	329084
1999Q1	1232258	367755.66	281541	354626
1999Q2	1242065	421699.931	280396	320508
1999Q3	1255629	456032.994	282566	346758
1999Q4	1269437	471469.362	292088	352662
2000Q1	1283716	408019.164	301636	375023
2000Q2	1295527	412527.503	292271	361912

2000Q3	1308358	423246.358	297760	362620
2000Q4	1319489	439917.434	305589	389275
2001Q1	1328058	519871.476	301051	384716
2001Q2	1334697	524167.743	306624	399522
2001Q3	1338242	511877.774	292729	366304
2001Q4	1348532	483966.469	299844	373913
2002Q1	1366030	369163.5	310223	378494
2002Q2	1382572	343537.04	315663	389505
2002Q3	1393913	331726.14	314513	375073
2002Q4	1403225	332956.269	323958	396462
2003Q1	1416210	374785.415	323546	380427
2003Q2	1423126	388933.347	334496	380240
2003Q3	1430849	404080.772	348216	394472
2003Q4	1439103	420318.541	360318	386081
2004Q1	1460889	428569.085	365827	372031
2004Q2	1481304	451125.643	394201	389597
2004Q3	1505525	478450.314	400568	400218
2004Q4	1521602	510355.528	417912	423042
2005Q1	1537071	563922.575	416469	408338
2005Q2	1564655	597274.923	[illegible]	436334
2005Q3	1585991	627881.577	450905	443281
2005Q4	1596611	655746.412	449305	432725
2006Q1	1620881	675557.734	478838	424757
2006Q2	1647548	700205.064	509044	454334
2006Q3	1671028	724143.753	512079	471462
2006Q4	1697027	747286.891	574887	498531
2007Q1	1723976	814461.341	563947	487871
2007Q2	1737298	817356.496	565146	484417
2007Q3	1758806	802630.828	564515	481834
2007Q4	1784580	771574.226	562228	516106
2008Q1	1797770	634304.951	579579	488518
2008Q2	1817405	613337.573	579428	513279
2008Q3	1825454	612571.551	581379	514691
2008Q4	1817747	630719.47	549574	488296
2009Q1	1788585	720371.331	507032	414318
2009Q2	1776243	751832.107	454674	396348
2009Q3	1783768	779859.344	452029	394823
2009Q4	1799004	804714.229	477973	407727
2010Q1	1819387	829025.733	499114	420859
2010Q2	1832882	847245.788	514973	440421
2010Q3	1849552	861768.676	541522	443488
2010Q4	1870211	872690.102	543611	453608
2011Q1	1893528	874238.774	555061	455217
2011Q2	1903012	880681.341	563800	465032
2011Q3	1911466	886107.63	587739	475358
2011Q4	1929366	890552.643	602288	481889

2012Q1	1940989	894051.015	608966	477239
2012Q2	1953619	896636.962	607979	469814
2012Q3	1959889	898344.223	625397	471787
2012Q4	1971279	899206.01	604950	465896

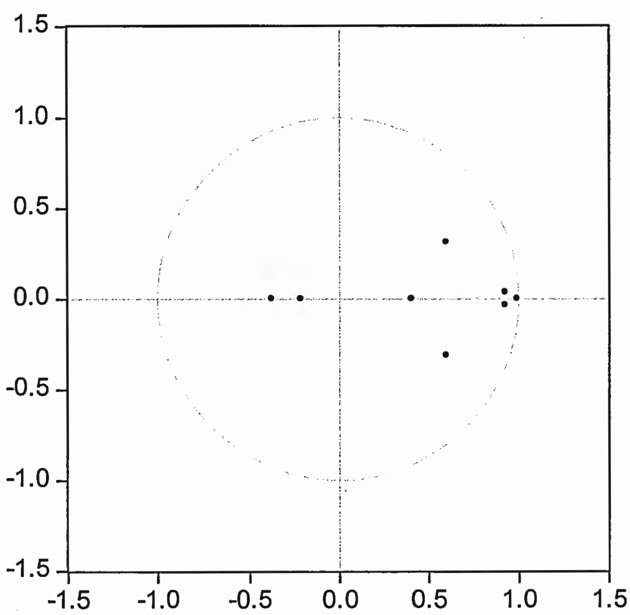
Appendix 2 – Estimated Stability of Model at 2 lags

Roots of Characteristic Polynomial
Endogenous variables: LRGDP LRFDI LRIMP LREX
Exogenous variables: C
Lag specification: 1 2
Date: 08/14/14 Time: 12:43

Root	Modulus
0.992424	0.992424
0.926567 - 0.036455i	0.927284
0.926567 + 0.036455i	0.927284
0.600600 - 0.312783i	0.677165
0.600600 + 0.312783i	0.677165
0.407673	0.407673
-0.378089	0.378089
-0.212467	0.212467

No root lies outside the unit circle.
VAR satisfies the stability condition.

Inverse Roots of AR Characteristic Polynomial



Appendix 3a – The Vector Error Correction Estimates

Vector Error Correction Estimates
Date: 08/14/14 Time: 12:47
Sample (adjusted): 1990Q4 2012Q4
Included observations: 89 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
LRGDP(-1)	1.000000
LRFDI(-1)	-0.169229 (0.01634) [-10.3561]
LRIMP(-1)	-0.606397 (0.05484) [-11.0568]
LREX(-1)	0.761078 (0.11165) [6.81662]
C	-14.05241 (0.78516) [-17.8975]

Error Correction:	D(LRGDP)	D(LRFDI)	D(LRIMP)	D(LREX)
CointEq1	-0.054953 (0.01575) [-3.48912]	0.809614 (0.37386) [2.16557]	-0.121891 (0.12622) [-0.96569]	-0.463189 (0.16356) [-2.83200]
D(LRGDP(-1))	0.748299 (0.10773) [6.94633]	0.878169 (2.55712) [0.34342]	3.198143 (0.86334) [3.70439]	3.068390 (1.11869) [2.74284]
D(LRGDP(-2))	-0.033576 (0.10530) [-0.31886]	1.335548 (2.49958) [0.53431]	-1.289953 (0.84391) [-1.52854]	-2.565723 (1.09352) [-2.34630]
D(LRFDI(-1))	-0.004554 (0.00493) [-0.92287]	0.478262 (0.11713) [4.08320]	-0.031640 (0.03955) [-0.80008]	-0.078240 (0.05124) [-1.52689]
D(LRFDI(-2))	-0.000577 (0.00554) [-0.10413]	0.227975 (0.13155) [1.73296]	-0.046455 (0.04441) [-1.04593]	-0.050681 (0.05755) [-0.88063]
D(LRIMP(-1))	0.018736 (0.01650) [1.13549]	0.520906 (0.39167) [1.32996]	-0.054074 (0.13224) [-0.40892]	0.349263 (0.17135) [2.03832]
D(LRIMP(-2))	-0.014144 (0.01531) [-0.92384]	0.249386 (0.36343) [0.68620]	0.027067 (0.12270) [0.22059]	0.069154 (0.15899) [0.43495]
D(LREX(-1))	-0.005494 (0.01241)	-0.571974 (0.29452)	-0.013430 (0.09944)	-0.409415 (0.12885)

	[-0.44276]	[-1.94203]	[-0.13506]	[-3.17750]
D(LREX(-2))	0.005665	-0.427945	0.002092	-0.164553
	(0.01086)	(0.25768)	(0.08700)	(0.11273)
	[0.52187]	[-1.66073]	[0.02404]	[-1.45969]
R-squared	0.607140	0.196572	0.226831	0.446321
Adj. R-squared	0.567855	0.116229	0.149514	0.390953
Sum sq. resids	0.001637	0.922113	0.105110	0.176483
S.E. equation	0.004523	0.107361	0.036247	0.046968
F-statistic	15.45439	2.446670	2.933780	8.061012
Log likelihood	358.9345	77.06717	173.7061	150.6455
Akaike AIC	-7.863696	-1.529599	-3.701261	-3.183044
Schwarz SC	-7.612036	-1.277939	-3.449601	-2.931384
Mean dependent	0.006699	0.028476	0.013629	0.008427
S.D. dependent	0.006880	0.114203	0.039305	0.060184

Determinant resid covariance (dof adj.)	5.45E-13
Determinant resid covariance	3.56E-13
Log likelihood	770.3936
Akaike information criterion	-16.39087
Schwarz criterion	-15.24442

Appendix 3b -Table 5.5 The Johansen Cointegration Test Results

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No of CE (s)	Eigenvalue	Trace Statistic	0.05 Critical value	Prob.**
None*	0.289684	58.72576	47.85613	0.0035
At most 1	0.220021	28.28373	29.79707	0.0739
At most 2	0.064893	6.168235	15.49471	0.6756
At most 3	0.002210	0.196887	3.841466	0.6572

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

** MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No of CE (s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical value	Prob.**
None*	0.289684	30.44203	27.58434	0.0209
At most 1*	0.220021	22.11549	21.13162	0.0363

At most 2	0.064893	5.971348	14.26460	0.6169
At most 3	0.002210	0.196887	3.841466	0.6572

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0,05 level

*denotes rejection of the hypothesis at the 0,05 level

**McKinnon-Haug-Michelis (1999) p-values

Appendix 4a – The VEC Residual Serial Correlation LM Tests

VEC Residual Serial Correlation LM Tests
Null Hypothesis: no serial correlation at lag order h
Date: 08/14/14 Time: 12:47
Sample: 1990Q1 2012Q4
Included observations: 89

Lags	LM-Stat	Prob
1	17.20929	0.3722
2	**22.11325**	**0.1396**
3	24.44839	0.0802
4	55.37103	0.0000
5	17.97419	0.3254
6	17.82892	0.3340
7	22.12486	0.1392
8	28.09263	0.0308
9	28.04358	0.0312
10	17.32993	0.3646
11	10.58486	0.8344
12	24.27456	0.0837

Probs from chi-square with 16 df.

Appendix 4b- The VEC Residual Heteroskedasticity Tests: No Cross

VEC Residual Heteroskedasticity Tests: No Cross Terms (only levels and squares)
Date: 08/14/14 Time: 12:48
Sample: 1990Q1 2012Q4
Included observations: 89

Joint test:

Chi-sq	df	Prob.
199.3714	180	0.1536

Individual components:

Dependent	R-squared	F(18,70)	Prob.	Chi-sq(18)	Prob.
res1*res1	0.389255	2.478560	0.0036	34.64367	0.0105
res2*res2	0.256678	1.342879	0.1895	22.84432	0.1966
res3*res3	0.192396	0.926454	0.5507	17.12326	0.5146
res4*res4	0.129829	0.580222	0.9022	11.55482	0.8693
res2*res1	0.451714	3.203921	0.0002	40.20254	0.0020
res3*res1	0.178061	0.842471	0.6457	15.84744	0.6032
res3*res2	0.181528	0.862515	[illegible]	16.15604	0.5817
res4*res1	0.138470	0.625047	0.8679	12.32387	0.8301
res4*res2	0.210073	1.031208	0.4256	18.69646	0.4107
res4*res3	0.243898	1.254448	0.2452	21.70689	0.2453

Appendix 4c – The VEC Residual Normality Tests

VEC Residual Normality Tests
Orthogonalization: Cholesky (Lutkepohl)
Null Hypothesis: residuals are multivariate normal
Date: 08/14/14 Time: 12:48
Sample: 1990Q1 2012Q4
Included observations: 89

Component	Skewness	Chi-sq	df	Prob.
1	0.243814	0.881771	1	0.3477
2	0.083645	0.103782	1	0.7473
3	-0.197685	0.579676	1	0.4464
4	-0.222690	0.735594	1	0.3911
Joint		2.300823	4	0.6806