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**THE DETERMINANTS OF FOREIGN DIRECT INVESTMENTS IN
THE MOTOR INDUSTRY IN SOUTH AFRICA**

BY

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ABSTRACT

The recent surge in foreign capital inflows into developing countries has generated interest among researchers wanting to analyse the major determinants of Foreign Direct Investments in the motor industry (FDI_{s_m}). This dissertation investigates the determinants of FDI in the motor industry in South Africa. The underpinning theoretical literature in this study is the Micro-level theory of FDI and the Eclectic theory as well as empirical literature from several authors. The study used quarterly time series data, which covers the period 1994q1- 2008q4.

FDIs are modeled as the function of economic growth, interest rates, exchange rate, education and the openness of the country. The variables in the model are tested for stationarity. Cointegration analysis was also used to test for long run relationships between the variables. The trace and the maximum eigenvalue tests suggest that there are at least two cointegration relationships, an error correction modelling technique is used to establish the determinants of foreign direct investment. The error correction model was estimated which provided both long run and short run parameter estimates. The results show that economic growth, education and the openness of the country are positively related to foreign direct investment in the motor industry. Interest rates and exchange rates negatively affect foreign direct investment in the motor industry in South Africa.

The results of this study are also supported by the impulse response and variance decomposition tests. The policy recommendation that emanate from this study is that efforts should be made to boost the level of economic growth in order to enhance and attract more foreign investors. It is therefore important for the government to pursue policies that will encourage economic growth.

DECLARATION

I, the undersigned, **Siyabulela Onceya**, student number **200603950**, do hereby declare that this dissertation is my original work with the exception of quotations and references whose sources are acknowledged and that it has not been submitted, and will not be presented at another University for similar or any other degree award.

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Signature

.....

Date

ACKNOWLEDGEMENTS

Firstly, I want to thank God for giving me the power and strength in making this study to be a success. I want to thank my family for their support. My parents Mr & Mrs Onceya, I couldn't have done this without your love, continuous support and encouragement.

I would like to thank the Department of Transport for the financial assistance. My gratitude goes to my supervisor Dr. R Ncwadi, who guided, supported and encouraged me. Thank you very much.

DEDICATION

I dedicate this study to myself. It has been a long way. To my parents, I have no words to thank you, I love you.

LIST OF ACRONYMS

ADF	AUGMENTED DICKEY-FULLER
CPI	CONSUMER PRICE INDEX
CSA	COUNTRY SPECIFIC ADVANTAGES
CREFSA-DFI	CENTRE FOR RESEARCH INTO ECONOMICS AND FINANCE IN
DTI	DEPARTMENT of TRADE and INDUSTRY
DF	DICKEY FULLER
ECM	ERROR CORRECTION MODELS
EDU	EDUCATION
EXCR	EXCHANGE RATES
FDI	FOREIGN DIRECT INVESTMENT
FMCSA	FORD MOTOR COMPANY SOUTH AFRICA
FPI	FOREIGN PORTFOLIO INVESTMENT
FSA	FIRM SPECIFIC ADVANTAGE
GDP	GROSS DOMESTIC PRODUCT
GEAR	GROWTH, EMPLOYMENT AND REDISTRIBUTION
GMSA	GENERAL MOTORS SOUTH AFRICA
IR	INTEREST RATES
MDG	MILLENIUM DEVELOPMENT GOAL
MIDP	MOTOR INDUSTRY DEVELOPMENT PROGRAMME
LM	LANGRANGE MULTIPLIER
NAAMSA	NATIONAL ASSOCIATION of AUTOMOBILE MANUFACTURES SOUTH AFRICA
MNE	MULTINATIONAL ENTEPRISES
OC	OPENNESS OF THE COUNTRY
OECD	ORGANISATION for ECONOMIC Co-OPERATION and DEVELOPMENT

OEM's	ORIGINAL EQUIPMENT MANUFACTURES
R&D	RESEARCH AND DEVELOPMENT
SARB	SOUTH AFRICAN RESERVE BANK
SSA	SUB- SAHARAN AFRICA
STATSSA	STATISTICS SOUTH AFRICA
VAR	VECTOR AUTO REGRESSIVE
VECM	VECTOR ERROR CORRECTION MODEL
VWSA	VOLKSWAGEN SOUTH AFRICA

TABLE OF CONTENTS

ABSTRACT.....	i
DECLARATION.....	ii
ACKNOWLEDGEMENTS.....	iii
DEDICATION.....	iv
LIST OF ACRONYMS.....	v
LIST OF FIGURES.....	x
LIST OF TABLES.....	xi
CHAPTER ONE.....	1
1. INTRODUCTION AND BACKGROUND.....	1
1.2 PROBLEM STATEMENT.....	3
1.3 OBJECTIVE OF THE STUDY.....	3
1.4 HYPOTHESIS.....	4
1.5 SIGNIFICANCE OF THE STUDY.....	4
1.6 LITERATURE REVIEW.....	4
1.6.1 THEORETICAL LITERATURE REVIEW.....	4
1.6.2 THE ECLECTIC THEORY.....	4
1.6.3 MICRO- LEVEL THEORY OF FDI.....	6
1.6.2 EMPIRICAL LITERATURE.....	6
1.7 RESEARCH METHODOLOGY.....	8
1.7.1 DATA SOURCES.....	9
1.7.2 DATA ANALYSIS.....	9
1.8 OUTLINE OF THE STUDY.....	9
CHAPTER TWO.....	10
LITERATURE REVIEW.....	10
2.1 INTRODUCTION.....	10
2.2 THEORETICAL LITERATURE.....	10
2.2.1 The ECLECTIC THEORY.....	10
2.2.2 MICRO-LEVEL THEORY OF FDI.....	16
2.3 EMPIRICAL LITERATURE ON FDI.....	19

2.3.1 STUDIES IN DEVELOPING COUNTRIES	19
2.3.2 STUDIES IN DEVELOPED COUNTRIES	29
2.3.3 ASSESSMENT OF LITERATURE	33
TABLE 2.1: SUMMARY OF SELECTED EMPIRICAL LITERATURE ON THE DETERMINANTS OF FDI IN THE MOTOR INDUSTRY	35
2.4 CONCLUDING REMARKS	36
CHAPTER THREE	37
AN OVERVIEW OF THE DETERMINANTS OF FOREIGN DIRECT INVESTMENTS IN SOUTH AFRICA.....	37
3.1 INTRODUCTION.....	37
3.2. HISTORICAL OVERVIEW OF THE FOREIGN DIRECT INVESTMENT IN SOUTH AFRICA	37
3.2.1 FOREIGN DIRECT INVESTMENT IN THE MOTOR INDUSTRY IN SOUTH AFRICA	39
FIGURE 3.1 FOREIGN DIRECT INVESTMENTS IN THE MOTOR INDUSTRY IN SOUTH AFRICA	39
3.2.2 ECONOMIC GROWTH.....	40
FIGURE 3.2 GROWTH DOMESTIC PRODUCT IN SOUTH AFRICA	41
FIGURE 3.3 CONTRIBUTION OF MOTOR INDUSTRY TO THE GDP IN SOUTH AFRICA	42
3.2.3 INTEREST RATES	43
FIGURE 3.4 PRIME INTEREST RATES IN SOUTH AFRICA FROM 1990- 2008.....	43
3.2.4 EXCHANGE RATES	44
FIGURE 3.5 NOMINAL EXCHANGE RATES IN SOUTH AFRICA.....	45
3.2.5 EDUCATION.....	45
FIGURE 3.6 NUMBER OF PEOPLE WHO ACCESSED FORMAL EDUCATION IN SOUTH AFRICA	46
3.2.6 HISTORY OF THE MOTOR INDUSTRY DEVELOPMENT PROGRAMME.....	47
3.2.7 OPENNESS OF THE COUNTRY	48
FIGURE 3.7 OPENNESS OF THE COUNTRY	49
FIGURE 3.8 MOTOR INDUSTRY PERFORMANCE SINCE 1995- 2010 NEW SALES AND PROJECTIONS	50
3.2.7 OTHER DETERMINANTS OF FOREIGN INVESTMENT	50
3.2.7.1 INFRASTRUCTURE	50
3.2.7.2 INTERNATIONAL RESERVES	51

3.2.7.3 EXTERNAL DEBT	51
3.2.7.4 NATURAL RESOURCE AVAILABILITY	51
3.2.7.5 RETURN OF INVESTMENT	52
3.2.8 CONCLUDING REMARKS	52
CHAPTER 4	54
RESEARCH METHODOLOGY.....	54
4.1 INTRODUCTION.....	54
4.2 MODEL SPECIFICATION	54
4.3 DEFINITION AND MEASUREMENT OF VARIABLES.....	55
4.4 EXPECTED RELATIONSHIPS.....	56
4.5 ESTIMATION TECHNIQUES	56
4.6 DATA ANALYSIS	57
4.7 TESTING FOR STATIONARITY/ UNIT ROOT.....	57
4.8 COINTEGRATION	59
4.9 ERROR CORRECTION MODEL.....	62
4.10 DIAGNOSTICS CHECK.....	63
4.10.1 RESIDUAL NORMALITY TEST	63
4.10.2 HETEROSKEDASTICITY	64
4.10.3 AUTOCORRELATION LM TEST	64
4.11 IMPULSE RESPONSE AND VARIANCE DECOMPOSITION.....	64
4.11.1 IMPULSE RESPONSE ANALYSIS	65
4.11.2 VARIANCE DECOMPOSITION ANALYSIS.....	65
4.12 CONCLUDING REMARKS	66
CHAPTER FIVE	67
EMPIRICAL ANALYSIS AND FINDINGS	67
5.1 INTRODUCTION.....	67
5.2 STATIONARITY/ UNIT ROOT TEST	67
TABLE 5.1: STATIONARITY TESTS.....	68
FIGURE 5.1: PLOTS ILLUSTRATION OF VARIABLES IN LEVELS	69
FIGURE 5.2: GRAPHICAL ILLUSTRATION OF VARIABLES AFTER FIRST DIFFERENCING	70
5.3 COINTEGRATION.....	71
TABLE 5.2: LAG LENGTH INFORMATION CRITERIA	71

TABLE 5.3: JOHANSEN COINTEGRATION RANK TEST RESULTS	72
FIGURE 5.3: JOHANSEN COINTEGRATING RELATIONSHIPS	74
5.2.3 ERROR CORRECTION AND THE LONG RUN RELATIONSHIP	74
TABLE 5.4: VECM LONG RUN ESTIMATES	75
5.4 SHORT RUN PARAMETERS	77
TABLE 5.5: VECM SHORT RUN PARAMETERS	77
TABLE 5.6 DIAGNOSTICS TEST	78
5.2.5 IMPULSE RESPONSE AND VARIANCE DECOMPOSITION	80
FIGURE 5.4 IMPULSE RESPONSE OF ALL VARIABLES IN THE FOREIGN DIRECT INVESTMENT MODEL	81
TABLE 5.7 VARIANCE DECOMPOSITION OF FDI	82
FIGURE 5.5 THE VARIANCE DECOMPOSITION OF THE VARIABLES IN THE MODEL.....	83
5.3 CONCLUDING REMARKS	84
CHAPTER 6	85
SUMMARY, IMPLICATIONS, CONCLUSION & RECOMMENDATIONS	85
6.1 INTRODUCTION.....	85
6.2 SUMMARY OF THE MAIN FINDINGS	85
6.2 POLICY IMPLICATIONS AND RECOMMENDATIONS	87
6.3 LIMITATIONS OF THE STUDY AND AREAS FOR FURTHER RESEARCH	89
REFERENCES	90
National Association of Automobile Manufacturers South Africa Available online at http://www.naamsa.co.za Accessed on 19 April 2011	97
APPENDIX I	100
Raw Data.....	100

LIST OF FIGURES

FIGURE 3.1 FOREIGN DIRECT INVESTMENT IN THE MOTOR INDUSTRY IN SOUTH AFRICA.....	39
FIGURE 3.2 ECONOMIC GROWTH IN SOUTH AFRICA.....	41

FIGURE 3.3 CONTRIBUTION OF MOTOR INDUSTRY TO THE GDP IN SOUTH AFRICA.....	43
FIGURE 3.4 INTERST RATES IN SOUTH AFRICA.....	44
FIGURE 3.5 EXCHANGE RATES IN SOUTH AFRICA.....	46
FIGURE 3.6 EDUCATION LEVELS IN SOUTH AFRICA.....	47
FIGURE 3.7 OPENNESS OF THE COUNTRY.....	49
FIGURE 3.8 INDUSTRY PERFORMANCE SINCE 1995 NEW SALES AND PROJECTIONS.....	50
FIGURE 5.1 PLOTS ILLUSTRATION OF VARIABLES IN LEVELS.....	69
FIGURE 5.2 GRAPHICAL ILLUSTRATION OF VARIABLES AFTER FIRST DIFFERENCING.....	70
FIGURE 5.3 JOHANSENS COINTEGRATING RELATIONSHIPS.....	74
FIGURE 5.4 IMPLUSE RESPONSE OF ALL VARIABLES IN THE FOREIGN DIRECT INVESTMENT MODEL.....	81
FIGURE 5.5 VARIANCE DECMPOSITION OF THE VARIABLES IN THE MODEL.....	83

LIST OF TABLES

TABLE 2.1 SUMMARY OF SELECTED EMPIRICAL LITERATURE ON THE DETERMINANTS OF FDI _s IN THE MOTOR INDUSTRY.....	35
TABLE 5.1 STATIONARITY TESTS.....	68
TABLE 5.2 LAG LENGTH INFORMATION CRITERIA.....	71
TABLE 5.3 JOHANSEN COINTEGRATION RANK TEST RESULTS.....	73
TABLE 5.4 VECM LONG RUN ESTIMATES.....	75

TABLE 5.5 VECM SHORT RUN PARAMETERS.....	77
TABLE 5.6 DIAGNOSTICS TEST.....	78
TABLE 5.7 VARIANCE DECOMPOSITION OF FDI.....	82

CHAPTER ONE

1. INTRODUCTION AND BACKGROUND

Foreign Direct Investment (FDI) is a measure of foreign ownership of productive assets, such as factories, mines and land (Asiedu, 2002). FDI is regarded as an engine of growth as it provides much needed capital for investment, and boosts the economy of South Africa. Further FDI aids local firms to become more productive by adopting more efficient technology or physical capital. FDI contributes to growth in a substantial manner because it is more stable than other forms of capital flows (Asiedu 2002).

Foreign Direct Investment (FDI) is seen as a key driver of economic growth and development. FDI does not just boost capital formation but also enhances the quality of the capital stock (Gorg & Greenaway; 2004:189). As a result of the potential role of FDI in accelerating growth and economic transformation, many developing countries particularly South Africa seek such investment to accelerate its development.

The boom of FDI flows towards the automobile industry since the early 1990's indicates that multinational enterprises have increasingly considered the host countries to be profitable investment locations. Various experts argue that the determinants of and motivations for FDI in developing industries have changed in the process of globalization. As a consequence, it is no longer sufficient to offer promising markets in order to induce FDI inflows. Policy makers face rather complex challenges in striving for the locational attractiveness of FDI (Kokko 2002).

Promoting and attracting FDI has therefore become a major component of development strategies for developing industries. The role of FDI as a source of capital has become increasingly important not only because of the belief that it can help bridge the savings-investment gap but also because it can assist in the attainment of Millennium Development Goal (MDG) targets (Ajayi, 1999).

The automobile industry is the leading manufacturing sector in the South African economy. It incorporates the manufacture, distribution, servicing and maintenance of motor vehicles and plays a vital role in the South African economy by contributing extensively to the country's Gross Domestic Product (GDP). South Africa's automotive industry's total contribution to the country's gross domestic product (GDP) was 7.3% in 2007 (NAAMSA, 2009). The South

African automobile industry is capable of exporting passenger cars and commercial vehicle to dealers and countries around the world. About 40% of South Africa's vehicle output comes from the Eastern Cape, contributing about 18% to the region's economy (RSA Department of Trade and Industry, 2010). The Eastern Cape's automotive sector plays a pivotal role in maintaining the country's position as an automotive competitor in Africa and the world and is home to four Original Equipment Manufacturers (OEMs) involved in assembly, production and export programmes. The OEMs are Volkswagen South Africa (VWSA), General Motors South Africa (GMSA), Mercedes-Benz South Africa, and the Ford Motor Company South Africa (FMCSA)'s engine plant. Further, the province has about 180 component suppliers which support the local and national manufacturers, as well as supply export markets with a range of components and spares. (National Association of Automobile Manufactures South Africa, 2010).

Significant structural changes have taken place in South Africa's automotive industry over the past decade 1996 to 2010 since the introduction of the Motor Industry Development Programme (MIDP) in 1995, after the Local Content Programme (phase I to VI) in 1960. The domestic production of vehicle models has been rationalised significantly to achieve increasingly economies of scale benefits in the domestic and exports markets. Total automotive exports (completely built-up vehicles and components) have increased from insignificant amounts for several consecutive years. South Africa's automotive sector has grown in stature to become the leading manufacturing sector in the country's economy. The sector's exports, as a percentage of total South African exports, have increased more than threefold from the 4,1 % in 1995 to 13,7 % in 2007 (Stats SA 2008). This growth has been coupled with significant investments in best practice assets and state of the art technology have been introduced, mainly to accommodate export contracts for vehicles and automotive components. Consequently, the complexity in the component sector has also been reduced. The surge in exports of completely built-up vehicles, right and left hand drive models, and a diverse range of components to demanding world markets, since 1995, is indicative of the domestic industry's improved international competitive levels.

FDI boosts the flexibility to produce relatively short runs, abundance of raw materials and low energy costs, among other, combined with the expertise, advanced technology and established business relationships with parent companies which ensure that the local industry adds value to the global sourcing strategies of multinational automobile corporations.

The global economic slowdown led to job losses in the form of voluntary retrenchments, and production slowdowns at original-equipment manufacturers (OEMs) General Motors South Africa (GMSA) and the Ford Motor Company South Africa (FMCSA) engine plants in the Eastern Cape.

1.2 PROBLEM STATEMENT

Over the last ten years there has been a renewed interest in FDI due to the change in the political and economic environment. However to encourage FDI in South Africa it is important to know the determinants of FDIs so as to establish what can be done to encourage large inflows of FDI in the automobile industry.

The manufacturing sector strongly benefited from the depreciation of the rand in 2001 and 2002. In 2005, the automotive industry was the best performing manufacturing sub-sector. According to the National Association of Automobile Manufacturers of South Africa, total domestic vehicle sales increased by 18.7 per cent in 2004, benefiting from the launch of Toyota's exports to Europe and the commencement of Ford's export regime.

Ten years after democracy, South Africa still faces the ever-growing task of reducing the inequalities and the challenges of achieving high economic growth. However, the country has managed to maintain budgetary discipline and contain inflation at low levels. Between 1990-1995 it has been relatively stable. Over the period 1996- 2008 FDIs in the motor industry have varied. It is not clear whether these changes resulted from GDP fluctuations, low interest rates, trade openness, overvalued exchange rates and education.

This study investigates the determinants of FDIs in the motor industry in South Africa. Furthermore the study seeks to find answers to what attracts FDIs, the trends in FDI inflows, and what has resulted to these changes in FDIs in the motor industry in South Africa.

1.3 OBJECTIVE OF THE STUDY

The objectives of this study are to:

- Investigate the determinants of FDIs in automobile industry in South Africa.
- To investigate the impact of FDIs in the motor industry in South Africa.
- To provide policy recommendations.

1.4 HYPOTHESIS

H₀: Economic growth is not a fundamental determinant of FDI in the Motor Industry in South Africa

H_a: Economic growth is a fundamental determinant of FDI in the Motor Industry in South Africa

1.5 SIGNIFICANCE OF THE STUDY

Foreign Direct Investments (FDIs) are an important source of capital stock in that it complements domestic investment and creates new job opportunities. FDIs in most cases contribute towards the enhancement of technology transfer, which in turn boost economic growth.

This study contributes to the ongoing debate on the determinants of FDIs in the motor industry. There have been a number of fluctuations in the FDIs in the motor industry over the past twenty years. These changes resulted from GDP fluctuations, low interest rates, trade openness, overvalued exchange rates and education. The study is useful for policy formulation, evaluation and prescription. Policy makers need information on the precise factors that affect FDI inflows in the motor industry in South Africa.

1.6 LITERATURE REVIEW

The section below provides the theories that deal with the determinants of Foreign Direct Investment.

1.6.1 THEORETICAL LITERATURE REVIEW

The theories which deal with the determinants of FDIs are the Eclectic theory (OLI) theory and the Micro-level theory.

1.6.2 THE ECLECTIC THEORY

The Eclectic theory also known as the OLI (Ownership, Location and International advantage) theory of Foreign Direct investment was developed by Dunning (1973). The theory seeks to offer a general framework for determining the extent and patterns of both foreign owned production undertaken by a country's own enterprises and also that of

domestic production owned by foreign enterprises. In this theory, Dunning (1973) distinguishes between two types of investment that a firm can choose to undertake (that is Foreign Portfolio Investments (FPIs) and Foreign Direct Investments (FDIs)).

Foreign Portfolio Investment (FPI) is defined as the passive holdings of securities and other financial assets, which do not entail active management or control of the securities issuer. FPI is positively influenced by high rates of return and reduction of risk through geographic diversification. The return on FPI is normally in the form of interest payments or non-voting dividends. On the other hand Foreign Direct Investment (FDI) is defined as the acquisition of foreign assets for the purpose of control (Dunning, 1973).

The Eclectic theory is based on three different pillars i.e. O+L+I and each pillar focuses on a different question that every foreign investor seeks to answer.= The first known as the O pillar is the Ownership Advantages /Firm Specific Advantages (FSA) which addresses the why question. Why go abroad? According to Dunning (1973) this question hypothesises that foreign firms have one or more firm specific advantages (e.g. ownership advantage, core competency) which allows these firms to overcome the operating costs in a foreign country.

The *L* pillar is about Location Advantages /Country Specific Advantages. Dunning (1973) says the where question [where to locate?] is addressed under this factor. Dunning (1973) says the decision of a firm to move offshore is based upon the firm specific advantage in combination with factors in a foreign country. Factors such as labour and land are very important in determining the location of a foreign firm in order for it to make profits. Dunning (1973)states that the choice of investment location depends on several complex calculations that include economic, social and political factors to determine whether investing in that country is profitable or not.

The *I* pillar represents the Internalisation Advantages (internal route). This factor addresses the how? question [how to go abroad?]. The foreign investor can have several choices of entry mode, which can range from the extent of transactions (market), to the hierarchy (entirely owned subsidiary). The foreign investor can choose internalisation if the market does not exist or functions poorly that is transaction costs of the external route are high.

1.6.3 MICRO- LEVEL THEORY OF FDI

The micro-level theory also known as the industrial organization theory was developed by Hymer (1960). Hymer's theory is firm-specific, rather than country-specific. Hymer (1960) suggests that the decision to set up value-adding operations abroad depends on the industry and certain aspects of individual companies, rather than the country and national capital availability as suggested by Dunning (1973). Hymer noted that some countries have more FDI than others; thus Hymer (1960) argued that it had more to do with the non-capital strengths of competitive firms, which included strong technologies and good education. The theory makes two main points:

Firms become Multinational Enterprises (MNEs) due to their possession of a competitive advantage and its ability to maximise their productivity by using this competitive advantage in another country. This however leads to the concept of ownership advantages as discussed by Dunning (1973).

The competitive structures of some industries would encourage firms to internationalise more than those in other industries (that is concentrated industries (an oligopoly) would be most likely populated by MNEs). Hymer's micro-level theory of FDI therefore hypothesises that the rate of profit has a tendency to drop in industrialised countries, often due to domestic competition, creating the propensity for firms to engage in FDI in underdeveloped countries. This theory considered the key requirements for an individual firm in a given industry to invest overseas and thus become an MNE, including tradable ownership advantages and the removal of competition.

1.6.2 EMPIRICAL LITERATURE

This section reviews empirical literature on the several studies that have been done by previous scholars with a special focus on the determinants of Foreign Direct Investment.

Faruquee (1992) used a time series study to establish the major determinants of FDI in Sub-Saharan Africa. Faruquee's research was based mostly on the effects of exchange rates on FDI in these countries. Faruquee (1992) emphasised that on the supply side, a depreciation of the

exchange rate would in theory have an ambiguous effect, reducing investment in the non tradable sector, and raising it in the tradable sector, unless the sector was highly dependent on imported capital and intermediate goods. On the demand side, the effect is unambiguously contractionary, reducing private-sector real wealth and expenditure and, consequently, domestic demand (Faruqee (1992)). However Faruqee (1992) found that the real exchange rate was significantly correlated with private investment rather than Foreign Direct Investment in Sub-Saharan Africa.

Estrin's (2003) study suggest that managers of foreign direct subsidiaries perceive South Africa's automobile industry a better environment than other emerging markets, across board in terms of six indicators; quality of raw materials and machinery; the ability to obtain real estate; the quality of professionals; the reliability of information technology and the telecommunications network and reliability of utilities such as electricity.

Chunlai (1997) carried out a panel data regression study to determine location determinants of FDI in developing countries. He found that market size, GDP growth, manufacturing efficiency wage, remoteness, stock of FDI and openness play a key role in attracting FDI. Concluding his findings Chunlai recommended strong FDI policies in order to attract more FDI inflows into developing countries and developing industries.

Onyeiwu (2000) used a cross- sectional data to explore the determinants of the outflow of FDI from the Arab world. Human capital, corruption, natural resource availability, infrastructure, political rights, openness of the country, rate of return on investment were significant factors for FDI outflows from the Arab world. Onyeiwu found that the presence of an educated population trained to work in modern business organisations has a positive effect on the level of foreign direct inflows into the Arab world.

Using a time series regression study from 1980 to 1992, Dunning (1994) also investigated how economic and human capital indicators influenced foreign investment in some European and African countries. Dunning distinguished between three sets of economic influences on FDI that included: (1) the investment climate, as measured by the degree of foreign indebtedness and the state of balance of payments, (2) market factors, such as the size and growth of the market measured by the GDP of the host country and (3) cost factors, such as the availability of labour, low labour costs and inflation.

1.7 RESEARCH METHODOLOGY

This study follows the model specification of Ngowi (2001), Asiedu (2002), Chitiga (2003) because these authors in their models used variable GDP, IR and OC and they found that GDP is the main determinant of FDIs. The econometric model used in the study is as follows;

$$FDI_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 IR_{it} + \beta_3 EXCR_{it} + \beta_4 ED_{it} + \beta_5 OE_{it} + u_{it} \dots \dots \dots (1)$$

Where

FDI_{it} = Foreign Direct Investment

GDP = Gross Domestic Product

I = Interest Rate

EXCR = Exchange Rate

EDU = Education

OE = Openness of the Economy

u = Error term

t = time

It is expected that there is a positive relationship between the variable FDI and GDP. This is because as the GDP increases investors from foreign countries would want to invest more. A positive or negative relationship is expected between FDI and exchange rates, because if the rand is lower than the investor's currency then the investors will take advantage of the weak currency and decrease FDI. A positive relationship is expected between FDI and education. The importance of education to economic growth is by the ratio of tertiary institution enrolment in the population. Barro and Lee (1994) and Akinlo (2004) included this variable in their growth equation and found a direct relationship. The variable FDI and openness of the country is expected to have a positive relationship because through the openness of the country barriers to entry are removed allowing more FDIs.

1.7.1 DATA SOURCES

Quarterly time series data is employed, which covers the period 1994q1- 2008q4. The data in this study is obtained from South African Reserve Bank (SARB), National Association of Automobile Manufacturers South Africa (NAAMSA), Economic Statistic publications, Statistics South Africa (STATSSA), and the Department of Trade and Industry (DTI).

1.7.2 DATA ANALYSIS

The study uses a regression as the estimation of the time series data. The Dickey Fuller (DF) is used to test stationarity. The data is tested for unit root (non-stationarity) by using the Augmented Dickey Fuller (ADF). The Durbin Watson (d- test) test is used to test for serial correlation. In order to determine whether there is a long run relationship between variables the Johansen (1988) and Johansen and Juselius (1990) cointegration techniques is used. In cases of cointegration it implies that there is a likelihood of the existence of interdependence or causality among the variables. If there is no evidence for cointegration among the variables, the specification of the Granger causality test will be used. It is empirical that many macro economic variables appear to be integrated of the first ordering meaning that their changes are stationary. The research methodology is discussed in details in chapter four.

1.8 OUTLINE OF THE STUDY

Chapter one provides an introduction of the study. Chapter two contains literature review which comprises of theoretical literature and empirical literature. Following this chapter is Chapter three, which provides an overview of the Foreign Direct Investment in the automobile industry in South Africa. Chapter four contains the methodology and analysis of results. Chapter five provides conclusions and policy recommendations and the area of further research on the determinants of Foreign Direct Investment in the automobile industry in South Africa.

This chapter presented the introduction, problem statement, objectives and significance of the study and the outline of the study.

The next chapter provides theoretical as well as empirical literature.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews theoretical as well as empirical literature on the determinants of Foreign Direct Investments (FDIs). The leading theories in identifying the determinants of FDIs are the Eclectic Theory of FDI, the Micro-level theory of FDI. The empirical literature in subsequent sections also highlights the determinants of FDIs.

The chapter begins by presenting a theoretical literature. This is followed by a presentation of an empirical literature. The third section presents the assessment, both theoretical and empirical literature. Concluding remarks are provided towards the end of the chapter.

2.2 THEORETICAL LITERATURE

The following section provides the theories that deal with the determinants of Foreign Direct Investments.

2.2.1 The ECLECTIC THEORY

The Eclectic theory also known as the OLI theory of Foreign Direct investment was developed by Dunning (1973). The eclectic paradigm seeks to offer a general framework for determining the extent and patterns of both foreign owned production undertaken by a country's own enterprises and also that of domestic production owned by foreign enterprises. In this theory, Dunning (1973) distinguishes between two types of investment that a firm can choose to undertake that is (Foreign Portfolio Investment (FPI) and Foreign Direct Investment (FDI). Foreign Portfolio Investment (FPI) is defined as the passive holdings of securities and other financial assets, which do not entail active management or control of the securities issuer. FPI is positively influenced by high rates of return and reduction of risk through geographic diversification. The return on FPI is normally in the form of interest

payments or non-voting dividends. On the other hand Foreign Direct Investment (FDI) is defined as the acquisition of foreign assets for the purpose of control Dunning (1973).

The eclectic theory is launched in three different pillars namely, O+L+I and each pillar focuses on a different question that every foreign investor seeks to answer. The first known as the O pillar is the Ownership Advantages /Firm Specific Advantages (FSA) which addresses the why question. Why go abroad? According to Dunning (1985) this question hypothesizes that foreign firms have one or more firm specific advantages (e.g. ownership advantage, core competency) which allows these firms to overcome the operating costs in a foreign country. This ownership advantage as termed by Dunning (1985), normally can not be seen but can be transferred within the Foreign enterprises at low cost, (for example, brand name, benefits of economies of scale and technology). Operating costs can therefore be offset by generating high revenues in a foreign location.

The L pillar is about Location Advantages /Country Specific Advantages. Dunning (1985) points out that the where question [locate where?] is addressed under this pillar. According to Dunning (1985) the decision of a firm to move offshore is based upon the firm specific advantage in conjunction with factors in a foreign country. Factors such as labour and land are important in determining the location of a Multinational Enterprise (MNE) in order for it to make profits. Dunning (1985) further went on to say that the choice of investment location depends on several complex calculations that include economic, social and political factors to determine whether investing in that country is profitable or not.

The I pillar represents the Internalisation Advantages (internal route). This pillar address the HOW question [how to go abroad?]. The MNE can have several choices of entry mode, which can range from the arm's length transactions (market), to the hierarchy (wholly owned subsidiary). The MNE can choose internalisation if the market does not exist or functions poorly that is transaction costs of the external route are high. Under the Firm Specific Advantage, an MNE operating a plant in a foreign country can be faced with a number of additional costs in relation to their local counterparts (local competitor). These costs according to Dunning (1985) can include;

- (i) cultural, legal, institutional and language differences;
- (ii) lack of knowledge about local market conditions; and/or
- (iii) the increased expense of communicating and operating at a distance.

The eclectic theory therefore points out that for a foreign firm to be competitive in a foreign country, it must have some kind of unique advantages that can help them overcome the cost associated with operating in the new country. Either the foreign firm should be able to generate higher revenues, for the same cost, or lower costs, for the same revenues compared to domestic firms.

According to the eclectic theory the MNEs are the only firms that are entitled to the costs of foreignness, therefore they must have other ways to earn either higher revenues or have lower costs in order to be able to stay in business. In order for an MNE to be profitable in a foreign market it must have some advantages which are readily transferable and not shared by its local competitors. These advantages are called *ownership or firm specific advantages (FSAs) or core competencies*.

According to Dunning (1997) the firm must own this advantage, meaning that the firm must have a complete monopoly power over its FSAs and must be able to exploit and transfer them abroad, resulting in higher marginal return or lower marginal cost than its competitors. These advantages are therefore internal to a specific firm and can only be enjoyed by that firm. Advantages can also be location bound advantages (that is related to the home country, such as monopoly control over a local resource) or non-location bound (e.g. technology, economies of scale and scope from simply being of large size). Dunning (1997) identified three main types of ownership advantages for a multinational enterprise. These include:

- *Knowledge/technology*, broadly defined to include all forms of innovation activities;
- *Economies of large size (advantages of common governance)* such as economies of scale and scope, economies of learning, broader access to financial capital throughout the MNE organization, and advantages from international diversification of assets and risks; and
- *Monopolistic advantages* that accrue to the MNE in the form of privileged access to input and output markets through patent rights, and ownership of scarce natural resources.

The Eclectic theory provides that these Firm Specific Advantages can change over time and usually vary with the age and experience of the multinational enterprise. According to the eclectic theory the firm must use some foreign factors in connection with its domestic Firm

Specific Advantages in order to earn full rent on these FSAs. The locational advantages of various countries are keys in determining which country will play host to the MNE. Thus it is not surprising that the relative attractiveness of different locations can change over time so that a host country can, to some extent, engineer its competitive advantage as a location for FDI. Dunning (1994) distinguished between three categories of country specific advantages (CSAs) as follows: Economic (E), Social (S) and Political (P). The Economic advantages include the quantities and qualities of the factors of production, size and scope of the market, transport, as well as telecommunications costs. Social or cultural advantages include psychological distance between the home and host country, general attitude towards foreigners, language and cultural differences, and the overall stance towards free enterprise. Lastly, the political advantages include the general and specific government policies that affect inward FDI flows, international production, and intra-firm trade. Thus, an attractive Country Specific Advantage package for a multinational enterprise would include a large and growing high income market, low production costs, a large endowment of factors scarce in the home country, an economy that is politically stable, welcomes FDI and is culturally and geographically close to the home country.

The Eclectic theory paradigm points out that the existence of a special know-how or core skill is an asset that can generate economic profits to a foreign firm. These profits can be earned by licensing the Firms Specific advantage (FSA) to another firm, exporting products using this FSA as an input, or setting up subsidiaries abroad. The ownership advantage of MNEs therefore explains why firms go abroad while the locational advantages of countries explain where MNEs set up foreign plants. According to Dunning (1997) the 'How they go abroad' question is another issue. This model argues that external, arm's length markets are either imperfect or in some cases nonexistent. Because of this reason, the MNE can substitute its own internal market and reap some efficiency savings. Some firms can go abroad by simply exporting their products to foreign markets; however, uncertainty, search costs and tariff barriers are additional costs that usually hinder such trade. Alternatively, the firm could license a foreigner to distribute the product however the firm may worry about opportunistic behavior by the licensee.

The Eclectic model provides that the hierarchy (that is the vertically or horizontally integrated) is a superior method of organising transactions than the market (trade between unrelated firms) whenever external markets are nonexistent or imperfect. Dunning (1997)

predicted that internalisation advantages usually lead to preferentially wholly owned subsidiaries by MNEs over minority ownership or arm's length transactions. It is therefore the internalisation advantage part of the OLI theory that explains why MNEs are integrated businesses, producing in several countries, and using intra-firm trade to ship goods, services and intangibles among their affiliates. The following factors were identified by Dunning as difficulties associated with setting up MNEs abroad:

- Natural or Endemic Market Failure (natural imperfections);
- Difficulties in pricing knowledge: information impactedness, opportunism, uncertainty, public goods characteristic of knowledge, failure to account for all costs and benefits;
- Transaction costs of making markets under conditions of risk and uncertainty: search and negotiation costs, problems of moral hazard and adverse selection, lack of futures markets and insurance, risk of broken contracts;
- Structural Market Failure (imperfections created by the MNE);
- Exertion of monopoly power: Using oligopolistic methods, such as predatory pricing, cross-subsidization, cartelizing markets, market segmentation, creating barriers to entry, which distort external markets and cause structural market failures; and
- Arbitraging government regulations including exploiting international differences in government regulations such as tariffs, taxes, price controls, and other non tariff barriers;.

Furthermore, Dunning (1994) argued that the determinants and motives of FDI are always shifting or rather complex. Dunning (1994) highlighted that FDI in developing countries is shifting from market seeking and resource-seeking FDI to more efficiency seeking FDI. Due to socioeconomic induced pressure on prices, MNEs are expected to relocate some of their production facilities to low cost developing countries. Nevertheless, and in contrast to FDI in industrial countries, FDI in developing countries still is directed predominantly at accessing natural resources and national or regional markets.

Nevertheless the Eclectic theory has its weaknesses. It has been suggested that it is rather misleading to suggest that the triumvirate of variables which make up the eclectic paradigm are independent of one another. The Eclectic theory postulates that the OLI variables are independent of each other. This notion has received much criticism by international trade scholars. The understanding is that it is very difficult to separate these variables as they work hand in hand. For example a firm's response to its exogenous locational variables might itself influence its ownership advantages, including its ability and willingness to internalise markets. Therefore over time, the separate identity of the variables becomes even more difficult to justify.

Kojima (1982) claimed that the explanatory variables identified by the paradigm are so numerous that its predictive value is almost zero. The eclectic theory state that under each pillar (OLI) exists a lot of variables that MNEs consider when contemplating an investment decision. Furthermore it has also been argued that the eclectic theory insufficiently allows for differences in the strategic response of firms to any given configuration of OLI variables. This theory has been viewed in static (or comparatively static) terms and it offers little guidance as to the dynamics of the international process of firms/countries.

The eclectic theory is relevant to this study because it identifies the determinants for MNE (for an example the motor industry companies) to invest abroad, are the location advantage, ownership advantage and internationalization advantage. In the case of the location advantage, foreign investors for motor industries have the advantage of choosing the location where the plants will be built and these locations are close to the ports and harbours so that the manufactured motor vehicles are shipped to other countries and transported within good infrastructure facilities. Most of the motor industries are foreign owned companies and the foreign investors have the ownership advantage which includes brand names, benefits of economies of scale and technology.

2.2.2 MICRO-LEVEL THEORY OF FDI

The Micro-level theory also known as the industrial organisation theory was developed by Hymer (1960). Hymer's theory is firm-specific, rather than country-specific. Hymer (1960) suggests that the decision to set up value-adding operations abroad depends on the industry and certain aspects of individual companies, rather than the country and national capital availability as suggested by Dunning (1973). According to Hymer (1960) some countries had more FDIs than others; thus he argued that it had more to do with the non-capital strengths of competitive firms, which included strong technologies and good education. The micro-level theory makes two main points:

Firstly, the firms become MNEs due to their possession of a competitive advantage and their ability to maximise their productivity by using this competitive advantage in another country. This however leads to the concept of ownership advantages as discussed by Dunning (1994).

Secondly, the competitive structures of some industries would encourage firms to internationalise more than those in other industries (concentrated industries (an oligopoly) would most likely be populated by MNEs). Hymer's micro-level theory of FDI therefore hypothesises that the rate of profit has a tendency to drop in industrialised countries, often due to domestic competition, creating the propensity for firms to engage in FDI in underdeveloped countries. This theory considered the key requirements for an individual firm in a given industry to invest overseas and thus become an MNE, including tradable ownership advantages and the removal of competition.

Hymer made four assumptions under the Micro-Level theory namely;

- Other theories suggested that the flow of capital was one directional, from developed to underdeveloped countries, whereas in reality Hymer (1976) suggests that, in the post-war years, FDI was two-way between developed and developing countries;
- A country was supposed to either engage in outward FDI or receive inward FDI only. In fact Hymer observed that MNEs, moved in both directions across national boundaries in industrialised countries, meaning countries simultaneously received inward FDI and engaged in outward FDI;

- The level of outward FDI was found to vary between industries, meaning that if capital availability was the driver of FDI, then there should be no variation, as all industries would be equally able and motivated to invest abroad; and
- As foreign subsidiaries were financed locally; it did not fit that capital moved from one country to another.

Hymer (1976) strongly argued that Multinational Enterprises (MNEs) can only exist in an imperfect market, where firms have non-financial ownership advantages compared to other firms in the same industry. This meant that the determinants for MNEs lie with the individual firms, rather than the country's capital availability as suggested by the Eclectic theory of FDI. Another result of structural market failure is the removal of conflict between firms within a given industry. Hymer (1976) further discusses the nature of the "market power" approach of firms and their "oligopolistic" interdependence, as they focus on the domination of the market, the raising of entry barriers and the removal of conflict, all by collusive agreements.

According to Hymer (1960), firms invest abroad in order to dominate more markets, raise profits and create more conflict-removing oligopolies. Hymer(1960) states that only the largest of firms, such as those in an oligopoly environment, could sufficiently offset the costs of being foreign with their strong ownership advantages. Like Dunning (1973), Hymer believed that MNEs investing in foreign markets are, compared to local firms, faced with certain additional risks and costs in terms of knowledge of local market conditions, cultural, institutional and linguistic barriers, and communication and transport costs. Thus firms that want to invest through FDIs in these foreign markets must have specific advantages to gain a competitive edge on local firms in a foreign or destined country. These include advanced technology, Research and Development (R&D) capabilities, superior managerial, administrative and marketing skills, access to low-cost funding, and interest rate and exchange rate differentials.

In 1976 Hymer considered what would happen in a world of segmented national markets which are dominated by home grown monopolists when lower transportation costs and trade barriers brought two such monopolist into contact. Hymer (1960) was of the opinion that

competition between two such giant firms would result in externalities and on the other hand a merger of the two, or the acquisition of one by the other i.e. the creation of a firm spanning the two countries, i.e. an MNE would internalise. This could however explain the creation of MNEs. According to this theory MNEs are instruments by which competitors reduce competition in industries where large barriers to entry have created and are sustaining local monopolies. Hymer therefore believed that MNEs were internalising externalities due to competition on markets for final products. In simple terms this means that as competition intensifies between two firms on markets for final products, prices charged on consumers are lowered such that they end up losing their monopoly profits. Hymer stresses that these externalities are pecuniary externalities, insofar as their internalisation is zero-sum: what ever is lost by MNEs, the consumer gains. He therefore saw MNEs as internalises of pecuniary externalities due to structural market imperfections.

Hymer notes that there are positive relationships between oligopolistic market structures and FDI by United States firms. This leads to the conclusion that competitive conditions are influenced FDI and that firm specific ownership (O) advantages have something to do with FDI as suggested by Dunning, 1973.

Other scholars have criticised Hymer's work. Yamin (2000) stated that Hymer discusses the theory behind how and why firms invest in international markets, but ignores how firms operate efficiently in other countries, including their use of advantages. Yamin observed that Hymer assumed firms were merely reacting to structural market failures, whereas in reality firms are in fact proactive in their use of advantages. Hymer believed that a firm's main objective was profit maximisation and expansion.

Yamin (2000) argued that firms actively employ and develop assets, and thus improving their internal efficiency. Thus it is believed that oligopolies succeed through their size rather than possessing an ownership advantage, as the purpose of oligopolies is to remove conflict, whereas assets increase competition and encourage innovation. Also to be noted is that Hymer believed that only oligopolies can invest abroad whereas, today this is no longer the case. This suggests that the scale (or market power) as a final strategy is unnecessary and that ownership advantages are key to the creation of successful MNEs.

Another weakness of the Micro-level theory is that it is largely based on the market power approach, completely ignoring the costs associated with making transactions to invest abroad (Transaction costs). Dunning & Rugman (1985) believed that cognitive market failures require transaction-specific assets to minimise these costs, but Hymer only included tradable, advantages, such as scale economies and technologies.

The micro- level theory is also relevant to this study as it points out that the reason why foreign investors decide to set up value adding operations abroad depends on the industry and certain aspects of individual companies, rather than country or national specific. According to the micro level theory it has more to do with the non- capital strengths including technology. The motor industry companies are MNE because of their possession of competitive advantage and by the ability to maximize their productivity using their competitive advantage in another country. MNE like the motor industry companies invest abroad in order to dominate more markets and raise profits. Firms that want to invest through FDI must have competitive edge on local firms in destined countries these include technology, Research & Development (R&D) to access to low funding and interest rates and exchange rate differentials.

2.3 EMPIRICAL LITERATURE ON FDI

This subsection reviews empirical literature with a special focus on the determinants of Foreign Direct Investments. The empirical literature is presented according to various countries, developing and developed countries.

2.3.1 STUDIES IN DEVELOPING COUNTRIES

Asiedu (2002) investigated the major determinants of Foreign Direct Investment in Sub-Saharan Africa and compared these with other developing countries. Using some time series regression analysis Asiedu (2002) examined whether differences existed between the factors that influence Foreign Direct Investment in Sub Saharan Africa also affected other developing countries. Asiedu (2002) identified the following variables:

Asiedu (2002) identified four main differences between the Sub Saharan countries and other developing countries. Firstly, geographical location explains low levels of FDI in Sub Saharan Africa compared to other developing countries. Secondly, higher returns on capital attract FDI inflows in other developing countries but these returns are insignificant in Sub Saharan Africa. Asiedu (2002) however explains that this is due to a risky investment climate in sub Saharan Africa. Thirdly, openness to trade has a lesser impact on FDI in Africa than in other developing countries; this implies that African countries receive lower levels of FDI in part because they are less open to trade. Thus Asiedu (2002) suggests that trade liberalisation as an engine for attracting FDI in Sub-Saharan Africa may be less effective, possibly because investors do not believe that trade reform is credible. Finally, Asiedu pointed out that, infrastructural development does not have a significant impact on FDI in Sub Saharan Africa but encourages FDI to other developing countries.

In a cross sectional study, Ngowi (2001) explored Foreign Direct Investment determinants in African countries including Mozambique, Namibia, Zimbabwe, Tanzania, Uganda, Zambia and South Africa. Ngowi identified major factors that all investing firms are considered when contemplating investing in foreign countries, namely

- Well functioning and transparent financial markets;
- The availability and quality of natural resources;
- Low transactions and business costs, including trade and labour regulations, rules of entry and exit;
- An efficient and dependable legal system;
- A stable and predictable political environment;
- Favourable macroeconomic indicators like, good performance on economic growth, stable inflation rates, low budget deficits;
- The quality of infrastructure, transport networks, communication networks, roads, electrical power;
- The size, openness and competitiveness of the domestic market;
- Qualified human capital; low cost, unskilled labour may be an influential determinant, depending on the nature of the prospective FDI into markets, favourable tax structures;

With respect to African countries Ngowi (2001) found that, the main factors preventing large FDI inflows are that countries are regarded as high risk and are characterised by a lack of political and institutional stability and predictability. Ngowi (2001) also cited additional factors that include among others hindrances to prospective FDI including poor access to world markets, price instability, high levels of corruption, small and stagnant markets and inadequate infrastructure. Ngowi concluded that African countries still have great potential in attracting larger FDI inflows as long as all the above mentioned factors are dealt with.

Fedderke and Romm (2004) studied growth impact and determinants of Foreign Direct Investments (FDI) in South Africa. The study is primarily concerned with the provision of structural analysis of the growth impact of FDI in South Africa and its determinants. The study uses aggregate time series data in South Africa for the period 1960-2002. The empirical results show that growth impact of FDI is positive for South Africa thus confirming the positive spill over of foreign capital on capital and labour, and hence output in South Africa. Market size has the largest positive elasticity in determining FDI and wage costs negatively influence the decision to invest.

Kamaly (2002), investigated the main determinants of FDI in the Middle East and North African Countries (MENA countries). Using a dynamic panel data model covering the period 1990-1999 he found that economic growth and the lagged value of FDI/GDP were the only significant determinants of FDI flows to the MENA region. This study however lacked an adequate sample size and it did not consider any institutional factors that may affect FDI flows to the MENA region.

In a cross-sectional study, Onyeiwu (2000) explored the determinants of the inflow of FDI from the Arab world. Human capital, corruption, natural resource availability, infrastructure, political rights, openness of the country, rate of return on investment were significant factors for FDI outflows from the Arab world. Onyeiwu found that the presence of an educated population trained to work in modern business organisations has a positive effect on the level of foreign direct inflows into the Arab world.

Faruqee (1992) used a time series study to establish the major determinants of FDI in Sub-Saharan Africa. Faruqee's research was based mostly on the effects of exchange rates on FDI in these countries. Faruqee (1992) emphasised that on the supply side, a depreciation of the

exchange rate would in theory have an ambiguous effect, reducing investment in the non tradables sector, and raising it in the tradables sector, unless the sector was highly dependent on imported capital and intermediate goods. On the demand side, the effect is unambiguously contractionary, reducing private-sector real wealth and expenditure and, consequently, domestic demand (Faruqee (1992)). However Faruqee (1992) found that the real exchange rate was significantly correlated with private investment rather than Foreign Direct Investment in Sub-Saharan Africa.

In a time series regression Kandiero and Chitiga (2003) studied the impact of openness to trade on the Flow of FDI's into African countries including Egypt, Lesotho, South Africa, Nigeria, Zimbabwe and many more. This empirical work covers 51 African countries using panel data from 1980 to 2001. Kandiero and Chitiga (2003) found out that FDI's to Africa is affected by factors including investment taxes, corruption, wages, and openness to trade. According to the findings of the study the reduction in tariff and non-tariff barriers such as licensing or cumbersome procedures increases FDI in African countries.

In their analysis the Kandiero and Chitiga discovered that in the financial sector, countries such as Egypt, Lesotho, South Africa, Nigeria, among others are considered more open compared to countries such Angola, Tunisia, and Benin and Zimbabwe. Therefore in order for Africa to catch up with the rest of the developing countries in attracting large FDI inflows, more openness to trade should be encouraged. Kandiero and Chitiga (2003) concludes that openness to trade and factors such as investment tax, wages, infrastructure, institutional framework and regulation should be made a priority, in order for the Africa region to attract more FDI's inflows.

Lamprecht (2006) analysed the MIDP as a promotional tool for the South African automotive industry in the global automotive industry. The MIDP is a policy programme which sought to attract investment, increase exports and improve international competitiveness for the domestic market. The study conducts primary (qualitative & quantitative) and secondary data collection procedures using exporters who benefit directly from MIDP and key role players. The sample size consists of 70 companies including OEM (8), components manufacturers (50), and key role or stakeholders (12). The study found that all OEM's benefit directly from MIDP with 23 components manufactures benefiting directly or indirectly from MIDP. The main reason for all companies interviewed to register under the MIDP was to generate business interest and to attract investment in South Africa. A number of important concerns

were raised by all stakeholders, these include, the need to generate adequate government incentives to attract investment, WTO rules and regulations and impact on MIDP as well as cost factors impacting on international competitiveness including strong rand and raw materials. Improved economies of scale benefits achieved by OEM`s under the MIDP ensure improved international competitiveness for OEM and component suppliers, which in turn generate increased business opportunities and economic viability of investment in the domestic automotive industry.

Franse (2006) studied the impact of Motor Industry Development Programme (MIDP) to an industry manufacturer by using a case study. The researcher uses a qualitative case study approach because of the depth and richness it provides. Interviews and semi- structures interviews to the company`s senior executives were conducted. In conducting the study use is made of the company`s Annual Financial Statements, Management Accounting Reports and other relevant documentation. The limitation of using documentation such as Annual Financial Statements is that there is a possibility of them being inaccurate, incomplete and biased. After data analysis it was found that the MIDP has certainly contributed to an improved financial performance, due to increased levels in vehicle and component exports as well as an expanded domestic market. As a result of the MIDP the company experienced increased; capital expenditure, production, productivity development, vehicle imports and exports and profitability.

Chunlai (1997) carried out a panel data regression study to investigate the determinants of FDIs in developing countries. Chunlai (1997) found that market size, GDP growth, manufacturing efficiency wage, remoteness, stock of FDI and openness play a key role in attracting FDI.

Using a time series regression study from 1980 to 1992 Dunning (1994) also investigated how economic and human capital indicators influenced foreign investment in some European and African countries. Dunning (1994) distinguished between three sets of economic influences on FDI that included: (1) the investment climate, as measured by the degree of foreign indebtedness and the state of balance of payments, (2) market factors, such as the size and growth of the market measured by the GDP of the host country and (3) cost factors, such as the availability of labour, low labour costs and inflation.

Schneider and Frey (1985) used a time series regression analysis study in European countries focusing on the impact of human capital on FDI inflows. They found out that skills of the work force played a very significant role in attracting FDI inflows.

Using a survey type of a research Hess (2000) assessed the investment climate in SADC economies (including South Africa and Zimbabwe), and highlighted the most common factors acting as constraints to investment. Hess (2000) interviewed several firms in European countries wishing to invest in southern Africa. This way Hess identified five most important barriers as follows:

- inadequate infrastructure, most notably for telecommunications, transport, and the provision of electricity and water;
- inefficient and cumbersome bureaucracies, which can breed corruption;
- unstable political and economic environments;
- a lack of transparency and;
- high taxation.

The Hess (2000) identified weaknesses to be associated with one or more of the economies in the region as follows:

- underdeveloped financial sectors;
- shortages of skilled labour;
- low productivity;
- small domestic markets;
- differing product standards;
- archaic legislation;
- weak private sector institutions;
- visa requirements and availability of work/residence permits;
- uncertain or restricted land ownership;

Hess (2000) emphasised the need for policy coordination in attracting FDI. Hess (2000) pointed out that the most important factors in attracting significant levels of foreign investment is a stable political and macroeconomic environment. Hess (2000) noted that investors required as much certainty as possible about the direction of the economy.

Agarwal (1980) used a survey methodology to determine the basic economic determinants of country attractiveness with respect to FDI. Agarwal (1980) used the differences in the rate of return on capital across countries, portfolio diversification strategy of investors and market size of the host country to determine FDI flows in the Middle East and North African countries (including Algeria, Tunisia and Morocco). Agarwal concluded that the supply of cheap labour appears to be a more convincing explanation of FDI. Agarwal also learnt that the relationship between FDI and market size of the host countries is very important in boosting foreign investment in these countries.

Mowatt and Zulu (1999) carried out a survey of South African firms investing within Eastern and Southern Africa. Mowatt and Zulu reported that regional (South African) investors are generally informed about the different economic conditions that exist across the region. Mowatt and Zulu also found that Botswana, Mozambique and Namibia exhibited good investment climate, while Zimbabwe's climate was poor. Financial factors such as exchange controls, depreciation and high interest rates were found to be barriers in Zimbabwe, and to a lesser extent, in Mozambique, but not so in Botswana and Namibia.

A survey was carried out by (CREFSA-DFI) Centre for Research into Economics and Finance in Southern Africa and Development Finance International, (2000) on behalf of regional investors within Eastern and Southern Africa to assess the investment climate in Mozambique, Tanzania, Uganda, Zambia and Zimbabwe. The objective of this paper was to identify the most important factors shaping opinions on the investment climate in these countries, carried out by teams of officials from a range of institutions. The paper reported that, generally, investors in these countries tended to highlight commitment to liberalisation and general macroeconomic stability as positive factors in driving their investment decisions. However negative factors in these countries such as exchange rate instability and inflation, unreliability of infrastructure, and weak governance were major factors hindering FDI inflows.

The Africa Competitiveness Report (World Economic Forum, 1998) compiled using a survey on the factors affecting FDI inflows in developing countries pointed to corruption as a key concern for foreign investors. In addition other factors such as political and policy instability, high and complex taxes, and the quality of infrastructure were very important determinants of FDI. The report also highlighted that the factors most frequently mentioned as having a

negative influence on investment were extortion and bribery, high administrative costs of doing business and access to capital from these developing countries (including Zimbabwe, Namibia and Mozambique).

In a survey research conducted in Botswana to establish FDI determinants by Siphambe (2004), he found that significant amounts of FDI have been attracted to Botswana mainly in the diamond mining and banking services. In addition he found that high incentive schemes have been important for the Botswana economy. However the paper reports that other factors have also bolstered FDI, among these were the stable political environment, stable macroeconomic policy and competitive exchange rates relative to the neighboring South African rand. Low crime levels and good human capital development also make Botswana an attractive investment destination.

Khan and Bamou (2004) conducted a survey on foreign firms with investments in Cameroon to examine the various factors affecting FDI inflows onto the country. Khan and Bamou found out that a number of policy issues needed immediate attention to help boost FDI inflows in Cameroon. These included setting up an investment-friendly environment by improving the provision of infrastructure, investing in education, promoting economic growth and opening up the country through trade. Khan and Bamou also found that it was important for Cameroon to reduce corruption and to provide incentives such as tax holidays and custom exoneration for more Foreign Direct Investment to come into the country.

Asante (2000) provided a survey study on the historical inflows of FDI into Ghana back from the 1970s. The survey was based on managers with firms investing in the major economic sectors in Ghana. Asante (2000) reported that during the period under study the country received annual inflows as high as US\$ 68million. Asante also found out that active policies to attract FDI in Ghana included fiscal incentives such as tax holidays, accelerated depreciation allowances and arrangements for profit repatriation. Also in common with other countries incentives are generously given to firms which are involved in the development of industries. Asante concluded his study by providing evidence that the services sector receives higher FDI inflows because it provided more incentives for foreign investors than other sectors, followed by manufacturing and tourism. In addition, the author found that during the past decade the major types of FDI attracted into Ghana included investments to exploit the country's mineral resources, mainly gold.

Providing a similar analysis Mwega and Ngugi (2004) conducted a survey study on foreign firms in Kenya. The main objective of the study was to determine the various factors that constrain improved net inflows into Kenya and to examine whether the country responds differently to the various determinants of FDI than other countries. Mwega and Ngugi analysed among other issues the magnitudes of net FDI inflows, their composition and sectoral destination, as well as the economic, political and other factors that might influence them. The paper asserted that there has been high volatility in FDI flows to Kenya.

According to Mwega and Ngugi FDI has not played an important part in the Kenyan economy as expected despite the reforms that have been put in place up and the many incentives that have been provided to foreign investors. The paper highlights that among other issues, the deteriorating business environment in the 1980s and 1990s, caused a decrease in Foreign Direct Investment into the Kenyan economy.

In Nigeria a survey was conducted by Ogunkola and Egesa (2004) on firms in the oil and other sectors to determine factors affecting Foreign Direct Investment inflows. In their analysis they noted that Nigeria still remained one of the major destinations of FDI in Africa. On the other hand, FDI regimes are improving though serious deficiencies still remain an issue. Ogunkola and Egesa found that political and institutional uncertainty persisted in the country, and the weakening of the rule of law has discouraged FDI and trade flows outside the oil sector. The inadequacy of the Legal and judicial systems to support the needs of new investors into other sectors of the economy has further hindered FDI inflows into the country. Ogunkola and Egesa highlighted the need for a more conducive policy environment put in place for Nigeria to attract further investments.

In another survey conducted on foreign firms with investments in Uganda to determine various factors affecting FDI inflows by Obwona and Egesa (2004) found that there was no single factor that affected the flow of FDI into Uganda, but that various policies have had an impact at different times. Obwona and Egesa (2004) argued that privatisation and the return of previously confiscated properties of expelled Asians (for example, led to considerable FDI that cut across the various sectors). Based on their findings a constellation of policies have been put in place to achieve macroeconomic stability. This together with peace in much of the country has brought large inflows of FDI. Obwona and Egesa reported that among other

significant factors influencing FDI into Uganda are the successful implementation of the privatization program and efforts at regional integration which are important in attracting market seeking investment. Other factors such as aggressive investment promotion, reform of incentive schemes and administrative simplicity are instrumental in attracting investment in Uganda. In conclusion, their survey findings showed that various positive steps made to attract FDI, notwithstanding the weaknesses dominate especially in the areas of infrastructure, level of corruption and improvement of institutional support. Consequently, special programmes should be put in place in order to enhance the business environment and improve the risk coverage schemes on both bilateral and multilateral basis.

The South African survey on foreign firms by Franz (2004) analysed various factors influencing the flow of FDI and the policy measures that have been put in place to attract FDI in recent times. He concluded that it is important to address social issues such as crime and HIV/AIDS as these may negatively affect the flow of FDI.

Lorentzen (2007) studied the dynamics of industry and innovation in the South African Automotive Industry. The study analyses the relationship between human capital in host countries and international capital inflows. A case study of Daimler Chrysler SA (DCSA) which is based in the Eastern Cape is done. The case study is based on interviews with DCSA, component suppliers, education and training providers, a business association, and a provincial development agency. The case study found that the integration into global supply chains can have a profoundly positive impact, through education and training, on local human resources. With the production and export of new C-Class model DCSA had to upgrade its human resources. A series of recruitment drives were launched to train its workforce and an skills intervention programme amounting to R500 million increased the workforce by around 1000 employees. A number of employees were also sent to the Germany (Bremen) plant for highly specialised training. The analysis also demonstrated that once DCSA had committed to integrating the East London plant in its global supply chain, it set about upgrading local human resources in a major way. The investment by DCSA in human capital development bodes well for province as the workforce will contribute to regional and ultimately to provincial economic development.

The above literature provides literature of the studies that have been conducted in the developing countries using different methods. The literature provides the main determinants of FDI and the relationship between FDI and its determinants.

2.3.2 STUDIES IN DEVELOPED COUNTRIES

Using a multivariate regression analysis from 1992-1997 Bandelj (2001) analysed the country level FDI determinants in several European Union countries (including Croatia, the Czech Republic, Hungary, Poland, Slovakia and Slovenia). Independent variables included GDP, GDP growth rate, population size, wages, inflation, infrastructure, education levels, unemployment, political stability, FDI policy as foreign aid, migration and trade flows, presence of national-minorities as a measure of historical cultural contact, and institutional arrangements between investors and host, such as EU Agreements and bilateral investment treaties. Bandelj (2001) concluded that all variables affected FDI inflows in all the countries studied. Bandelj (2001) however pointed out that political stability played a very significant role in attracting FDI into these countries.

Crenshaw (1991) used a regression study on European countries. Crenshaw (1991) found that national development, as measured by urbanization, economic growth, population growth, government consumption and human capital formation, encouraged FDI growth in European countries. Like Schneider and Frey, Crenshaw concluded that human capital formation significantly influenced the level of FDI inflows.

Using time series regression analysis Stoeber (1986) analysed FDI factors determining investment decisions in Korea covering the period 1970 to 1980. Stoeber (1986) found that legal characteristics of host countries, such as foreign investment policies, could facilitate or discourage investment inflows. However, Stoeber suggested that strong FDI policies should be a priority for increases in FDI inflows.

Basi (1963) used a survey study in Eastern and Central European firms where he conducted one on one interviews with firm executives to determine the major factors affecting Foreign Direct Investment decisions (political instability and market potential) in Third World countries. Basi's (1963) survey was based on a comparative analysis between political instability and market potential. Basi found out that business executives interviewed reported

political instability as the most important variable influencing their foreign investment decisions, compared to market potential.

The Organization for Economic Co-operation and Development (OECD) (1994) conducted a survey study based on interviews carried out in Multinational firms to assess the factors affecting FDI in Central and Eastern countries. The paper found that the frequency of changes in a country's legal policies and bureaucratic/ administrative barriers decisively shaped investment choices. Welfens (1993) also conducted a survey study based on interviews with senior managers in transition economies (Central and Eastern Europe) on factors affecting FDI. Welfens found that a set of credible political institutions, and stabilising monetary and fiscal policies were also important drivers for FDI growth. In addition he concluded that political instability provides a more hostile environment for foreign corporations, thus discouraging their investment. However, in another survey based study on FDI in the motor vehicle industry from 1948-65, Bollen and Jones (1982) found out that the effect of political instability was much weaker than suspected.

Alter and Wehrle (1993) carried out a survey study in Central and Eastern European transition countries to determine the drivers for FDI inflows. In carrying out their study the authors used a questionnaire based survey of senior executives. Alter and Wehrle (1993) concluded that national policies on FDI may provide incentives to foreign investment through tax breaks, prevention of double taxation, establishment of free economic zones, and exemptions from certain import duties. Alter and Wehrle (1993) also found that in other European countries, FDI is discouraged through a requirement of an investment permit or registration, a high degree of screening or sectoral restrictions and entry barriers.

Lankes and Venables (1997) reported the findings of a survey of 117 Western European firms with investments in Eastern Europe. The major objective of the study was to examine how the characteristics of FDI vary across the transitional economies and to analyse the reasons why firms undertake FDI. They found that there were at least two distinct motives for undertaking FDI: (1) market access and (2) production costs. Market access is derived from the gain of being close to consumers and therefore tends to be associated with distribution outlets and/or production purely for the local market. According to Lankes and Venables production costs originate from the benefits of being able to base production in low-cost locations and tends to be correlated with export orientation. Lankes and Venables noted that

projects that are dependent on lower production costs were found to be more footloose, replacing or displacing production around the world, more closely integrated in the overall activities of the firm, and somewhat more up stream. However Lanke and Venables (1997) noted that some firms did not follow the relevant steps in answering their questions.

In a rational choice research, sociologists London and Ross (1995) premised the inquiry on their theory of global capitalism. This theory contended that developed countries seek more easily managed and less costly Third World labour. The authors argued that labour control and labour cost were key determinants of FDI. London and Ross also found out that although labour costs influenced the flow of FDI, other factors such as national development and political stability played a significant role as well.

Wang (2004) analysed the impact of policy reforms and foreign direct investment (FDI) in the Chinese automotive industry. Since 1978 the country has moved to a more liberalized market economy but still has restrictive policies such tariffs, screening of foreign firms and foreign equity limits. The study finds that the open market policies the country has pursued over the years has increased FDI into the Chinese automotive sector. There are three main patterns for foreign investment in China: equity joint ventures (EJV), co-operative joint ventures (CJV) and wholly foreign-owned ventures (WFO). The EJV is the main pattern of foreign investment with Europe accounting for the biggest share of geographical origin of investment. Between 1981 and 1998 the net foreign capital injected to the Chinese automotive industry was only about \$4.54 billion, equivalent to 22 per cent of the total investment in the FDI projects. The study concludes that in order to attract more FDI the Chinese government has to reduce trade and non-trade barriers. Liberalisation of trade and investment, and deregulation of industrial policy however are necessary but not sufficient conditions for the sustainable development progress of the automotive industry. The success of the automobile industry depends also on the extent to which China will transform into a market economy and its integration into the world economy.

Decena (1999) studied the impact of trade liberalization on the Philippines automotive industry. The study tries to examine the automotive industry's behavior towards transition a regulated to a liberalized system with the elimination of two main policies, local content requirements and foreign exchange requirements. The study covers the passenger car sector for the period 1986 to 2004 when regulations were lifted. The Dynamo Systems (DS) approach was used to capture how changes in policies will affect the industry variables like

production, imports, exports, costs of production and employment and thus the DS approach facilitates the simulation process. The simulation results showed that the industry would exhibit growth if no changes were made to the present policies but elimination of local content programs would increase average car prices, decrease employment and the production rate. The results also show that elimination of foreign exchange requirements will increase investment and thus lowering of local content requirements as opposed to complete elimination would be a better alternative.

The rate of exchange between countries determines the terms of trade and therefore the impact of the exchange rate on a country's trade levels is important. Williamson (2000) studied exchange rate exposure and competition using the automobile industry in the US and Japan. The study tries to examine the effects of real exchange changes on multinational firms and incorporates the effect of intra-industry competition on the relation between exchange rates and firm value. Real exchanges are observed monthly, specifically on the fifteenth day of each month to counter the effects of macroeconomic announcements. The sample is comprised of monthly return index of each firm on its home security market covering the period 1973-1995. An OLS estimation equation is used in regression analysis with the aid of a seemingly unrelated regression (SUR) to capture the cross-sectional dependence in residuals. The empirical results show that a time varying exposure exists across countries for multinational firms and global competitors. The currency exposure is a function of foreign sales, cost structure of foreign competition and degree of competition. The appreciation of a currency will have a negative impact on the firms and foreign production is a measure to counter foreign exchange exposure.

Allayanis (1997) looked at the time variation of exchange rate exposure for the U.S. manufacturing industry. This study examines the time-variation of the exposure of monthly U.S. manufacturing industry returns (imports and exports) to exchange rate movements. The study covers two time periods 1978-1986 and 1987-1990 involving over 137 U.S. manufacturing industries for the first period and over 124 for the second period. An augmented model which allows for both time-varying exposure of share of imports and exports is employed. The results of the study found that 22 percent for the first period and 32 percent for the second period of manufacturing industries are significantly exposed to exchange rate movements through exports and imports. The study also found that a percentage (1 %) appreciation of the dollar reduces the value of the industry through exports

(0.46) and increases the value of industry through imports (0.37) and hence in total reduces the industry value by 0.09 percent.

Sridharan et al (2009) studied the casual relationship between Foreign Direct Investment and Growth in the BRICS countries (Brazil, Russia, India, China and South Africa). The study uses quarterly data from 1996 to 2007 for Brazil, 1994 to 2007 for Russia, 1992 to 2007 for India, 1999 to 2007 for China and 1990 to 2007 for South Africa. The study employs the Industrial Production Index (IPI) as a measure of Economic Growth. The empirical results found that Growth leads FDI bi-directionally for Brazil, Russia and South Africa and FDI leads Growth uni-directionally for India and China respectively.

Ravenhill (2005) studied the impact of FDI into the Korean Automobile industry. The study tries to examine the factors driving FDI into the industry and the subsequent impact on car makers and auto parts suppliers. The buying of local car makers (Daewoo and Samsung Motors) by foreign firms (GM and Renault) respectively contributed to capital injection and flow into the local industry. The takeover has also contributed to improved technology transfer and research and development in the domestic market and integration into the global network. Investment into the auto parts industry has been lagging behind but has increased in recent years as many foreign firms have injected money through joint ventures. Research and development has been largely conducted in parent company's headquarters abroad and not much technology transfer has occurred. There are however constraints in encouraging investment into the industry like labour market flexibility and trade union militancy thus having a significant impact on employment creation.

2.3.3 ASSESSMENT OF LITERATURE

The chapter provided a review of both theoretical and empirical literature. In the analysis of the theoretical literature the Eclectic theory and the Micro level theory were discussed. The main highlight of the Eclectic theory is that of the ownership advantage. The theory points out that for a country to be competitive in a foreign country, it must have some kind of a unique advantage that can help them overcome the cost associated with operating in a new country. In this regard the eclectic theory stresses that the foreign firm to own a particular resource in a particular country. This theory makes a contribution towards FDI discussions. There are some challenges with the theory mainly a matter of ownership is usually played by

a lot of socio-economic issues. The Micro level theory highlights that the decision to go abroad is not about the ownership specific rather firm specific. The decision to set up value-adding operation abroad depends on the industry and certain aspects such as technology, good education and skilled labour force.

A number of studies have been done examining the determinants of Foreign Direct Investment in the motor industry as it can be noted in Table 2.1. On the empirical literature though based on different methodologies there are some similarities. The trend of similarities in empirical literature is that FDIs are mainly determined by economic growth. Studies by Asiedu (2002), Dunning (1994), Hess (2000) provide guidance on the theoretical and empirical framework to follow. The studies mentioned above are from developed and developing countries and form and use different techniques but the variables used in their respective empirical models are similar. These variables have been empirically found to have a positive relationship with FDIs. However exchange rates have been found to have a negative relationship with FDI.

Table 2.1 is a summary of the empirical findings of all studies on the determinants of Foreign Direct Investment in developed and developing countries. Studies are grouped according to the major determinants common in all empirical studies.

TABLE 2.1: SUMMARY OF SELECTED EMPIRICAL LITERATURE ON THE DETERMINANTS OF FDI_s IN THE MOTOR INDUSTRY

GROUP NO	AUTHOR(S)	METHODOLOGY	DETERMINANTS
1	Asiedu (2002), Ngowi (2001), Kamaly (2002), Bandelj (2001), Morisset (2000), Stoever (1986), Onyeiwu (2000) and Kandiero and Chitiga (2003), Sridharan et al (2009)	OLS Regression and Survey studies	Economic growth
2	Schneider and Frey (1985), Dunning (1994), London and Ross (1995), Agarwal (1980) and Onyeiwu (2000)	OLS Regression and Survey studies	Skilled work force and labour costs
3	Mowatt and Zulu (1999), CREFSA-DFI (2000), Khan and Bamou (2004), WBES (2000), WDRS (1997), UNCTAD (2000), CREFSA (2000), World Economic Forum (1998), Hess (2000), Kandiero and Chitiga (2003), Onyeiwu (2000), Bandelj (2001) and Morisset (2000)	Regression and Survey studies	Infrastructural Developments and high Interest rates
4	Siphambe (2004), Khan and Bamou (2004), CREFSA-DFI (2000), Faruqee (1992), Mowatt and Zulu (1999), Allayanis (1997), Williamson (2000)	Regression and Survey studies	Competitive exchange Rates
5	Khan and Bamou (2004), Obwona and Egesa (2004), Asante (2000), UNCTAD (2000), CREFSA (2000), Morisset (2000), Stoever (1986), Kandiero and Chitiga (2003)	Regression and Survey studies	FDI policies/ incentives trade liberalization
6	Lamprecht (2006), Franse (2006), Decena (1999), Wang (2004)	Regression and Survey studies	Trade openness

2.4 CONCLUDING REMARKS

The study reviewed two foreign direct investment theories, the Eclectic theory and the Micro-Level theory. The main insight from these theories is that the main reason why investors invest abroad is because of the location advantages, country specific advantages (locate where?), ownership advantages (why go abroad) and internationalisation advantage (how to go abroad). Countries exhibit differences in these aspects. Under the Country specific advantages (CSA) investment in a foreign country goes far beyond the (Firm Specific Advantage) FSA as it looks at the political environment, availability of raw materials, language and cultural differences, government regulations as well as the performance of the economy.

The determinants for foreign direct investment in the motor industry have been reviewed in the above literature. Empirical literature suggests that economic growth, education and openness of the country have a positive impact on FDIs. Interest rate and exchange are shown to have a negative impact on FDIs. The role of MIDP as promotional tool to drive economic growth in the sector is illustrated. The empirical literature shows a number of different methods which viewed the determinants of FDIs in the motor industry.

Based on the discussion contained in this chapter the hypothesis to be tested in this study is the impact of FDIs in the motor industry in South Africa.

The next chapter provides the overview of the determinants of foreign direct investment in the motor industry in South Africa.

CHAPTER THREE

AN OVERVIEW OF THE DETERMINANTS OF FOREIGN DIRECT INVESTMENTS IN SOUTH AFRICA

3.1 INTRODUCTION

The purpose of this chapter is to present an overview of the determinants of FDIs (Foreign Investments) in the automobile industry in South Africa. This chapter is divided into three sections. The first section gives the general background of the determinants of FDIs in the automobile industry. The second section discusses the relationship between the factors that determine FDI in the automobile industry. The third section concludes the chapter.

3.2. HISTORICAL OVERVIEW OF THE FOREIGN DIRECT INVESTMENT IN SOUTH AFRICA

South Africa is a developing country and depends heavily on investment for its continued growth. The injection of investment funds (FDIs) from abroad is essential to ensure the proper operation of the country's vast natural resources, which in turn enhance the continued growth and development, the advancement of all people living in the sub- continent.

Since the last twenty years, South Africa begun to integrate with the global economy. The countries that are assertively integrated have grown significantly than those countries that are not assertively integrated, Asiedu (2002).

The quality and quantity of foreign investment flowing into South Africa depends upon the returns that investors expect and the uncertainties around those returns. These expectations can be categorized as the following:

First there is a set of macro or country- level issues concerning economic and political stability and national policy towards foreign trade and investments; these generally refer to macroeconomic, fiscal monetary and exchange rate policies as well as political stability. As far as these macro indicators go, South Africa performs quite well.

Second, there is the set back of efficiency of a country's regulatory framework. As far as firms like the motor industry are concerned, the set back of efficiency of a country's regulatory framework relates to the entry and exit, labour relations and flexibility in labour use, efficiency of transparency of financing and taxation, and efficiency of regulations concerning the environment safety, healthy, and other legislatives public interest.

Third, the important expectation is the quality and quantity of available physical and financial infrastructure, such as power, transport, telecommunications and banking and finance.

The investment climate in South Africa has changed dramatically over the years. In the 1970's and the 1980's South Africa's foreign trade and investment in the motor industry was heavily influenced by sanctions and boycotts. The sanctions and campaigns against apartheid resulted in low investment inflows to South Africa, or even disinvestment. Domestic investment which, was based on import substitution, took center stage compared to Foreign Direct Investment (FDI). Although FDIs continued to flow in the motor industry during South Africa's political and economic isolation, favoured domestic returns on investment, political circumstances locally and pressure from abroad (economic sanctions, trade boycotts, civil society campaigns) led to massive outflow of capital, especially in 1980's (Gelb, 2002). The investment climate changed in 1994 (when the first democratically elected government came into power), the country became politically stable with a more open and outwardly oriented economy. The success of first democratic elections in 1994 put the economy on a growth path and created an environment for both domestic and foreign investment.

The South African automobile sector has seen the greatest destination of investment by EU manufactures over the past decade, followed by US and Japan (Hanouch and Rumney, 2005). Mining investment has also been much stronger since 2000 because of the availability of minerals in South Africa. The gas and oil industries have also attracted larger amounts of Foreign Investment between 1994 and 1999 while investment in the mining sector has been much stronger since 2000 (Hanouch and Rumney, 2005).

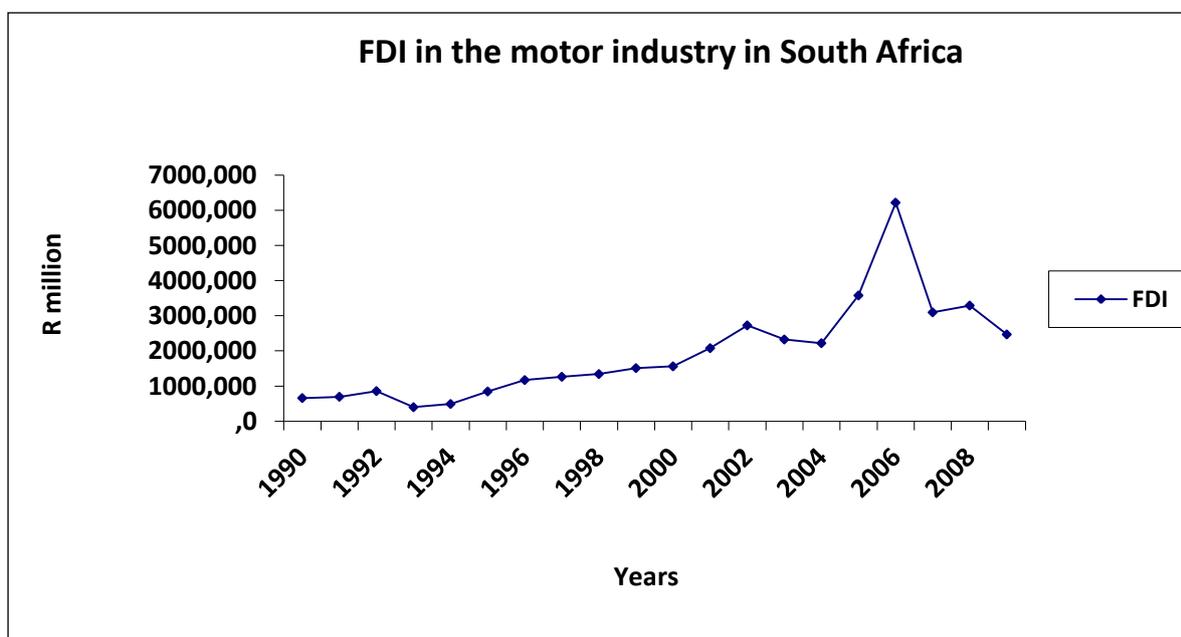
The strong growth in the automotive sector in South Africa has been the result of well-designed and well-managed government policies, particularly the Motor Industry Development Programme, (RSA Trade and Investment in South Africa 2003). Automotive exports comprise 12,8% of South Africa's total exports, a three-fold increase from 4% in 1995. In 2002, the automotive sector was the third largest sector in South Africa's economy (after mining and financial services) measured by its percentage contribution to the GDP of

the country. It was the leading manufacturing sector, contributing 6,3% to the country's GDP,(RSA Department of Trade and Industry, September 2003).

3.2.1 FOREIGN DIRECT INVESTMENT IN THE MOTOR INDUSTRY IN SOUTH AFRICA

A successful automotive industry is often seen as an emblem of economic success and, especially in developing countries, as a sign of mastery of modern technologies. In South Africa, one aspect that distinguishes the motor industry from other sectors is the importance of government policies in steering its development.

FIGURE 3.1 FOREIGN DIRECT INVESTMENTS IN THE MOTOR INDUSTRY IN SOUTH AFRICA



Source: National Association of Automobile Manufacturers Annual Report, 2006, National Association of Automobile Manufacturers Quarterly Review of Business Conditions , 2009

In 1990 there was a fall in the capital inflow of foreign direct investment. This was partly due to the decline in the economic growth from 2.4% in 1989 to -0.3% in 1990, and lack of export incentives (Macro- Economic Strategy, 1996). In addition to this, a company in South African business to supported democratisation as a necessary tool if not a sufficient condition for restoring international economic linkages and the resumption of capital inflows to the country played a significant role. The three year period between 1991 to 1993 Foreign Direct Investment in the motor industry averaged about 0.1% per year.

The year 1994 marked political and social reforms in South Africa which brought about the termination of international sanctions and trade boycotts, and the end of the disinvestment campaign and pressure for the withdrawal of foreign loans. The adoption of neoliberal economic policies played a part in appeasing local business interests and attracting foreign investors. GEAR (Growth, Employment And Redistribution) policy introduced in 1996 reassured the world that South Africa offered investors a stable political system, robust institutions, modern infrastructure, a consistent growth rate and many economic opportunities. The GEAR policy also liberalised capital controls and foreign exchange rates which left the value of rand, import and export economic activity highly susceptible to the volatile and rapidly changing nature of international capital markets (Mohamed, 2003).

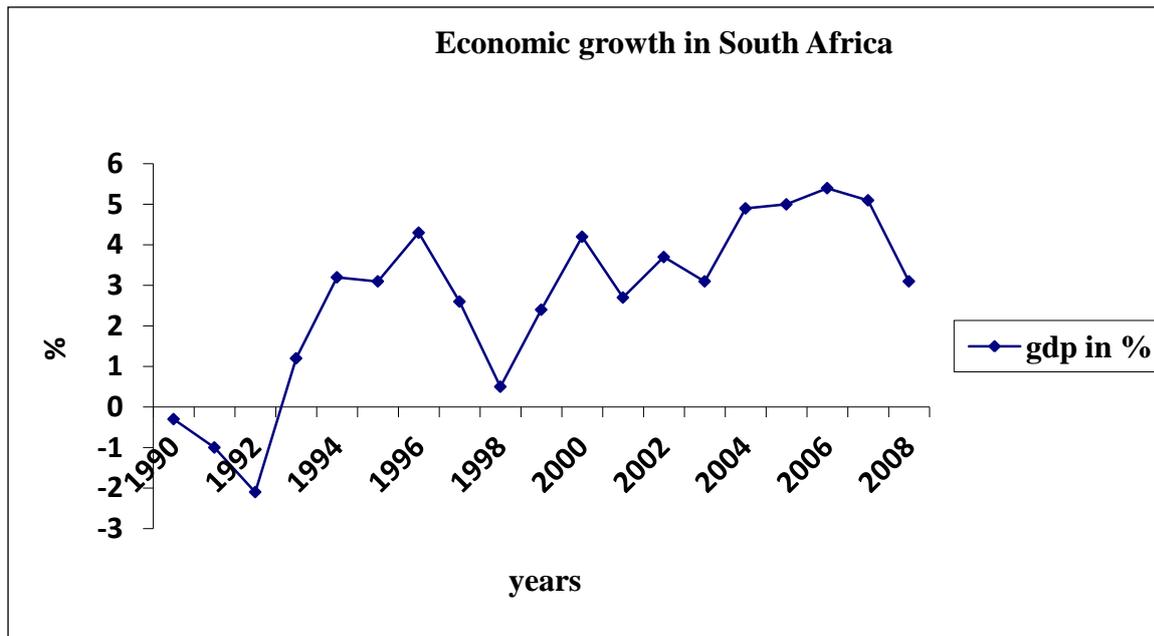
After the new millennium South Africa recorded an increase in the capital inflows. Between the periods 2002 to 2005 foreign direct investment fluctuated and averaged R4 billion, even after 2005 foreign direct investment increased up to R6.5 billion (NAMMSA 2009). At the end of 2007 there was a fall in the foreign direct investment and this was the result of the financial global crisis.

Low levels of inflation, the steady increase in economic growth, trade liberalization, openness of the economy and favourable political rights are some of the factors that have boosted FDI inflows to the South African economy. South Africa is therefore becoming the investment destination of choice of an increasing number of leading global companies as shown by Barclays bank's cash injection into the economy, the biggest single foreign direct investment ever, (World Investment report, 2006).

3.2.2 ECONOMIC GROWTH

Economic growth plays an important role in the attraction of capital flows into any country in the world. Countries that experience high economic growth rates stand a better chance of attracting more FDI inflows as they tend to exhibit political and economic stability and implement policies that attract FDI (Bengoa and Sanchez, 2003). South Africa has shown in figure 3.1, that it has enjoyed more FDI business most probably because of its high economic growth trends. South Africa's economic growth rates decreased strongly during the apartheid era which was crippled by economic sanctions, leading to massive capital outflows.

FIGURE 3.2 GROWTH DOMESTIC PRODUCT IN SOUTH AFRICA



SOURCE: South African Reserve Bank, 2010

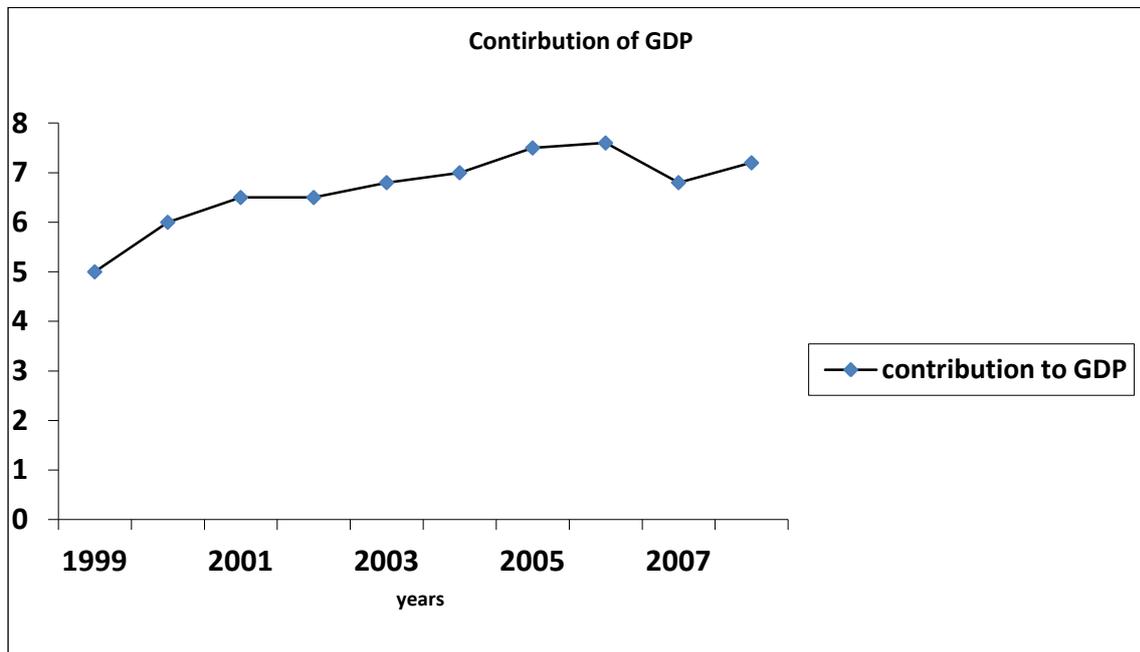
During the period 1990 to 1992 there was a decrease in the economic growth of the country which resulted in a fall in the foreign direct investment in the South Africa. Starting from 1994 there was an increase in the gross domestic product growth from 3.2% to 4.3% by 1997 which means that there is an increase in the flow of FDI to the automobile industry. In 2000 the South African economy grew by 3.5%. This growth rate was associated with the government's macro-economic strategy, which was launched soon after independence in 1994. The dividends of the new strategy were beginning to emerge. This strategy was aimed at monetary policy reforms that are bringing down inflation and easing the balance of payments constraint, tax reform and fiscal discipline, (South African Reserve Bank, 2010)

In 2001 and 2002 the economy grew by 2.7% and 3.5%, respectively. Great attempts to open the economy to international competition and securing access to new markets greatly boosted the economy towards sustainable development.

A report published by the IMF showed that the South African economy was still growing relatively in 2003, recording 1.9% growth, (South African Reserve Bank, 2003). This growth was partly due to lower and more predictable inflation, the strengthening of public finances, and an improved external position. This expansion in economic activity moreover created additional jobs for the locals, thus giving them a chance to contribute to the country's GDP. The two year period between 2004 and 2005 saw the country's GDP increasing by an average

of 3.4%, the highest ever by South Africa since the 1980s. This was the result of South Africa's flexible exchange rate regime and an integral element of the inflation targeting regime. The flexible exchange rate regime worked positively for the economy as it boosted the weak export sector. During the period 2007 and 2008 there was a decrease in the economic growth because of the global financial crisis.

FIGURE 3.3 CONTRIBUTION OF MOTOR INDUSTRY TO THE GDP IN SOUTH AFRICA



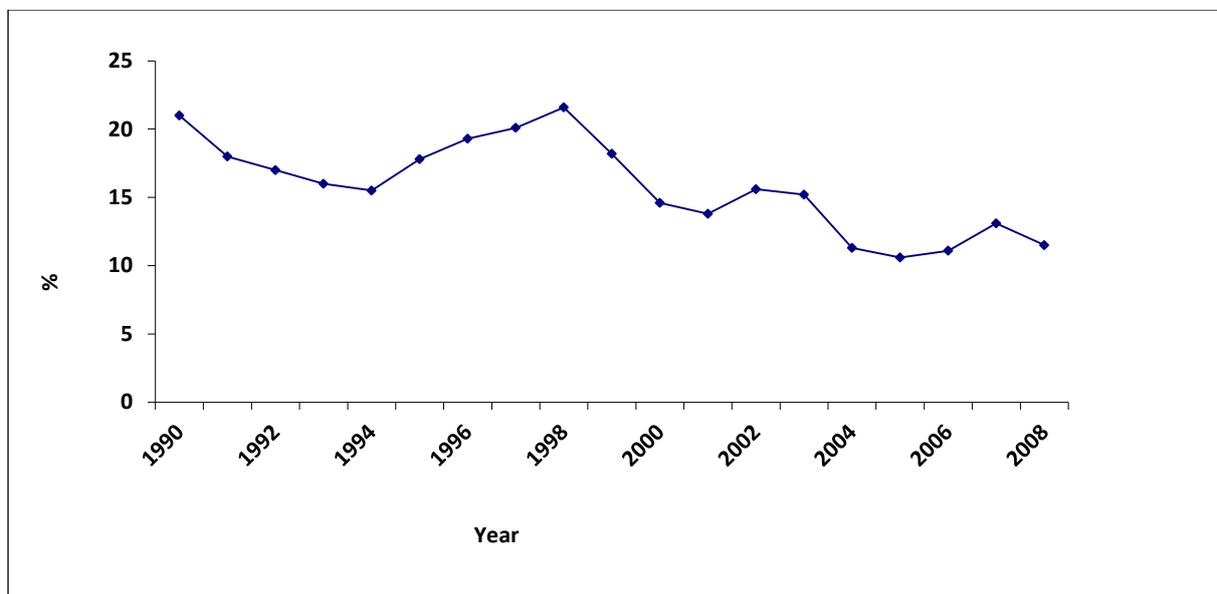
Source: National Association of Automobile Manufacturers Quarterly Review of Business Conditions , 2009

The Automotive Industry is the largest manufacturing sector in the SA economy and contributed 7,53% to SA GDP of R1 727 billion/Euro R205 billion in 2006 (2005 Total: R1 523bn/Euro 190bn).SA exports continue to surge as a result of improved commodity prices, competitiveness, and the Motor Industry Development Programme (MIDP) (26% compound growth annually since 1995), (NAAMSA).

3.2.3 INTEREST RATES

Interest rates also determine the flow of FDI to the host country. The most important aspect is that higher interest rates create a wider spread between the domestic interest rate and the world interest rate. A lower real interest rate, particularly in the context of political risk and instability, has the effect of reducing the flow of FDI in any potential investment location (Obsfeld, 1986). Real interest rates in South Africa have been managed by the Reserve Bank from the start of the decade, and therefore investors are finding it attractive to invest in the country (RSA Department of Industry and Trade, 2006).

FIGURE 3.4 PRIME INTEREST RATES IN SOUTH AFRICA FROM 1990-2008



Source: South African Reserve Bank, 2009

Due to the Asian financial crisis in 1997 the Reserve Bank increased prime interest rates to 20.1 percent to protect the domestic economy. The Reserve Bank adopted an inflation targeting policy in 2000 which would use interest rates as a tool to reduce inflation in the domestic economy. The new policy was successful in managing interest rates reaching 13.8 percent by the year 2001. However due to the Rand depreciation in 2002 interest rate increased to 15.6 percent. Since then the Reserve Bank was able to manage interest rates reaching its lowest level of 10.6 percent in 2005. This was the lowest level since 1990 and this is attributed to the high economic growth in the country during the period 2003-2006. Since then interest have steadily increased, initially reaching 13.5 in 2007 but declined to

11.5 in 2008. This was as a result of the slowdown in global economic growth in 2007 and the global financial crisis in 2008.

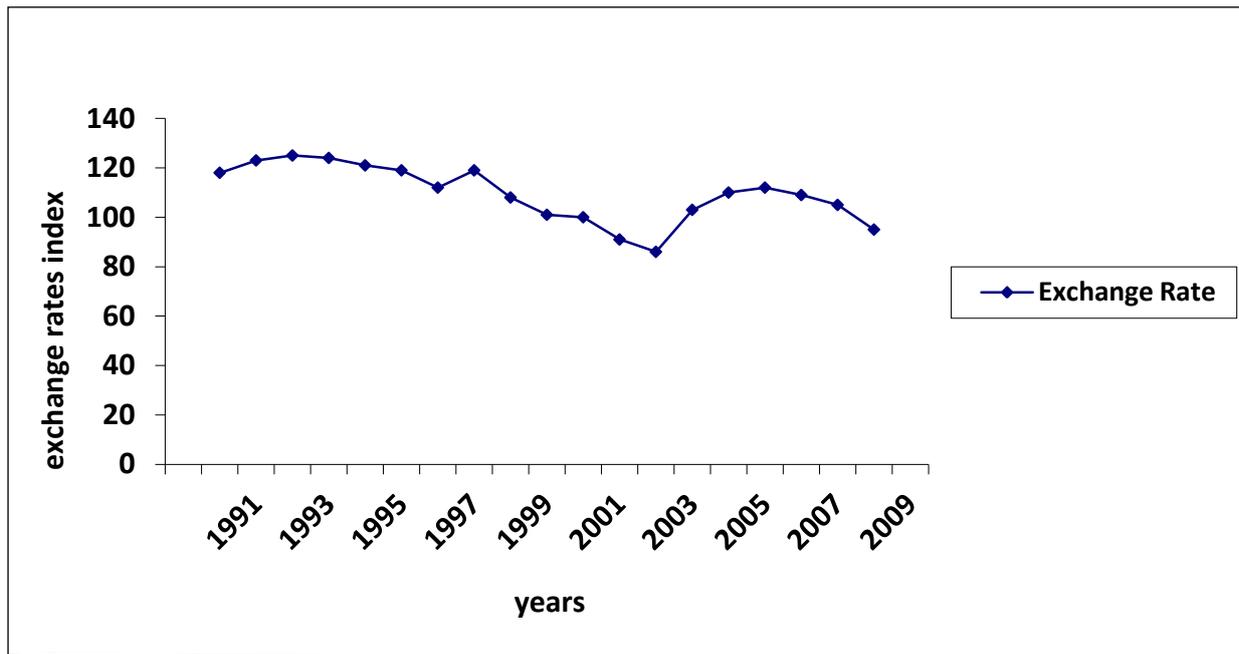
3.2.4 EXCHANGE RATES

When the domestic currency depreciates, there can be a negative or positive effect on the FDI inflows. Real depreciation of the currency of the host country may reduce FDI inflows in the host country, because a lower level of exchange rate (measured in units of foreign currency per domestic currency) maybe associated with lower expectations of future profitability. There are a various measures of foreign exchange rate which are used in the foreign exchange market. These include the nominal exchange rate, real exchange rate, bilateral and multilateral (effective) exchange rates. The focus of the study will be on the multilateral-nominal effective exchange rate. The nominal effective exchange rate (NEER) or trade weighted nominal exchange rate of a currency is a weighted average of its exchange rate against other currencies. The weights used are usually the proportion of a country's trade with another country. An increase in value of the currency in terms of another is called an appreciation and a decrease in value is called a depreciation of the currency. (Benasy et al, 2000; Cleeve 2004).

For instance Froot and Stein (1991) states that FDI inflows into USA were negatively correlated with the value of the dollar. On contrary Cushman (1985) focused on the effects of real exchange rate risk and expectations of FDI. He concluded that an increase in the uncertainty of future changes in the exchange rates might reduce exports but increase market seeking FDI.

Lecraw (1991) also showed that the impact of exchange rates depend upon the motivation of FDI, negative on export orientated and resource seeking FDI, but positive to market seeking FDI.

FIGURE 3.5 NOMINAL EXCHANGE RATES IN SOUTH AFRICA



Source: South African Reserve Bank, 2009

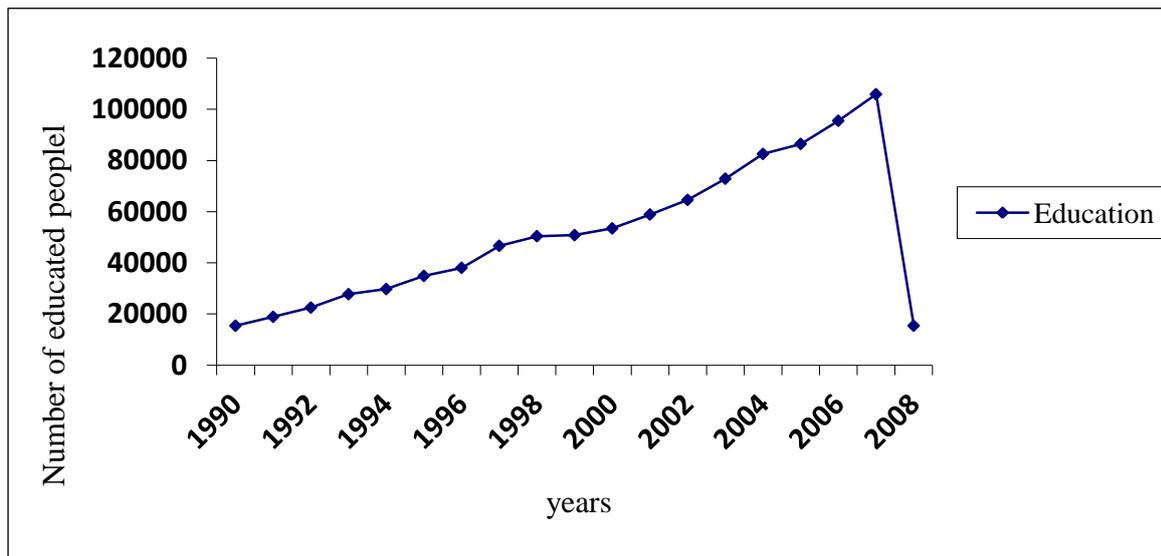
The exchange rate continued to appreciate reaching 110.00 in 2004 to 112.00 in 2005 as capital inflows intensified and global commodity prices increased. The nominal exchange rate declined from 106.00 to 95 between the years 2006 and 2008. This is attributed to lower interest rates, lower prices for key domestic exports and slowdown in global economic growth

3.2.5 EDUCATION

Education plays an important role in attracting foreign direct investments. The cost of labour is important in location considerations, especially when investment is export oriented (Wheeler and Moody, 1992; Mody and Srinivasan, 1998). Lower labour cost reduces the cost of production, all the factors remain unchanged. Sometimes, the availability of cheap labour justifies the relocation of a part of the production process in foreign countries. Recent studies, however, have shown that with FDI moving towards technologically intensive activities, low cost unskilled labour is not vogue. Rather, there is demand for qualified human capital (Pigato, 2001). Thus investing firms are also concerned about the quality of the labour force. It is generally believed that highly educated personnel are able to learn and adopt new technology faster, and the cost of retraining is also less. As a result of the need for high quality labour, investors are most likely to target countries where the government maintains liberal policy on the employment of expatriate staff. This is to enable investors to bring in

foreigners to their operation in order to bridge the gap in the skill of local personnel wherever it exists.

FIGURE 3.6 NUMBER OF PEOPLE WHO ACCESSED FORMAL EDUCATION IN SOUTH AFRICA



Source: Quantec, 2011

The number of people who have obtained the tertiary education in South Africa has been increasing since 1990. After 1994- 2005 education levels increased and this was a result of the new government. In 2008 the education levels started decreasing resulting from a number of factors including the following; lack of systematic routines and rituals, the knowledge problem, bureaucratic and administrative ineptitude, lack of accountability and the lack of capacity and expertise.

South Africa has a weak system of accountability in schools. While support to teachers is strong, and much as has been invested in teacher development, there is a very low level of accountability performance (Mbeki 2011).

3.2.6 HISTORY OF THE MOTOR INDUSTRY DEVELOPMENT PROGRAMME

The MIDP, introduced in September 1995, was the next phase after the Local Content Programme, aimed to develop an internationally competitive and growing automotive industry that would be able to; provide high-quality, affordable vehicles and components to the domestic and international markets; provide sustainable employment through increased production; and make a greater contribution to the economic growth of the country by increasing production and achieving an improved sectoral trade balance. It deviated from the previous programmes as no local content requirements were set.

These national objectives were to be achieved by:

- Encouraging a phased integration into the global automotive industry;
- Increasing the volume and scale of production by the expansion of exports and gradual rationalisation of models produced domestically; and
- Encouraging the modernisation and upgrading of the automotive industry in order to promote higher productivity and facilitate the global integration process.

The major policy instrument to achieve the objective has been:

- The gradual and continuous reduction in tariff protection so as to expose the industry to greater international competition,
- The encouragement of higher volumes and a greater degree of specialisation by allowing exporting firms to earn rebates of automotive import duties; and
- The introduction of a range of incentives designed to upgrade the capacity of the industry in all spheres.

The MIDP has now been in operation for sixteen years. It has successfully helped to guide the automotive industry's integrated emergence from isolation, helping it to become a global source exporting high technology and quality automotive products to demanding world markets. The MIDP has been extended until 2012 (NAAMSA 2001), in view of the following aims:

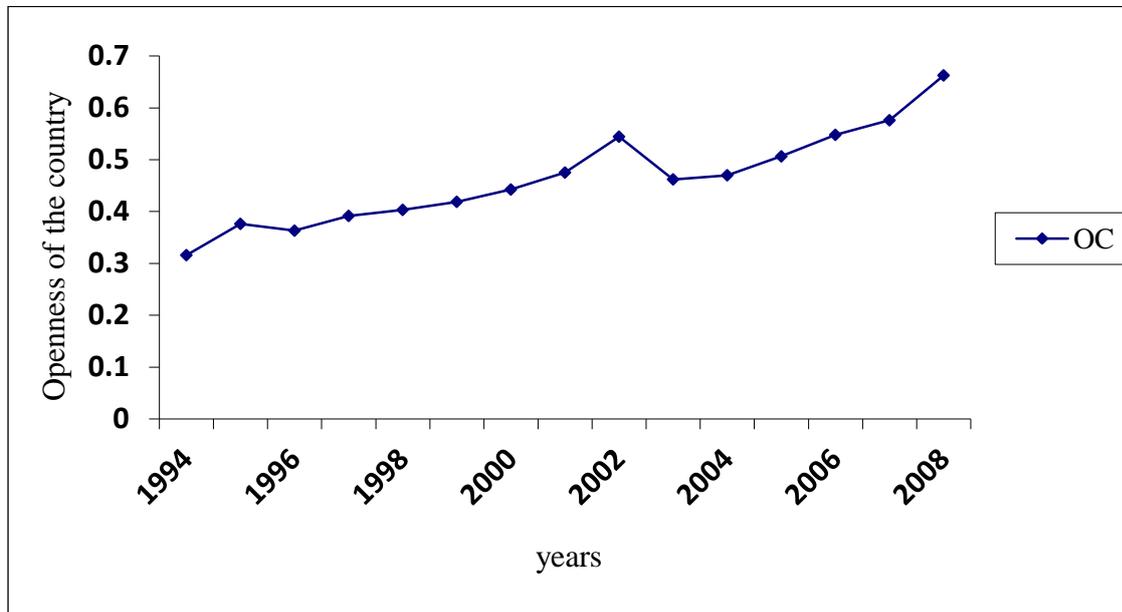
- To maintain and enhance the South African industry's attractiveness as a foreign investment destination and production base for exporting completely built-up vehicles and components;
- To maintain the momentum of exports; and
- To secure the continued viability of domestic vehicle and component manufacture.

It is important to note that the constructive way in which industry and government co-operate to maximise the contribution of this key sector to the South African economy is increasingly being used as a benchmark for other sectors, (RSA NAAMSA 2001).

3.2.7 OPENNESS OF THE COUNTRY

Openness of the country is the ratio of net exports to the GDP of the country shown by the degree to which investors can move large sums of capital in and out of a country. It is an important factor that investor coincides before investing in any country. Countries with high capital restrictions and restrictive trade policies highly discourage FDI inflows compared to countries that promote capital inflows. Empirical studies on FDI in developing economies have identified a positive relationship between openness and FDI (Morisset 2000). South Africa has enjoyed brisk business after the lifting of sanctions that were imposed on them during the pre-independence era. Trade liberalisation in major sectors of the economy has highly boosted the level of capital inflows to the country.

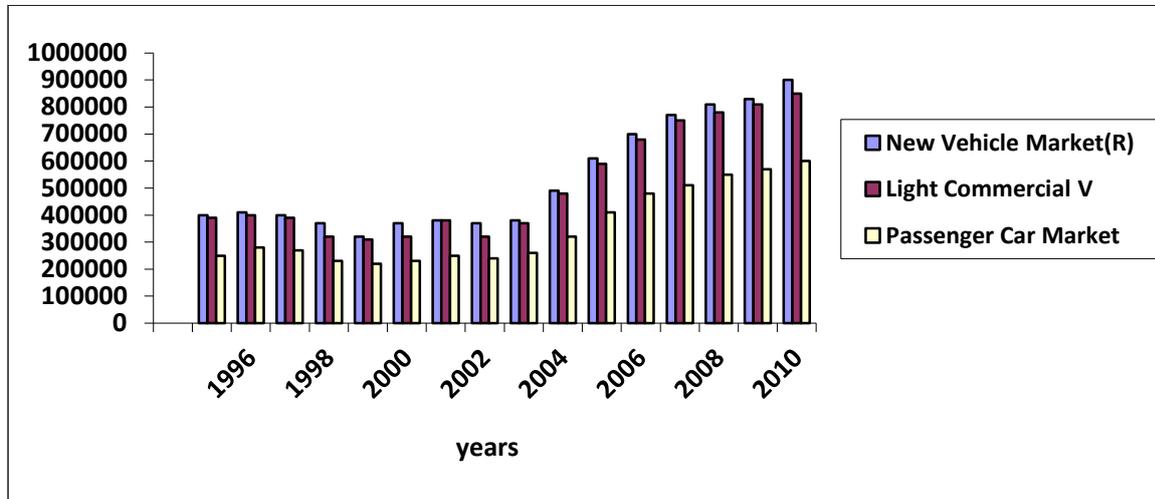
FIGURE 3.7 OPENNESS OF THE COUNTRY



Source: department of trade and industry

The year 1994 marked political and social reforms in South Africa which brought about the termination of international sanctions and trade boycotts, and the end of the disinvestment campaign and pressure for the withdrawal of foreign loans. The adoption of neoliberal economic policies played a part in appeasing local business interests and attracting foreign investors. The GEAR (Growth, Employment And Redistribution) policy introduced in 1996 reassured the world that South Africa offered investors a stable political system, robust institutions, modern infrastructure, a consistent growth rate and many economic opportunities. The GEAR policy also liberalised capital controls and foreign exchange rates which left the value of rand, import and export economic activity highly susceptible to the volatile and rapidly changing nature of international capital markets (Mohamed, 2003).

FIGURE 3.8 MOTOR INDUSTRY PERFORMANCE SINCE 1995- 2010 NEW SALES AND PROJECTIONS



SOURCE: NAMMSA 2003

The Motor Industry Development Programme (MIDP) has been recognised around the world as a successful and innovative national strategy to develop automotive manufacturing and open up a domestic market in the new environment of globalisation. The export market has extended a lifeline to an industry whose existence was not warranted by the volumes demanded by the domestic market alone. Tariff protection has been substantially reduced and the industry has made important structural changes towards ensuring greater efficiencies and lower costs. As a result, this sector has established itself as the leading manufacturing sector in South Africa (RSA Department of Trade and Industry, 2003).

3.2.7 OTHER DETERMINANTS OF FOREIGN INVESTMENT

The following subsection focuses on the other determinants of Foreign Direct Investments, namely infrastructure, international reserves, external debt, natural resource availability and return on investment.

3.2.7.1 INFRASTRUCTURE

The availability of good infrastructure is crucial for attracting FDI regardless of the type of FDI. It is often stated that good infrastructure increases the productivity of investment and therefore stimulates FDI inflows (Asiedu, 2002).

Expanding new economic infrastructure and maintaining existing facilities are important components of an investment climate reform strategy. The government has, therefore, committed significant resources to infrastructure so as to improve the quality and sustainability of capital projects and the overall efficiency, competitiveness and growth of the economy. South Africa's diverse manufacturing industry is a world leader in several specialized sectors, including railway rolling stock, synthetic fuels, and mining equipment and machinery (Asiedu 2002).

3.2.7.2 INTERNATIONAL RESERVES

International reserves greatly influence the flow of capital in developing economies. International reserves are mainly regarded as important determinates of how good or bad the investment climate is in a country. High levels of international reserves boost investor confidence and therefore attract foreign investors whilst lower levels of international reserves have the opposite effects (Asiedu 2002).

3.2.7.3 EXTERNAL DEBT

External debt is considered by investors as a result of inappropriate macroeconomic policies that discourage their activities in developing countries. Debt service burdens often reduce the ability of developing economies to provide basic infrastructures such as, telephones, roads, water, and electricity. Analysts thus expect an increase in a country's debt/GDP ratio to negatively affect the flow of FDI to the country, while a decrease in the ratio would have the opposite effect on the attraction of FI (Chakrabarti 2001).

3.2.7.4 NATURAL RESOURCE AVAILABILITY

Natural resource availability is another factor that should not be overlooked when it comes to the attracting foreign investments. Investors looking for resources tend to locate their subsidiaries abroad where a regular, stable or cheaper supply of inputs such as raw materials and other energy resources are easily transported to their base (Jenkins and Thomas, 2002). Countries that have large oil deposits are mostly favoured by foreign investors because of lower production costs. South Africa falls under the category of countries that have abundant natural resources.

3.2.7.5 RETURN OF INVESTMENT

In general, FDI will go to countries that pay a higher return on capital. For developing countries, testing the rate of returns of capital is difficult because most developing countries do not have a well functioning capital market (Asiedu, 2002). What is often done is to use the inverse or real GDP per capita to measure the return on capital. The implication of this that all things being equal, investments in countries with higher per capita income should yield lower return and therefore real GDP per capita should be inversely related to FDI (Asiedu, 2002).

Foreign investors may be attracted to countries and industries with an existing concentration of the other foreign investors. In this case, the investment decision by others is seen as a good signal of favourable conditions. The term “agglomeration economies” is often applied to this situation (Campos and Kinoshita, 2003). The clustering of foreign investors leads to positive externalities. Three types of such externalities have been identified. The first is that technological spillovers can be shared among foreign investors. Second, they can draw on a share pool of skilled labour and specialized input suppliers.

3.2.8 CONCLUDING REMARKS

Foreign investment has played an important role in the development of the motor industry in South Africa as it has provided much needed capital. This chapter has been able to highlight and establish the main determinants of foreign direct investment in the motor industry. It is clear that economic growth, education and openness of the country have a positive relationship with foreign direct investments in the motor industry. This means that increasing GDP, increase in the education levels and openness of the country attracts more FDIs. The contribution (percentage share) of the motor industry to the GDP of this country has increased substantially since the introduction of the MIDP. Investment and exports have more than doubled since 1995 mainly because of the incentives offered by the MIDP. Exchange rates and interest rates have a negative relationship with FDIs in the motor industry, meaning that an increase in interest rates and exchange rates decreases the FDIs.

In addition to all the mentioned factors that determine the FDI in the automobile industry also the Macroeconomics and other policies also plays a role. Macroeconomic policy errors resulting

in exchange rate misalignment and the lack of convertible currencies constrain FDI flows. In cases where policies are not sustainable, FDI flows are hindered.

The study established other factors that investors consider before investing in foreign countries. The size and growth of the host market is a particular important determinant of FDI in the automobile industry. The South African market is huge in the context of SADC and Sub Saharan Africa as a whole. Market size and growth has proved to be the most prominent determinant of FDI, particularly those FDI flows that are market seeking.

Return on investment is another major determinant of investment. In general, FDI will go to countries that pay a high return on capital. For developing countries like South Africa, testing the rate of return on capital is difficult because most developing countries do not have a well-functioning capital market. Skills of labour are identified as the major attractions for FDI. The cost of labour is important in location considerations especially when investment is export oriented. International reserves, availability of natural resources and the external debts are important.

The next chapter looks at the research methodology, model specification and the estimation techniques.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 INTRODUCTION

The study specifically looks at inflow of capital into the motor manufacturing industry. The foreign capital is mostly used for capital expenditure purposes like expansion, machinery and equipment. Quarterly data on capital expenditure from the first quarter of 1994 to the last quarter of 2008 is used. Quarterly time series data on capital expenditure was sourced from the National Association of Automobile Manufacturers of South Africa (NAAMSA) quarterly review of business conditions.

The first part of the chapter specifies the model and how estimation of the model is applied. This is followed by specifying the data that is used, the definition of variables and expected results. The last part of the chapter looks at various tests for the model including stationarity, cointegration error correction and diagnostic testing. The concluding remarks are provided towards the end of the chapter.

4.2 MODEL SPECIFICATION

The endogenous variable FDI is modelled as a function of economic growth, interest rate, exchange rates, education, and the openness of the country, which were found in previous chapters, chapter two and three to be the main determinants of FDIs. This is expressed in functional form as follows:

$$\text{FDI}_m = (\text{GDP}, \text{IR}, \text{EXCR}, \text{ED}, \text{OC}) \quad (4.1)$$

Where,

FDI_m = Foreign Direct Investment in the motor industry

GDP = Gross Domestic Product

IR	= Interest rate
EXCR	= Exchange Rate
ED	= Levels of education (tertiary education)
OC	= Openness of the country
t	= time/ year (quarterly)

The model can be expressed as follows:

$$FDI_m = \beta_0 + \beta_1 GDP_t + \beta_2 IR_t + \beta_3 EXCR_t + \beta_4 ED_m + \beta_5 OC_t + \mu \quad (4.2)$$

4.3 DEFINITION AND MEASUREMENT OF VARIABLES

The study employs quarterly time series data which covers the period 1994q1- 2008q4. The data was obtained from the Department of Trade and Industry (DTI).

Quarterly time series data on the prime interest rate in South Africa was used, the quarterly data was sourced from the South African Reserve Bank (SARB).

Quarterly time series data on the nominal exchange rate of South Africa from 1994 to 2008 was used. Quarterly data on the nominal exchange rate was obtained from the South African Reserve Bank (SARB).

The number of educated people is used as the proxy to measure human capital investment. Quarterly data of the number of educated people was obtained from Quantec (2011).

Openness of the country is defined as the logarithm of the ratio of the sum of imports and exports of goods and services to GDP. Several other proxies ranging from the ratio of the tariffs to GDP to the ratio of tariff revenues to imports have been used, but this is the proxy that has been used by the majority of the studies (see Edwards, 1994: 84, Aron *et al.*, 1997: 31, Mkenda, 2001: 54 and MacDonald and Ricci, 2003: 21). The quarterly data from 1994-2008 is sourced from Quantec.

4.4 EXPECTED RELATIONSHIPS

From the theory and empirical literature, coefficient β_1 is expected to be positive. In other words Foreign Direct Investment (FDI_m) and Economic growth are expected to have a positive relationship. This is because as the GDP increases investors from foreign countries would want to invest more.

The coefficient β_2 is expected to be either positive or negative. The relationship can be positive because these are not domestic investors they are foreign investors the interest rates does not influence their decision to invest. On the other hand it can be negative because the higher the interests the lower the investment becomes.

The coefficient $\beta_3 > 0$, because if the rand depreciates than the investor's currency then the investors take advantage of the weaker currency and increase FDI.

The coefficient β_4 is expected to be $\beta_4 > 0$ because the greater the number of the higher the productivity becomes. High productivity attracts more FDIs.

The coefficient β_5 is expected to be $\beta_5 > 0$ because through the openness of the country barriers to entry are removed allowing more FDIs.

4.5 ESTIMATION TECHNIQUES

There are several techniques available for parameter estimation, ranging from classical regression methods to cointegration based techniques. The former is based on the assumption that all the variables to be included in a regression are stationary. However, most economic series are not stationary in their levels such that estimations based on this technique will be meaningless (spurious). Differencing the variables to mechanically turn them stationary has been the preferred approach to deal with this problem, but it throws away useful long run information that may be in the data. These problems gave birth to a new generation of models based on cointegration and error correction modelling. There are also several cointegration based methods, but the majority of them suffer from numerous problems when applied to multivariate models.

The technique in this category that has emerged as the most powerful and popular is the Johansen technique, which is the technique employed in this study. The Johansen (1991, 1995) technique has become an essential tool in the estimation of models that involve time series data. This approach is preferred as it captures the underlying time series properties of the data and is a systems equation test that provides estimates of all cointegrating relationships that may exist within a vector of nonstationary variables or a mixture of stationary and nonstationary variables (Harris, 1995: 80).

The Johansen technique has several advantages over other cointegration based techniques. These will be discussed below. There are several steps that have to be followed in implementing the Johansen methodology. (Harris 1995: 76) and Seddighi *et al.* (2000: 303). Firstly, to determine the stationarity (order of integration), secondly performing cointegration tests in order to identify any long run relationships in the variables, thirdly, a short run vector error correction model is then estimated on condition of finding cointegration in the previous step and finally, residual diagnostic checks form the last step. The study reviews each of these steps in the following sections.

4.6 DATA ANALYSIS

Econometrics modelling requires a number of tests to be carried out before actual regression estimates. This increases the robustness of the estimated coefficients leading to reliable estimates. A number of tests including stationarity and cointegration tests are therefore carried out in regression modelling.

4.7 TESTING FOR STATIONARITY/ UNIT ROOT

A random time series Y_t is said to be stationary if its mean and variance are constant over time. The value of covariance between two time periods depends only on the distance between the two time periods and not on the actual time at which the variance is computed (Gujarati, 1995). In algebraic terms, Y_t is weakly stationary if:

$$E(Y_t) = \mu \quad (4.3)$$

$$Var(Y_t) = E(Y_t - \mu)^2 = \delta^2 \quad (4.4)$$

$$E(Y_t - \mu)(Y_{t-k} - \mu) = 0 \quad (4.5)$$

There are several ways of testing for stationarity like Dickey Fuller, the Augmented Dickey Fuller, Phillips Perron. However the most popular of these tests is the Dickey-Fuller (DF) and the Augmented Dickey Fuller (ADF) unit root test for stationarity. This study will therefore use the DF and the ADF test developed by Dickey and Fuller (1970). It assumes that a time series $t Y$ follows an autoregressive process of order 1:

$$Y_t = \rho Y_{t-1} + \mu_t \quad (4.6)$$

where μ is the residual. If the estimated ρ is found to be equal to 1, Y_t is said to have a unit root or to be a random walk time series and therefore is non-stationary. On the other hand if the estimated ρ is less than 1, Y_t is stationary.

$$Y_t - Y_{t-1} = \Delta Y = (\rho - 1) Y_{t-1} + \mu_t \quad (4.7)$$

$$= \delta Y_{t-1} + \mu_t \quad (4.8)$$

If Y_t is non-stationary i.e. $\rho = 1$, the estimated δ will be equal to 0, and Y_t will be white noise or stationary. The first difference of a random walk time series is a stationary time series. Dickey and Fuller (1970) identified several variants of the DF unit root test. The following are some of them:

$$\Delta Y_t = \delta Y_{t-1} + \mu_t \quad (4.9)$$

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \mu_t \quad (4.10)$$

$$\Delta Y_t = \beta_1 + \beta_2 + \delta Y_{t-1} + \mu_t \quad (4.11)$$

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{k=1}^m \alpha_k \Delta Y_{t-k} + \mu_t \quad (4.12)$$

$$\Delta Y_t = \beta_1 + \beta_2 + \delta Y_{t-1} + \sum_{k=1}^m \alpha_k \Delta Y_{t-k} + \mu_t \quad (4.13)$$

Where t is the time or trend variable and m the number of lagged dependent variable introduced in the model. What should be noted from the above models is that, tests based on relation (4.12) or (4.13) are called augmented Dickey-Fuller (ADF) unit root tests because of the introduction of lags of the regressand as repressors to get rid of serial correlation. In simple terms the augmented Dickey Fuller (ADF) tests is known as the stricter version of the Dickey-Fuller test.

When testing whether a time series Y_t is stationary or not, the following hypotheses are formulated:

$$H_0: \delta = 0 = \rho = 1$$

$$H_A: \delta < 0 = \rho < 1$$

The test statistic is called the Dickey-Fuller t- statistic and is the estimated d divided by its standard error. The critical values are given by most of the econometric packages offering ADF tests (Gujarati, 1995).

4.8 COINTEGRATION

Cointegration is an econometric technique for testing the correlation between non stationary time series variables. If two or more series are themselves non-stationary, but a linear combination of them is stationary, then the series are said to be cointegrated. Cointegration is associated with the long-run equilibrium relationship between two or more variables. The economic interpretation of cointegration is that if two or more variables are linked to form an equilibrium relationship spanning the long run, even though the series themselves in the short run may deviate from the equilibrium, they will move closer together in the long run equilibrium (Pesaran and Smith, 1998). Therefore a non-stationary variable might have a long run relationship with other non-stationary variables, but this does not create a spurious regression if the deviation of this long run relationship is stationary. This implies that these variables are cointegrated.

Engle and Granger (1987) defined Cointegration using two definitions as follows (1) If a series y_t with no deterministic components can be represented by a stationary and invertible ARMA process after differencing d times, the series is integrated of order d , that is, $y_t \sim I(d)$. (2) If all elements of the vector y_t are $I(d)$ and there exists a cointegrating vector $B^{-1}y_t \sim I(d-b)$ such that $1 y \sim (d b) t b I$ - for any $b > 0$, the vector process is said to be cointegrated $CI(d, b)$. Several methods have been used for conducting cointegration tests during the past decade. However the most widely used methods for cointegration include the maximum likelihood based Johansen and Juselius (1990) tests and the residual based Engle-Granger (1987) test.

The Engle-Granger test uses a two-step procedure. Firstly the residual error is tested for stationarity. Where variables X and Y might individually be non-stationary but if the estimate of their residual error is stationary, X and Y are said to be cointegrated.

Therefore this implies that X and Y form a long run relationship and the regression is not spurious. Engle and Granger (1987) showed that any cointegrated series has an error correction representation, implying that the residual error of the estimation in the first step is stationary; the error correction model therefore can be estimated. Secondly, the error correction model is estimated, which represents the short run dynamics of the model. Thus, this two-step procedure covers both long run equilibrium and the short run adjustment process.

According to Pesaran (1998), the residual-based cointegration tests are inefficient and can lead to contradictory results, especially when there are more than two I(1) variables under consideration. For this reason the study uses the Johansen and Juselius maximum likelihood tests which are more rigorous than the residual based tests. The Johansen and Juselius (1990) tests are used for multivariate cases. These tests are based on the maximum likelihood procedure and provide a unified framework for testing cointegrating relations in the context of vector auto regressive (VAR) error correction models (ECM).

Johansen and Juselius proposed two tests for determining the number of cointegrating vectors. The first they termed the likelihood ratio test which is based on the maximum eigenvalue and the second they termed the likelihood ratio test based on the trace test. According to their analysis the power of the trace test is lower than the power of the maximal eigenvalue test (Johansen and Juselius 1990). In interpreting the results if the null hypothesis of no cointegrating vector can be rejected, it indicates that there is a long run relationship among the variables in the model. As a result, the error correction mechanism can be presented.

The Johansen and Juselius testing and estimating procedure is as follows:

- Pre test the variables for their order of integration.
- Estimate the Cointegrating Regression.
- Check whether there is a cointegrating (i.e. long run equilibrium) relationship.
- If so, estimate the dynamic error correction model.
- Assess model adequacy (Johansen & Juselius 1990)

Johansen and Juselius tests use two variants for the reduced rank tests in determining the cointegration of variables. The two test statistics for cointegration employed under the Johansen technique are formulated as:

$$\lambda_{-max}(r, r+1) = -T \sum_{i=r+1}^n \ln(1 - \lambda_i) \quad (4.15)$$

$$\lambda_{-trace}(r) = -T \sum_{i=r+1}^n \ln(1 - \lambda_i) \quad (4.16)$$

where r in equation (4.15) and (4.16) is the number of cointegrating vectors under the null hypothesis and λ_1 is the estimated value for the i^{th} ordered eigenvalue from the Π matrix. The larger is λ_1 , the more large and negative will be the test statistic.

Therefore if the eigenvalue is non-zero, then $\ln(1 - \lambda_i) < 0 \forall i > 1$. That is, for it to have a rank of 1, the largest eigenvalue must be significantly non-zero, while other eigenvalues will not be significantly different from zero.

Furthermore it should be noted that eigenvalues are usually associated with different cointegrating vectors, which will be eigenvectors. Therefore a significantly non-zero eigenvalue indicates a significant cointegrating vector. The λ trace is a joint test where the null hypothesis is that the number of cointegrating vectors is less than or equal to r against the alternative that they are more than r . It starts with p eigenvalues, and then successively the largest is removed λ trace = 0 when all the $\lambda_i = 0$, for $i=1, \dots, g$. Using the trace statistic to analyse Tables 4.3 and 4.4, we cannot reject the hypothesis that the model has one cointegrating vector.

According to Johansen and Juselius the maximum eigenvalue provides an alternative to the trace statistic for the number of cointegrated variables. They observe that the maximum eigenvalue is more reliable than the trace test in identifying the number of cointegrated variables. The tests can reveal that a long term relationship exist between the variables.

4.9 ERROR CORRECTION MODEL

The vector error correction models (VECM) specify the short-run dynamics of each variable in the system, and in a framework that anchors the dynamics to long-run equilibrium relationships suggested by economic theory. For instance, economic theory suggests that economic activity across regions should converge. If this convergence hypothesis is true, we might observe long-run relationships between employment performances across regions. The existence of such long-run conditions does not prevent the occurrence of stationary, though variable, short-run deviations from them. Phillips (1998) showed that forecasts based on a vector error correction model that explicitly estimates co-integrating relationships (if any) and unit roots are consistent and asymptotically optimal. Consider two series, Y_t and X_t , that are both $I(1)$. The model that one may consider estimating is:

$$\Delta Y_t = \beta \Delta X_t + \mu \quad (4.17)$$

One definition of the long run that is employed in econometrics implies that the variables has converged upon some long-term values and are no longer changing, thus $Y_t = Y_{t-1} = Y$; $X_t = X_{t-1} = X$. Hence all the difference terms will be zero in (4.19), i.e. $\Delta Y_t = 0$; $\Delta X_t = 0$, and thus everything in the equation cancels. Model (4.17) has no long-run solution and it therefore does not explain whether x and y have an equilibrium relationship. There is a class of models that can overcome this problem by using a combination of first differenced and lagged levels of Cointegration variables. Furthermore the following equation can be considered

$$\Delta y_t = \beta_1 \Delta x_t + \beta_2 (y_{t-1} - \gamma x_{t-1}) + \mu_t \quad (4.18)$$

This model is known as an error correction model or an equilibrium correction model. $Y_{t-1} - YX_{t-1}$ is known as the error correction term. Provided that Y_t and X_t are cointegrated with cointegrating coefficient Y , then $(Y_{t-1} - YX_{t-1})$ will be $I(0)$ even though the constituents are $I(1)$ (Brooks, 2000). It is thus valid to use OLS and standard procedures for statistical inference on (4.18). It is of course possible to have an intercept in either the cointegrating term (e.g. $(Y_{t-1} - \alpha - YX_{t-1})$) or in the model for ΔY_t (e.g. $\Delta Y_t = \beta_0 + \beta_1 \Delta X_t + \beta_2 (Y_{t-1} - YX_{t-1})$)

+ μ_0) or both. Whether a constant is included or not could be determined on the basis of financial theory, considering the arguments on the importance of a constant.

Error correction models are interpreted as follows:

Y is purported to change between $t - 1$ and t as a result of changes in the values of the explanatory variable(s), X , between $t - 1$ and t , and also in part to correct for any disequilibrium that existed during the previous period. What should be noted is that the error correction term ($Y_{t-1} - YX_{t-1}$) appears in (4.18) with a lag. It would be implausible for the term to appear without any lag (i.e. as $Y_{t-1} - YX_{t-1}$), for this would imply that Y changes between $t - 1$ and t in response to a disequilibrium at times t . Y defines the long-run relationship between X and Y , while β_1 describes the short-run relationship between changes in X and changes in Y . while on the other hand β_2 describes the speed of adjustment back to equilibrium, and its strict definition is that it measures the proportion of last period's equilibrium error that is corrected for.

4.10 DIAGNOSTICS CHECK

This stage is crucial in the analysis of the determinants of foreign direct investment in the motor industry because it validates the parameter estimation outcomes achieved by the estimated model. Diagnostic checks test the stochastic properties of the model, such as residual autocorrelation, heteroskedasticity and normality, among others. The multivariate extensions of the residual tests just mentioned will be applied in this study; therefore they are briefly discussed here.

4.10.1 RESIDUAL NORMALITY TEST

One of the most commonly applied tests for normality is the Bera-Jarque (BJ) test, (Gujarati 1995). The BJ uses the property of a normally distributed random variable that the entire distribution is characterised by the first two moments- the mean and the variance. The Bera-Jarque test statistic asymptotically follows a X^2 under the null hypothesis that the distribution of the series is symmetric. The null hypothesis of normality would be rejected if the residuals from the model are either significantly skewed or leptokurtic/ platykurtic (or both).

4.10.2 HETEROSKEDASTICITY

According to Brooks (2002, pg. 148), there are a number of formal statistical tests for heteroskedasticity. One such popular test is the White's (1980) general test for heteroskedasticity. The test is useful because it has a number of assumptions such as that it assumes that the regression model estimated is of the standard linear. After running the regression residuals are obtained and then test regression is run by regressing each product of the residuals on the cross products of the regressors and testing the joint significance of the regression. The null hypothesis for the White test is homoskedasticity and if we fail to reject the null hypothesis then we have homoskedasticity. If the null hypothesis is rejected, then we have heteroskedasticity.

4.10.3 AUTOCORRELATION LM TEST

The Lagrange Multiplier (LM) test used in this study is a multivariate test statistic for residual serial correlation up to the specified lag order. Harris (1995: 82) argues that the lag order for this test should be the same as that of the corresponding VAR. The test statistic for the chosen lag order (m) is computed by running an auxiliary regression of the residuals (μ_t) on the original right-hand explanatory variables and the lagged residuals (μ_{t-m}). Johansen (1995: 22) presents the formula of the LM statistic and provides detail on this test. The LM statistic tests the null hypothesis of no serial correlation against an alternative of autocorrelated residuals.

4.11 IMPULSE RESPONSE AND VARIANCE DECOMPOSITION

Having identified the determinants of foreign direct investment in a well-behaved model, interesting issues that remain will be: how the exchange rates react to shocks in any of those determinants, which shock is relatively the most important and how long, on average, it will take for the real exchange rate to restore its equilibrium following such shock. The usual block F-tests and an examination of causality in a VAR will show which of the variables in the model have statistically significant influences on the future values of each of the variables in the system. However, these tests will not reveal whether changes in a value of a given variable have a negative or positive influence on the other variables in the system, or how long it would take for the effect to work through the system (Brooks, 2002: 341). To provide such information, Lütkepohl and Reimers (1992) and Mellander *et al.* (1992) developed

impulse response and forecast error variance decomposition analyses for a VAR process with cointegrated variables. These are briefly discussed below.

4.11.1 IMPULSE RESPONSE ANALYSIS

Impulse response analysis traces out the responsiveness of the dependent variable in the VAR to shocks to each of the other variables. It shows the sign, magnitude and persistence of real and nominal shocks to the real exchange rate (in our context). A shock to a variable in a VAR not only directly affects that variable, but is also transmitted to all other endogenous variables in the system through the dynamic structure of the VAR. For each variable from the equations separately, a unit or one-time shock is applied to the forecast error and the effects upon the VAR system over time are observed. The impulse response analysis is applied on the VECM and, provided that the system is stable, the shock should gradually die away (Brooks, 2002: 341). There are several ways of performing impulse response analysis, but the Cholesky orthogonalisation approach to impulse response analysis, which is a multivariate model extension of the Cholesky factorisation technique, is preferred in this study. This approach is preferred because, unlike other approaches, it incorporates a small sample degrees of freedom adjustment when estimating the residual covariance matrix used to derive the Cholesky factor (Lütkepohl, 1991: 155-158).

14.11.2 VARIANCE DECOMPOSITION ANALYSIS

Further information on the linkages between foreign direct investment and its determinants can be obtained from variance decompositions, which measure the proportion of forecast error variance in a variable that is explained by innovations (impulses) in itself and the other variables. Variance decompositions performed on the VECM may provide some information on the relative importance of shocks to the determinants of foreign direct investment in explaining variations in the exchange rate. In other words, variance decompositions give the proportion of the movements in the dependent variables that are due to their 'own' shocks (innovations), versus shocks to the other variables (Brooks, 2002: 342). Brooks also observed that own series shocks explain most of the forecast error variance of the series in a VAR. The same factorisation technique and information used in estimating impulse responses is applied in the variance decompositions.

4.12 CONCLUDING REMARKS

In this chapter, the determinants for foreign direct investments in the motor industry in South Africa were specified. The determinants of foreign direct investments included among others, gross domestic product, interest rates, exchange rates, education, and the openness of the country. The model employs the Dickey-Fuller and the Augmented-Dickey Fuller for unit root test. The Johansen (1991.1995) cointegration technique is employed because of its several advantages over other techniques such as the Engle-Granger. A number of diagnostic checks are done including among others, residual normality test, heteroskedacity, autocorrelation Lagrange Multiplier to see whether the residual passes all these diagnostic checks. Impulse response and variance decomposition tests were also done to check the responsiveness and importance of shocks to the variable of interest.

The next chapter provides the empirical findings of the determinants of foreign direct investment in the motor industry.

CHAPTER FIVE

EMPIRICAL ANALYSIS AND FINDINGS

5.1 INTRODUCTION

This chapter provides the analysis by applying framework and the analytical techniques proposed in the previous chapter. The chapter presents an overview of the estimated results and findings. This section is divided into five subsections in namely; stationarity and unit root tests, cointegration tests, long run relationship, short run parameters and diagnostics checks and impulse response as well as variance decomposition.

5.2 STATIONARITY/ UNIT ROOT TEST

The first step in the procedure is to test whether the time series are stationary. As stated in chapter 4 the Augmented Dickey-Fuller (ADF) tests (Dickey and Fuller 1981) are employed to identify the order of integration that is the number of times a variable needs to be differenced to make it stationary. The results of these two tests are presented in the tables 5.1 5.2 and 5.3 respectively.

The variables were tested for stationarity under all deterministic trend assumption of; constant and no trend, constant and trend and no constant and no trend. Table 5.1 below shows that most of the variables have unit root in levels but become stationary after first differencing. The variables are shown to have unit root in levels as the value of the t-statistics is smaller (less negative) than the critical Mackinnon values for all deterministic trend assumptions. The null hypothesis of unit root is therefore accepted. However after first differencing the t-statistics become bigger (more negative) than the critical Mackinnon values for all deterministic trend assumptions. The null hypothesis of unit root is therefore rejected and the alternative of no unit root in the series is accepted. All variables are therefore integrated into the same order I(1).

TABLE 5.1: STATIONARITY TESTS

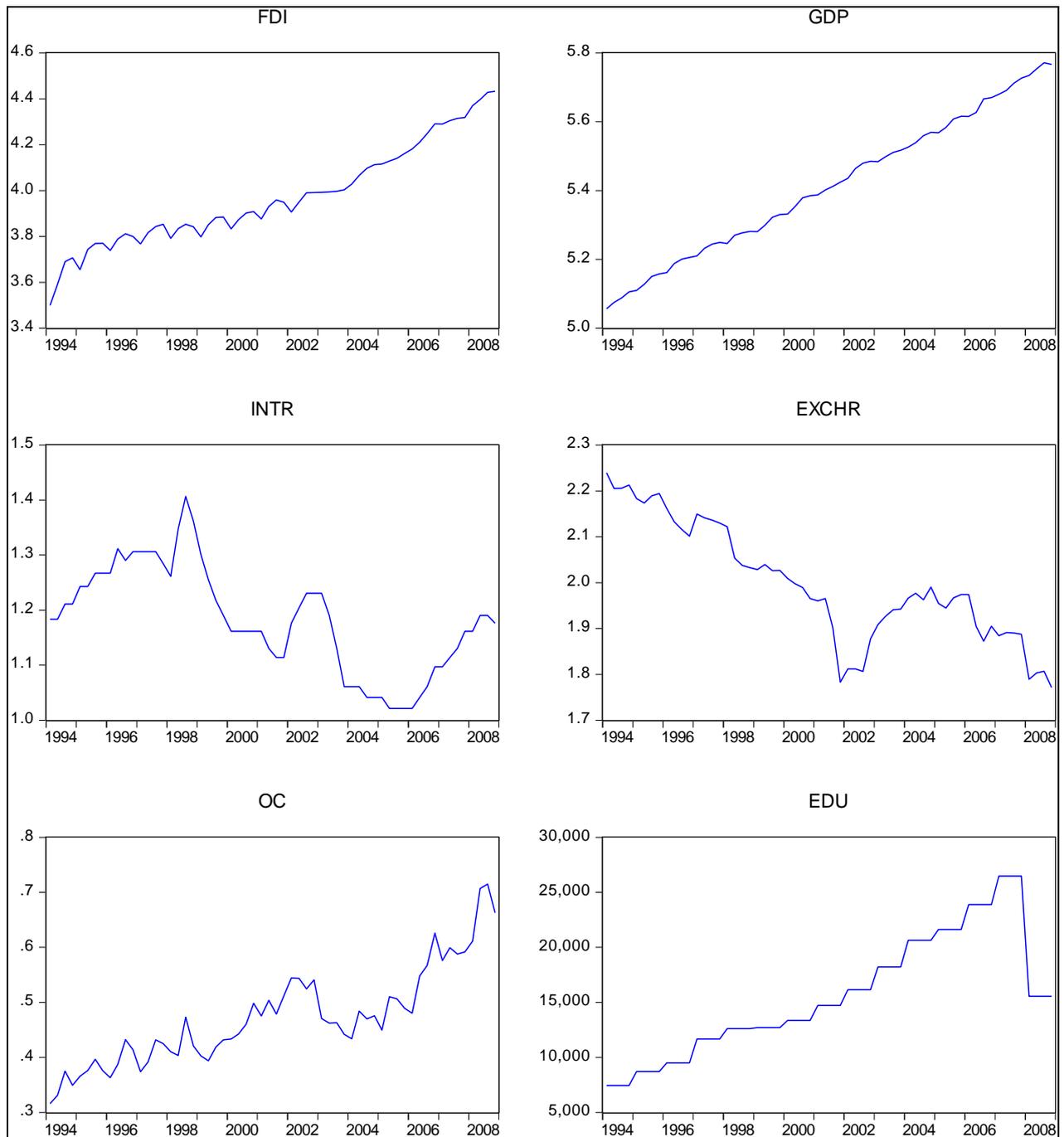
Variable	DICKEY- FULLER			AUGMENTED DICKEY- FULLER			Order of integration
		With constant & no trend	With constant & trend	With constant & no trend	With constant & trend	No constant & no trend	
LFI		-0.331236	-2.320711	-2.038269	-2.641400	1.350825	I(0)
DFI		-7.759011*	-7.92625*	-7.78635*	-7.90854*	-7.549834*	I(1)
LGDP		0.603701	-2.650445	-0.240549	-2.723344	-2.576349	I(0)
DGDP		-2.935449*	-2.762015	-2.9561**	-2.925812	-1.338886	I(1)
LINTR		-1.785311	-2.288617	-1.769625	-2.647746	-0.190189	I(0)
DINTR		-4.900554*	-4.89848*	-4.85827*	-4.81391*	-4.90159*	I(1)
LEXCHR		0.362252	-1.932559	-1.112410	-2.01557	-1.99989**	I(0)
DECXHR		-5.889762*	-6.71616*	-6.95855*	-6.88595*	-6.675424*	I(1)
LEDU		-0.922975	-1.764617	-1.627506	-1.359544	0.077662	I(0)
DEDU		-7.588796*	-7.72338*	-7.53891*	-7.66290*	-7.54983*	I(1)
LOC		-0.111553	-2.984360	-1.160071	-2.963440	-1.153118	I(0)
DOC		-8.783687*	-8.34373*	-8.71429*	-8.65402*	-8.46008*	I(1)
Critical Value	1%	-2.604746	-3.735800	-3.546099	-4.121303	-2.604746	
Critical Value	5%	-1.946447	-3.161200	-2.911730	-3.487845	-1.946447	

* represent a stationary variable at 1% level of significance

** represent a stationary variable at 5% level of significance

Source: Author's computation using Eviews 7 Econometric Package

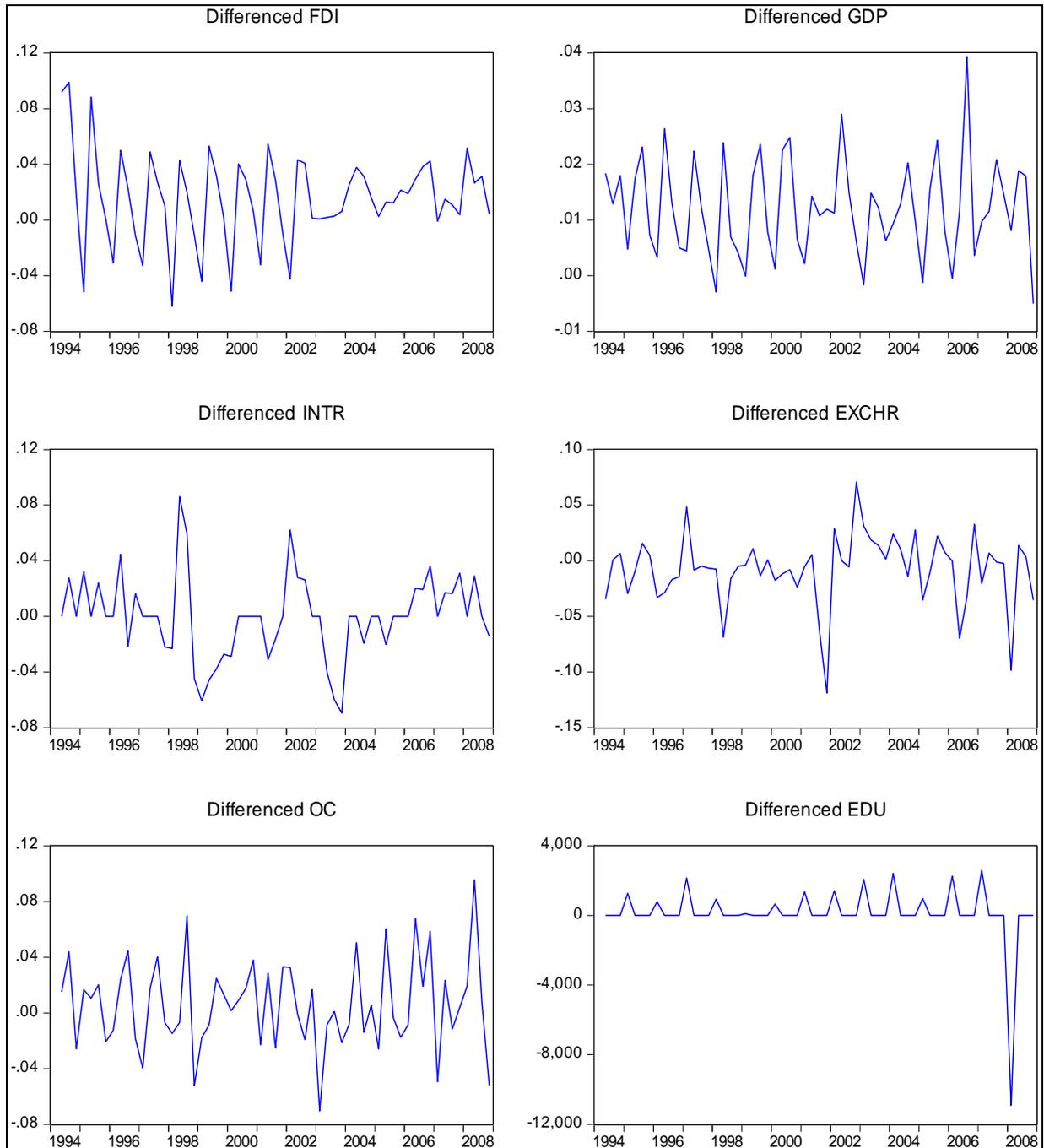
FIGURE 5.1: PLOTS ILLUSTRATION OF VARIABLES IN LEVELS



Source: Author's computation using Eviews 7 Econometric Package

LFDI, LGDP, LOC all trend upwards though there are fluctuations. This confirms the initial reported results in Table 5.1 that all variables poses unit root in levels. The LEDU variable decreases but it also follows an upward trend illustrating unit root. The last variables LEXCHR and LINTR also show trends albeit downward.

FIGURE 5.2: GRAPHICAL ILLUSTRATION OF VARIABLES AFTER FIRST DIFFERENCING



Source: Author's computation using Eviews 7 Econometric Package

The results above confirm the reported results in table 5.1 that showed that all variables become stationary after first differencing. All variables show the stationarity process as they seem to hover around their means. The variables therefore have a constant mean which is required for the stationarity process even though their variances are time variant. After establishing that most of the variables are integrated of the same order (1), it is necessary to

find out whether there is any long-term relationship among foreign direct investment and its determinants. This means that variables are ready for the cointegration test.

5.3 COINTEGRATION

Cointegration implies the existence of a long run relationship between variables. If variables are cointegrated, it means they are integrated of the same order, but within them exists a linear combination of at least one or more variables are integrated of order zero. The Johansen (maximum likelihood) cointegration technique is used to test for the existence of cointegration and the number of cointegrating vectors (Johansen 1988, 1991).

Table 5.2 below shows the lag length criteria obtained from the unrestricted VAR. The information criterion approach produces conflicting results as LR, FPE and AIC selects 5 lags whilst the SC and HQ both select 1 lags. An optimal lag length is required to produce uncorrelated and homoscedastic residuals. To reach a conclusion on the conflicting results all lags selected and use a lag length with robust diagnostics. Lag 1 produced spurious estimates whilst Lag 5 had too many cointegrating equations which would make interpretation difficult. Lag 4 was therefore chosen as the optimal lag for the data set. The Johansen cointegration test is therefore conducted under the assumption of no trend but a constant in the series and 4 lags for the VAR.

TABLE 5.2: LAG LENGTH INFORMATION CRITERIA

Lag	LR	FPE	AIC	SC	HQ
0	NA	2.55e-06	4.148658	4.367640	4.233340
1	595.5974	3.89e-11	-6.950531	-5.417658*	-6.357757*
2	47.01512	4.93e-11	-6.760847	-3.914084	-5.659981
3	46.49664	5.67e-11	-6.743330	-2.582676	-5.134371
4	63.85086	3.22e-11	-7.562601	-2.088056	-5.445550
5	51.10538*	2.25e-11*	-8.382901*	-1.594465	-5.757758

*indicates lag order selection criterion

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

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwartz information criterion

HQ: Hannan-Quinn information criterion

The results of the Johansen cointegration technique are reported in the table below.

TABLE 5.3: JOHANSEN COINTEGRATION RANK TEST RESULTS

Unrestricted Cointegration Rank Test (Trace)

Hypothesized	Trace	Statistic	Critical Value	Prob.**
None *	0.710832	139.0097	95.75366	0.0000
At most 1 *	0.391495	70.76852	69.81889	0.0419
At most 2	0.336651	43.44730	47.85613	0.1221
At most 3	0.205007	20.87233	29.79707	0.3657
At most 4	0.137887	8.254112	15.49471	0.4386
At most 5	0.001705	0.093832	3.841466	0.7594

Trace test indicates 2 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	Max-Eigen	Statistic	Critical Value	Prob.**
None *	0.710832	68.24120	40.07757	0.0000
At most 1	0.391495	27.32122	33.87687	0.2465
At most 2	0.336651	22.57497	27.58434	0.1924
At most 3	0.205007	12.61822	21.13162	0.4879
At most 4	0.137887	8.160280	14.26460	0.3626
At most 5	0.001705	0.093832	3.841466	0.7594

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

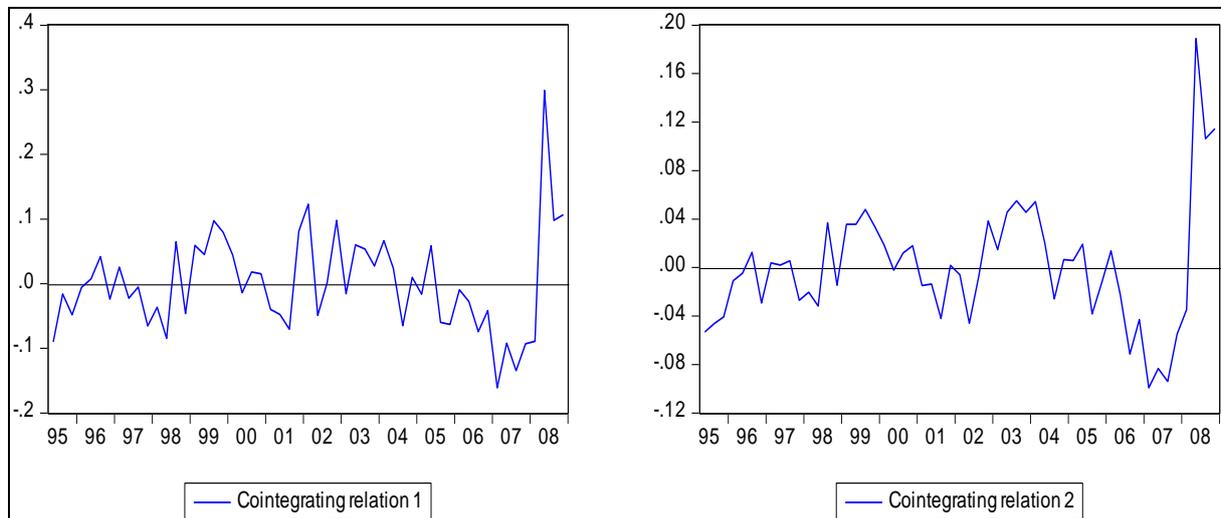
* denotes rejection of the hypothesis at the 0.05 level

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

The Maximum Eigenvalue test results are similar to that of the Trace tests as it rejects the null hypothesis of no cointegration at most 1 but fails to reject the null hypothesis that there is at most two cointegrating vector. The Trace test suggests that there are two cointegration relationships within foreign direct investment and its determinants whilst the Maximum Eigenvalue tests suggest that there is one cointegrating relationship within foreign direct investment and its determinants. To deal with this problem, Johansen and Juselius (1990) recommend the examination of the estimated cointegrating vector and basing one's choice on the interpretability of the cointegrating relations. Alternatively, Luintel and Khan (1999: 392) show that the trace test is more robust than the maximum eigenvalue statistic in testing for cointegration. The two cointegrating relationships within the model are graphically shown below. Figure 5.3 below shows the variables within the model move away from each other in

the short run but the relationship becomes more stationary in the long run indicating cointegration. Therefore there is a need to identify which vectors constitute the true or most significant cointegrating relationship.

FIGURE 5.3: JOHANSEN COINTEGRATING RELATIONSHIPS



Source: Author's computation using Eviews 7 Econometric Package

5.2.3 ERROR CORRECTION AND THE LONG RUN RELATIONSHIP

The ECM techniques allow the long run and short run dynamics to be estimated in a single step. The constant term of the single error correction framework is a combination of the short run and long run constant. This technique has an advantage as it isolates the speed of adjustment parameter which indicates how quickly the system returns to equilibrium after a random shock. If the gap between the long run and short run rates is large relative to the long run relationship, the error correction model must be applied.

The number of cointegrating relationships obtained in the previous step, the number of lags and the deterministic trend assumption used in the cointegration test are all used to specify a VECM. The VECM allows a distinction between the long and short run parameters for the foreign direct investment model. However, before interpreting the results from the VECM, the two cointegrating relationships that have been suggested in the last section have to be identified. This section therefore looks at the variables constitute the cointegrating equations. Table 5.4 below shows the estimates VECM through the E-views software with 2 specified cointegrating equations.

TABLE 5.4: VECM LONG RUN ESTIMATES

Sample (adjusted): 1995Q2 2008Q4

Included observations: 55 after adjustments

Standard errors in () & t-statistics in []

Cointegrating Eq:	CointEq1	CointEq2
FDI(-1)	1.000000	0.000000
GDP(-1)	0.000000	1.000000
INTR(-1)	0.198959 (0.17914) [1.11066]	0.307990 (0.09369) [3.28736]
EXCHR(-1)	-1.073810 (0.21108) [-5.08726]	-0.150527 (0.11040) [-1.36353]
OC(-1)	-2.286340 (0.50707) [-4.50893]	-1.131775 (0.26520) [-4.26761]

EDU(-1) -2.52E-05 -2.04E-05
 (4.6E-06) (2.4E-06)
 [-5.52527] [-8.54706]

C -0.592496 -4.625625

Error Correction:	D(FDI)	D(GDP)	D(INTR)	D(EXCHR)	D(OC)	D(EDU)
CointEq1	-1.123227	0.142599	0.493740	0.294564	-0.729295	38696.80
	(0.25222)	(0.07153)	(0.39153)	(0.42674)	(0.29128)	(20063.9)
	[-4.45342]	[1.99365]	[1.26104]	[0.69026]	[-2.50380]	[1.92868]
CointEq2	1.934983	-0.259295	-1.225575	0.359724	1.131531	-23458.20
	(0.43785)	(0.12417)	(0.67970)	(0.74082)	(0.50565)	(34831.0)
	[4.41929]	[-2.08822]	[-1.80310]	[0.48557]	[2.23776]	[-0.67349]

The VECM results clearly show evidence or presence of error correction. A comparison of the coefficients of the error correction terms shows that openness of the country (OC in cointEqua1) has the most significant coefficient and is the most significant with a t-value of -2.503 and has the correct and negative sign. FDI also has a negative coefficient and a t-value of -4.45 and thus also possess error correction. The other variables either have a positive sign or are insignificant. However variables with the negative sign still constitute the long run relationship despite being insignificant. In the second cointegrating equation GDP has the most significant coefficient, t-value -2.08822 and has the correct negative sign. Some variables do contain the error term but are insignificant. This suggests that FDI and GDP constitute the true cointegrating relationship in the first and second vectors. The long run relationship in the model is therefore explained by OC and GDP. The error correction term

measures the speed of the adjustment in returning the disequilibrium in the model to its equilibrium. The error correction term therefore suggest that any disequilibrium in the growth model will be corrected every quarter.

5.4 SHORT RUN PARAMETERS

The VECM techniques allow the long run and short run dynamics to be estimated in a single step. After the long run relationship has been established, the short run equilibrium parameter estimates are reported in table 5.5 below;

TABLE 5.5: VECM SHORT RUN PARAMETERS

Independent Variables	Coefficient	T-statistic
Constant	-0.106988	-3.55755*
GDP	2.122722	3.27121*
INTR	-0.331084	-2.62284*
EXCHR	-0.741596	-4.28573*
EDU	1.03	2.72099*
OC	0.810292	3.38182*
ECT_t	-1.123227	-4.45342*

*represents significance at 5%

Source: Author's computation using Eviews 7 Econometric Package

$$R^2 = 0.818431$$

$$SE = 0.017362$$

$$F\text{-Statistic} = 4.854296$$

TABLE 5.6 DIAGNOSTICS TEST

AR(LM)	31.8805	0.6647
White Test	56.5899	0.3889
Normality	25.08941	0.0444*

The estimated model exhibits robust results. The signs of all the coefficients conform to economic theory and are as expected. All the coefficients in the model are consistent estimates as indicated by the R^2 . The model has an R^2 of 0.81 meaning that 81% of variation in foreign direct investment is explained by the explanatory variables included in the model. The F- value which tests for the significance of the regression model is 4.854296 and is statistically significant. The standard error 0.017362 is low suggesting that the model is robust. The lower the standard error the more credible the estimates.

Before interpreting the results, it is necessary to consider the statistical properties of the model. The model was tested for normality, serial (auto) correlation, heteroskedasticity. Diagnostic tests carried out on the data reveal that the model is reasonably well specified. All of the diagnostic tests support the statistical appropriateness of the equation. In summary, the diagnostic tests indicate that the residuals are normally distributed, homoscedastic and serially uncorrelated. Having done the diagnostics the next section looks at coefficients of the explanatory variables and their impact to the dependent variable.

Gross Domestic Product has the expected positive sign and is significant at 5%. The results show a positive relationship between foreign direct investment and GDP. The coefficient value for GDP is 2.122722 which is significant as the t-statistics for this coefficient is 3.27121. The results indicate that 1% increase in GDP leads to 2.12% increase in FDI. This outcome is consistent with empirical literature discussed in chapter 2. The study by Kamaly

(2002), investigated the main determinants of FDI in the Middle East and North African Countries (MENA countries). Using a dynamic panel data model covering the period 1990-1999 he found that economic growth and the lagged value of FDI/GDP were the significant determinants of FDI flows to the MENA region.

Interest rates have the negative sign as expected. The coefficient value for interest rates is 0.331084 and is significant at 5% with a t-value of -2.62284. The size of the coefficient means that a 1% increase in interest rates in South Africa brings about 33% decrease in foreign direct investment inflows in the motor industry. The interest rate has a negative sign and therefore significant as supported by empirical literature reviewed in this study. The coefficient confirms that an increase in the interest rate is followed by a faster reaction on the FDI side. Several studies confirm the findings of this study e.g. Hess (2000), Kandiero and Chitiga (2003), Onyeiwu (2000), Bandelj (2001) and Morisset (2000).

Exchange rate has a negative sign that was expected. The coefficient of exchange is -0.74159 and is significant at 5% with a t-value of -4.28573. This means that a 1% increase in the exchange will lead to a 74% decrease in foreign direct investment in the motor industry. In other words this means that when the strength of a rand appreciates, this lowers foreign direct investment in the motor industry. This is consistent with literature; study by Faruquee (1992) used a time series study to establish the major determinants of FDI in Sub-Saharan Africa. His research was based mostly on the effects of exchange rates on FDI in these countries. He emphasised that on the supply side, a depreciation of the exchange rate would in theory have an ambiguous effect, reducing investment in the non tradables sector, and raising it in the tradables sector, unless the sector was highly dependent on imported capital and intermediate goods.

Education variable as has positive sign as expected. The coefficient value for education is 1.03 and is significant at 5% with a t-value of 2.7209. This means that a 1% increase in the number of people that have tertiary education brings about 1.03% increase in foreign direct investments inflows. This is consistent with literature, the study by Schneider and Frey (1985) used a time series regression analysis study in European countries focusing on the impact of human capital on FDI inflows. They found out that educated and skilled workers played a very significant role in attracting FDI inflows.

OC, is a ratio of net exports to the gross domestic product is significant in regression. Openness determines how open an economy is to world trade and the income growth benefits

that flow from trade. The positive coefficient of this variable in regression suggests that an increase in trade openness increase foreign direct investment and thus corroborates the theoretical relationship. The variable has a corresponding t-value of 3.3818. The size of the coefficient means that a 1% increase in trade openness increases foreign direct investment by 81 %. Increasing openness means increasing foreign direct investment in the motor industry.

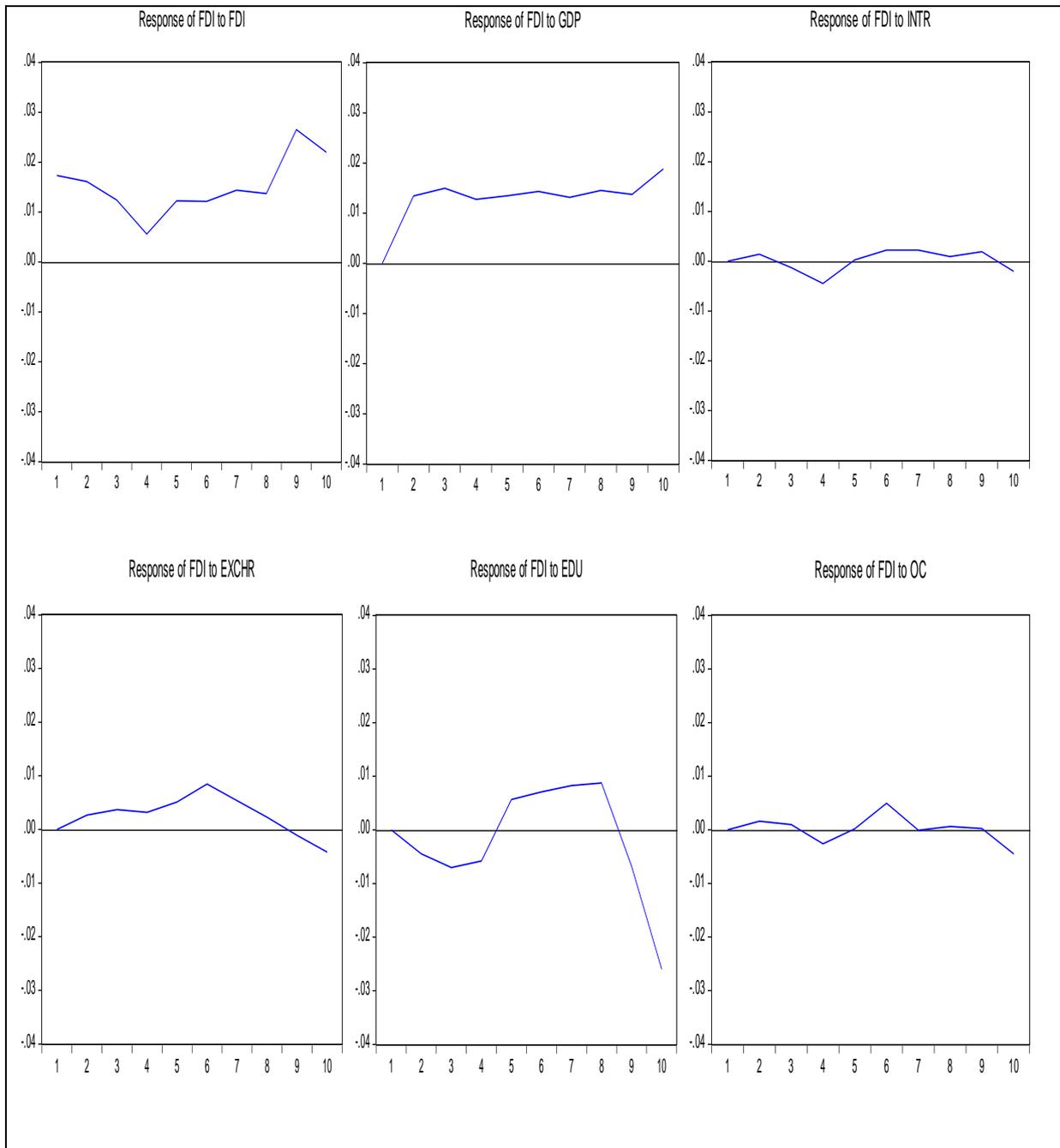
Study by Kandiero and Chitiga (2003) studied the impact of openness to trade on the Flow of FDI into African countries including Egypt, Lesotho, South Africa, Nigeria, Zimbabwe and many more. According to the findings of this research the reduction in tariff and non-tariff barriers such as licensing or cumbersome procedures increases FDI in African countries.

The error correction term has the correct negative sign. The negative sign means that when the economy is shocked out of equilibrium it adjusts back to the equilibrium. This is a non-explosive situation. ECT_{t-1} is also statistically significant at 5% level. The size of the coefficient (-1.123227) suggests that the speed of adjustment is fast. This speed indicates that the FDI adjusts quickly back to equilibrium.

5.2.5 IMPULSE RESPONSE AND VARIANCE DECOMPOSITION

Sometimes VECM estimations do not show the wealth of information of the dynamic effects on the short run parameter estimates. This can be overcome by the impulse response and variance decomposition tests. Impulse response analysis traces out the responsiveness of the dependent variable in the VAR to shocks to each of the other variables in the system. Variance decomposition analysis on the hand provides a means of determining the relative importance of shocks in explaining variations in the variable of interest.

FIGURE 5.4 IMPULSE RESPONSE OF ALL VARIABLES IN THE FOREIGN DIRECT INVESTMENT MODEL



Source: Author's computation 2011

These impulse response functions show the dynamic response of the foreign direct investment to a one-period standard deviation shock to the innovations of the system and also indicate the directions and persistence of the response to each of the shocks over a 10 quarter

(2.5 years) period. For the most part, the impulse response functions have the expected pattern and confirm the results from the short run relationship analysis. Shocks to three of the variables are not significantly different from zero and are transitory, while shocks to the other three variables are significant, but only two are persistent. The first graph shows the response of the independent variable to deviations by itself. This simply means that the effect of FDI to changes in FDI. FDI had remained stable despite fluctuations over the 10 quarter (2.5 years) short run period. A one-period standard deviation shock to GDP marginally appreciates the foreign direct investment. A shock to IR has a depreciation effect on foreign direct investment, but also remains constant over the 2.5 years. A one period standard deviation shock to exchange rates depreciates foreign direct investment in the 8th quarter. A one time standard deviation shock to education marginally appreciates up until the 8th quarter, decreases in the seventh but then appreciates in 9th quarter. The overall impact of education to FDI is positive which is similar to VECM short run estimates. Lastly, a shock to the openness of the country has a positive impact on foreign direct investment. OC remains constant but increases by more than 1% in the 5th quarter but then goes back in the 6th quarter and remain constant again. Among the analysed variables only gross domestic product, education and openness of the country are shown to have a persistent and significant impact on FDI, the rest are shown to have only a minimal impact.

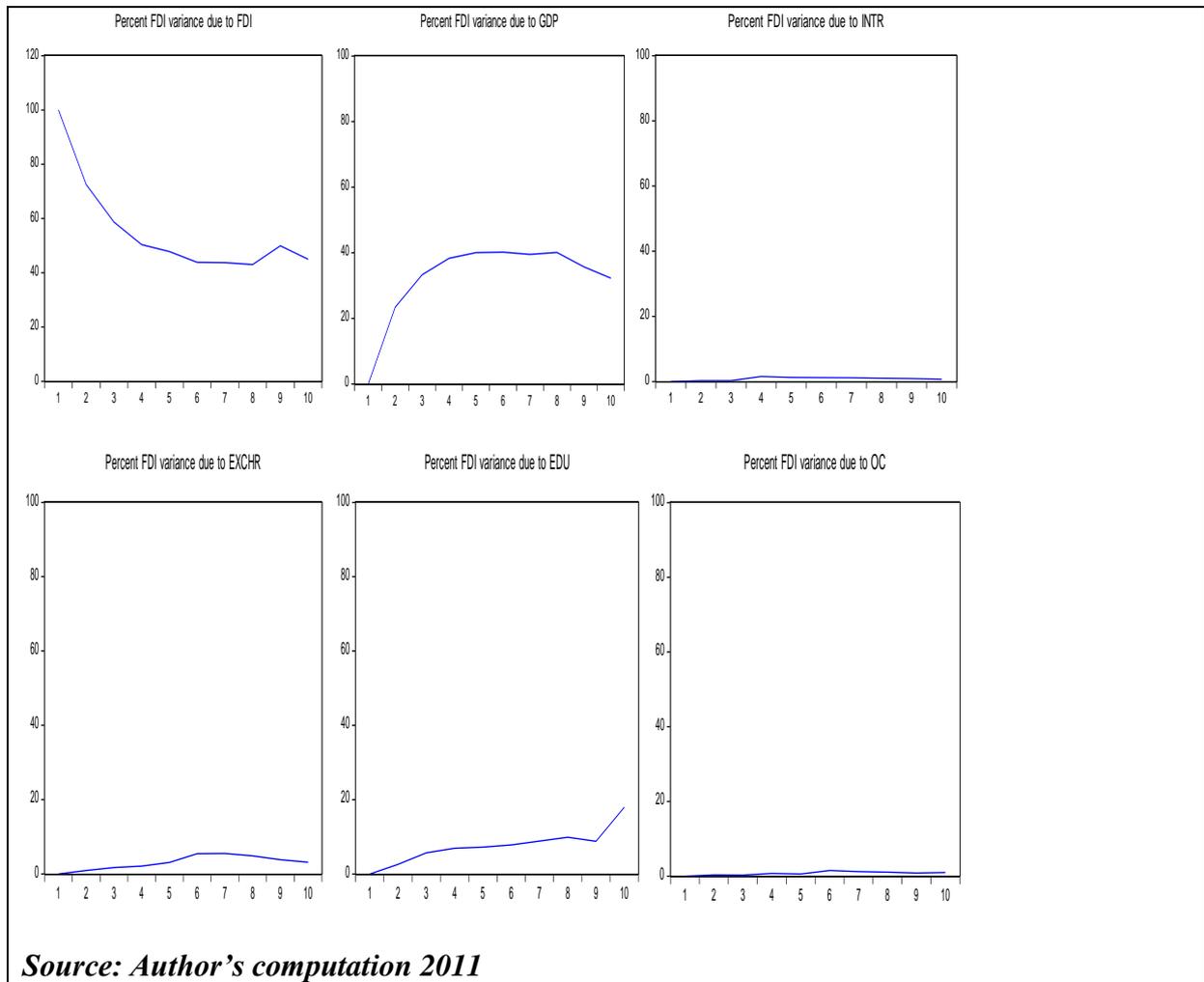
Table 5.7 and Figure 5.5 below illustrates the proportion of the movements in the dependent variables (FDI) that are due to their ‘own’ shocks (innovations), versus shocks to the other variables. In the context of this study, it provides a way of determining the relative importance of shocks to each of the variables that help in explaining variations in FDI.

TABLE 5.7 VARIANCE DECOMPOSITION OF FDI

Period	S.E.	FDI	GDP	INTR	EXCHR	EDU	OC
1	0.017362	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.027815	72.54619	23.36188	0.253828	0.923811	2.573527	0.340766
3	0.034919	58.71874	33.28141	0.294361	1.715760	5.694107	0.295623
4	0.038531	50.33536	38.34330	1.575630	2.101334	6.944848	0.699532
5	0.043307	47.84252	40.06267	1.251512	3.070920	7.216907	0.555472
6	0.048786	43.88180	40.21289	1.200150	5.427691	7.796860	1.480605
7	0.053504	43.71968	39.48597	1.176420	5.518476	8.868207	1.231254
8	0.057849	43.03610	40.10723	1.032376	4.877950	9.881143	1.065210
9	0.065505	49.97107	35.69542	0.890605	3.833382	8.777404	0.832115
10	0.076478	44.94857	32.27148	0.722237	3.118961	17.98172	0.957027

Source: Author's computation 2011

FIGURE 5.5 THE VARIANCE DECOMPOSITION OF THE VARIABLES IN THE MODEL



The lag information criteria selected 4 lags but the study allows for 10 lags in order to determine the impact of shocks over time. For the 4 quarter ahead forecast error variance, the dependent variable (FDI) itself explains about 50% of its variations whilst the rest of the variables explain the remaining 50%. Of the remaining 50% explained by other variables, 38% is explained by GDP, 2% by interest rates, 2% by exchange rates, 7% by education, and the remaining 1% by openness of the country.

However after the 8th quarter the dependant variable only explains around 43% of its variation whilst the independent variables explain about 57%. This suggest that the only a small proportion of variation in the dependant variable is explained by itself over time and its variations is attributed to its independent variables.

5.3 CONCLUDING REMARKS

The chapter has analysed the relationship between foreign direct investment and its determinants as well as the dynamic adjustment of foreign direct investment following shocks to its determinants. The chapter started by analyzing the time series properties of the data employing both informal and formal tests for stationarity. The variables were found not to be integrated of the same order. Johansen cointegration tests on alternative model specifications provided evidence that there is cointegration between foreign direct investment and its determinants, which were included in the model. These findings indicate that foreign direct investment is subject to permanent changes as a result of changes in its fundamentals. Evidence of cointegration allowed the estimation of VECMs, which simultaneously provided the parameter estimates for both the long and short run relationships. The short run dynamics are consistent with literature showing the GDP, EDU, OC have a positive impact on FDI whilst EXCHR and INTR both have a negative impact. The impulse response showed that GDP, education and the openness of the country are persistent on FDI. The study therefore corroborates with the theoretical and empirical literature by showing that GDP, EDU and OC contribute positively to FDI.

The next chapter provides the summary of the empirical results, implications and policy recommendations.

CHAPTER 6

SUMMARY, IMPLICATIONS, CONCLUSION & RECOMMENDATIONS

6.1 INTRODUCTION

This chapter provides the summary of the main findings, the implication of the findings, conclusion and recommendations. Firstly by providing a brief summary of the main findings in each chapter of the dissertation. Secondly is followed by a discussion on the policy implication of the findings. Lastly conclusions and recommendation are provided towards the end of the chapter.

6.2 SUMMARY OF THE MAIN FINDINGS

The aim of this dissertation was to explore the main determinants of FDIs in the motor industry. In doing so chapter two provided the theoretical foundation of the study. The Eclectic and the Micro- level theories of the determinants of foreign direct investment were relevant for the study. Various studies were viewed as the empirical literature on the determinants of FDIs.

The main insight from these theories is that the main reasons why investors invest abroad is because of the location advantages, country specific advantages (locate where), ownership advantages (why go abroad) and internationalisation advantage (how to go abroad). Countries exhibit differences in these aspects. Under the Country specific advantages (CSA) investment in a foreign country goes far beyond the FSA as it looks at the political environment, availability of raw materials, language and cultural differences, government regulations as well as the performance of the economy.

Chapter three provided an overview of the determinants of FDIs in the motor industry in South Africa. The chapter was divided in three sections; the first one presented the general determinants of FDIs in South Africa. The second section presented the relationship between FDIs in the motor industry and its determinants and the last section concludes the chapter.

Chapter four presented the model specification and how the model was estimated. The determinants of foreign direct investment included gross domestic product, interest rate, exchange rates, education and openness of the country. The model employed the Dickey-Fuller and the Augmented Dickey Fuller for unit root test. The Johansen (1991.1995)

cointegration technique was employed. Diagnostic checks were done including the residual normality test, heteroskedacity, autocorrelation Langrage Multiplier. The impulse response and variance decomposition tests were also done to check the responsiveness and importance of shocks to the variable of interest.

Chapter five analysed the relationship between foreign direct investment and its determinants. The chapter analysed the time series properties of the data employing the formal and informal tests. The data was subjected to stationarity tests using Dickey Fuller and Augmented Dickey Fuller tests. Variables were non- stationary in levels. After being differenced once, all variable became stationary, implying that all variables entered the model in first difference. After testing for stationarity it was necessary to find out whether there is any long- term relationship among foreign direct investment and its determinants, which is cointegration. The Johansen- Juselius technique was employed. The results suggested that there are two cointegrating vectors. With two cointegrating vectors, an error correction model was estimated for the foreign direct investment. A general specific modelling technique was employed. The model was subjected to a number of statistical and diagnostic tests. All the tests suggest a robust model. The short run dynamics are constant with literature showing the GDP, EDU and OC have a positive impact on FDIs, whilst EXCHR, INTR both have a negative impact on FDIs.

Foreign direct investment in the motor industry (FDI_m) was specified as a function of economic growth, interest rates, exchange rates, education, openness of the country and the error term variable. The results indicate that there is a positive relationship between foreign direct investment and economic growth. Changes in output are the most important determinant in foreign direct investment in the motor industry. An increase in economic growth leads to an increase in foreign direct investment. Economic growth is a fundamental pre-requisite for foreign investment. Theoretical and previous research on foreign direct investment confirms this result that there is a positive relationship between economic growth and foreign direct investment.

Interest rates have the negative sign as expected. The size of the coefficient means that an increase in interest rates in South Africa decreases foreign direct investment inflows in the motor industry. The interest rate has a negative sign and therefore significant as supported by empirical literature reviewed in this study. The coefficient confirms that an increase in the interest rate is followed by a faster reaction on the FDI side.

Exchange rate has a negative sign that was expected and therefore is significant and supported by empirical literature. The size of the coefficient means that exchange rates have a negative effect on foreign direct investment. This means that a 1% decrease in the exchange will lead to a 7% decrease in foreign direct investment in the motor industry. In other words this means that when the strength of a rand is weaker, this lowers foreign direct investment in the motor industry

Education variable has a positive sign as expected. This means that an increase in education will lead to an increase in foreign direct investment inflows. This is consistent with literature, the study by Schneider and Frey (1985) used a time series regression analysis study in European countries focusing on the impact of human capital on FDI inflows.

Openness of the country has a positive sign as expected and consistent with theoretical and empirical literature. The removal of barriers to entry in South Africa leads to an increase in the foreign direct investment in the motor industry.

6.2 POLICY IMPLICATIONS AND RECOMMENDATIONS

From the results summarised above, the following recommendations regarding determinants of foreign direct investment in the motor industry in South Africa can be made:

Firstly, the study finds economic growth as one of the main determinants of foreign direct investment in the motor industry in South Africa. The policy recommendation that emanate from this is that efforts should be made to boost the level of economic growth in order to enhance and attract more foreign investors. Economic growth is a catalyst for foreign investment. It is therefore important for the government to pursue policies that will encourage economic growth.

Secondly, another important factor on foreign direct investment in the motor industry in South Africa is interest rates. The study suggests that the authorities should be cautious about increase in interest rates as high interest rates can harm investment. It is therefore important to keep interest rates at reasonable rates to avoid crowding out of foreign direct investment. For any government in a developing country to attract investment, there is overwhelming evidence that countries should have positive records in terms of macroeconomic management, policy consistency, fair treatment of all investors, and no arbitrary involvement

in private business (foreign firms). There are two ways that have been suggested by other researchers such as Mweha and Ngugi (2004, Ogunkola and Afeikhena (2004) in which such record a can be improved. The first is to adopt a version of an independent currency board or to join a common currency, (for example one common Southern African currency like the EURO) as a discipline imposing constraint on monetary financing of fiscal deficits. This may send a good signal to investors that those permanent improvements in macroeconomic stability e.g. low inflation and interest rates can be attained and maintained. The second would be to have international or regional agreements in terms of foreign investment so as to have a confidence-building notion on investment.

Thirdly, exchange rates also important in attracting FDI in the motor industry in South Africa. Exchange rate will be shocked by factors that are outside the direct control of policy makers. The policy implication is that the authorities' ability to influence the movements in the exchange rate is limited. The authorities may however reduce the impact of this shock, in the long run, by utilising policies to promote the diversification of traded goods and acting on other fundamentals.

Fourthly, education is important because more educated people are productive. Investing firms are also concerned about the quality of the labour force. It is generally believed that highly educated personnel are able to learn and adopt new technology faster, and the cost of retraining is also less. As a result of the need for high quality labour, investors are most likely to target countries where the government maintains liberal policy on the employment of expatriate staff. This is to enable investors to bring in foreigners to their operation in order to bridge the gap in the skill of local personnel wherever it exists. This means that the government should provide more bursaries and learnership programmes to enhance and promote investment in human capital in the country.

Lastly, liberalising trade (more openness) is one of the tools in the policy maker's arsenal to avoid overvaluation both in the short and long run. This finding further confirms the stance of the monetary authorities in South Africa of acting on the fundamentals of the foreign direct investment. A word of caution is sounded however that as the effects of shocks vary from one country to another, there is no universal solution to the problems of fluctuations in foreign direct investment.

6.3 LIMITATIONS OF THE STUDY AND AREAS FOR FURTHER RESEARCH

One of the reasons for investigating the determinants of foreign direct investment was to estimate the fundamental determinants of FDI in the motor industry and ultimately measure the contribution of FDI in the motor industry to the economic growth in South Africa.

Factors which has also confronted previous researchers, concerns the unavailability of data, particularly in the motor industry, on the actual variables suggested by the theoretical models on the determination of foreign direct investment. This means that some of the variables either have to be excluded in the empirical model, albeit with the risk of an omitted variables bias, or proxies have to be found for those variables. The risk involved in finding proxies is that they may not correctly represent the impact of the actual variables, resulting in inconsistent results. Striking this balance poses a serious challenge to empirical studies on the determinants of foreign direct investment. However, these problems seem not to have significantly affected the findings presented in this study, since they corroborate both the theoretical and empirical knowledge on the determinants of foreign direct investment.

The areas for further research that emerge from this study include covering other instruments that can be used by developing countries in enhancing their strength in attracting high FDI inflows. FDI Incentives are important when it comes to decisions by investors wishing to invest in any country. This study finds it important to look at what can be done by countries in terms of FDI incentives which can be granted conditionally or unconditionally to foreign firms already investing in developing countries. Those granted conditional incentives may be linked to performance requirements which in some cases can have a disincentive effect on the investment (incentives are then used to compensate for this disincentive). Incentives may be granted automatically upon compliance with certain qualifying conditions, or there may be varying degrees of discretion on the part of the administering authority to decide on the awards. Incentives can be in 3 categories; (i) Direct tax incentives which are given to foreign firms to reduce their tax burden, (ii) Financial incentives that involve the provision of funds directly to firms to finance new foreign investments or certain operations, or to defray capital or operation costs and (iii) lastly other incentives for example market preferences, subsidised dedicated infrastructure, certain subsidized services, and preferential treatment on foreign exchange.

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APPENDIX I

Raw Data

Year	Foreign Direct Investments	Gross Domestic Product	Interest Rates	Exchange Rates	Openness of the country	Education
1994 q1	3.499137	5.056012	1.18327	2.239575	0.316096	7439
1994 q2	3.590953	5.074389	1.18327	2.205096	0.331134	7439
1994 q3	3.689841	5.087267	1.210853	2.2058	0.375109	7439
1994 q4	3.706803	5.105224	1.210853	2.212481	0.349195	7439
1995 q1	3.655138	5.10997	1.243038	2.183013	0.365832	8719.5
1995 q2	3.743353	5.127361	1.243038	2.173652	0.376368	8719.5
1995 q3	3.769303	5.150483	1.267172	2.189294	0.396476	8719.5
1995 q4	3.769599	5.157741	1.267172	2.194237	0.375669	8719.5
1996 q1	3.738622	5.161008	1.267172	2.161308	0.363294	9509.25
1996 q2	3.788522	5.187408	1.311754	2.132452	0.387497	9509.25
1996 q3	3.811106	5.200435	1.290035	2.115511	0.432145	9509.25
1996 q4	3.799892	5.205383	1.306425	2.101266	0.413757	9509.25
1997 q1	3.767082	5.209807	1.306425	2.14965	0.373946	11664.5
1997 q2	3.81591	5.232188	1.306425	2.141105	0.391705	11664.5
1997 q3	3.842983	5.244356	1.306425	2.136277	0.432064	11664.5
1997 q4	3.85309	5.248971	1.284431	2.129529	0.425079	11664.5
1998 q1	3.790988	5.246008	1.261263	2.121986	0.410276	12604.25
1998 q2	3.833657	5.269882	1.34733	2.053271	0.403356	12604.25
1998 q3	3.853272	5.276779	1.40654	2.037347	0.473094	12604.25
1998 q4	3.842297	5.280867	1.361728	2.032296	0.420721	12604.25
1999 q1	3.798098	5.280717	1.30103	2.028409	0.402853	12704.75
1999 q2	3.851075	5.298731	1.255273	2.039335	0.394051	12704.75
1999 q3	3.882809	5.32229	1.217484	2.025879	0.418908	12704.75
1999 q4	3.884059	5.330097	1.190332	2.026615	0.432035	12704.75
2000 q1	3.8327	5.331261	1.161368	2.008983	0.433597	13362.75
2000 q2	3.872972	5.353822	1.161368	1.997255	0.442615	13362.75
2000 q3	3.901785	5.378636	1.161368	1.989138	0.460342	13362.75
2000 q4	3.90827	5.385156	1.161368	1.965437	0.498303	13362.75
2001 q1	3.875929	5.387304	1.161368	1.960042	0.475327	14722.75
2001 q2	3.930389	5.401573	1.130334	1.965437	0.503864	14722.75
2001 q3	3.958994	5.412272	1.113943	1.901731	0.478633	14722.75
2001 q4	3.948999	5.424174	1.113943	1.782759	0.511747	14722.75
2002 q1	3.906497	5.435378	1.176091	1.811709	0.544448	16146.25
2002 q2	3.949731	5.464366	1.20412	1.811776	0.543542	16146.25
2002 q3	3.990472	5.479315	1.230449	1.80618	0.524352	16146.25
2002 q4	3.991625	5.485357	1.230449	1.876968	0.541085	16146.25
2003 q1	3.992244	5.483681	1.230449	1.908324	0.470735	18219.75
2003 q2	3.994097	5.498479	1.190332	1.926908	0.462132	18219.75

2003 q3	3.996731	5.510627	1.130334	1.940716	0.463175	18219.75
2003 q4	4.002857	5.516916	1.060698	1.942157	0.441829	18219.75
2004 q1	4.028042	5.526257	1.060698	1.966095	0.43369	20641.5
2004 q2	4.065804	5.539114	1.060698	1.976533	0.484146	20641.5
2004 q3	4.097084	5.559372	1.041393	1.962417	0.470094	20641.5
2004 q4	4.113141	5.569086	1.041393	1.990072	0.475655	20641.5
2005 q1	4.115611	5.567829	1.041393	1.954677	0.449647	21615
2005 q2	4.128399	5.583483	1.021189	1.944433	0.510141	21615
2005 q3	4.140697	5.607769	1.021189	1.966658	0.50653	21615
2005 q4	4.162026	5.615798	1.021189	1.974143	0.488949	21615
2006 q1	4.180928	5.615332	1.021189	1.973913	0.480305	23879.25
2006 q2	4.210185	5.626944	1.041393	1.904283	0.547995	23879.25
2006 q3	4.248415	5.666298	1.060698	1.872156	0.5671	23879.25
2006 q4	4.290591	5.669927	1.09691	1.90477	0.625674	23879.25
2007 q1	4.289567	5.679593	1.09691	1.884285	0.576104	26472.25
2007 q2	4.304491	5.69112	1.113943	1.891203	0.59943	26472.25
2007 q3	4.315193	5.711951	1.130334	1.89003	0.587873	26472.25
2007 q4	4.318856	5.726487	1.161368	1.887505	0.59185	26472.25
2008 q1	4.370476	5.734565	1.161368	1.788946	0.611103	15550.05
2008 q2	4.397036	5.753398	1.190332	1.802774	0.70669	15550.05
2008 q3	4.428345	5.771288	1.190332	1.806519	0.714763	15550.05
2008 q4	4.432745	5.76624	1.176091	1.771146	0.662634	15550.05