Foreign trade and economic growth in Namibia: A time series analysis

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Thesis submitted in fulfilment of the requirements for the degree

PHILOSOPHIAE DOCTOR

in

Economics

at the

North-West University (Vaal Triangle Campus)

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August 2015

DECLARATION

I, Cyril Ayetuoma Ogbokor, 24522465, hereby declare that the thesis for PHILOSOPHIAE DOCTOR is my own work, and that it has not been submitted previously for assessment or completion of any postgraduate qualification in any university or for another qualification.

Cyril Ayetuoma Ogbokor

August 2015

ACKNOWLEDGEMENTS

I would like to extend my deepest appreciation to the following:

- My wife, Gladys, as well as my three children, Efemena, Elo and Ogoh for their moral and spiritual support.
- My supervisor, Dr DF Meyer, for his time, academic support, advice and in particular his constructive engagement approach.
- Prof WCJ Grobler for always reminding me of the need to keep writing. In addition, he provided a number of constructive suggestions during the writing of this thesis.
- The University of North-West for granting me the opportunity to undertake a PhD study programme at Vaal Triangle Campus.
- The Rector of the Namibia University of Science and Technology (Formerly known as the Polytechnic of Namibia), Prof Tjama Tjivikua, for always emphasising the importance of human capital investment.
- Dr Johannes Peyavali Sheefeni Sheefeni of the Bank of Namibia (BoN) for adding value to this thesis through his comments, especially in the areas involving econometric modelling, estimation and analysis.
- Above all, the Almighty God for His continuous protection and immeasurable blessings.

ABSTRACT

Foreign trade is increasingly becoming a powerful tool when it comes to the promotion of economic growth in modern economies. This is especially so in the face of the continued rise of globalisation. In consideration of this fact, this thesis assessed the impact of foreign trade on the growth process of Namibia's economy for the period stretching from 1990 to 2012. This main objective was further developed into primary, theoretical and empirical objectives.

In order to realise these multiple objectives, two modern econometric time series techniques were employed, namely vector autoregressive (VAR) and auto-regression distributed lag (ARDL) models. Based on these two techniques, the following procedures featured during the study: Stationary tests, error correction modelling, cointegration tests, Granger causality tests, generalised impulse response functions and generalised forecast error variance decomposition. The following constitutes the main findings arising from this study:

First, the study found that there is a positive relationship among the variables that were investigated. Indeed, this positive relationship suggests that the economy of Namibia can be expanded potentially by means of foreign trade. The result is also in line with economic theory. Secondly, the empirical findings also show that export, foreign direct investment and exchange rate endogenously respond to shocks in economic growth. Thirdly, economic growth itself accounted for most of the innovations that occurred during the period under consideration concerning economic growth.

Fourthly, amongst the three explanatory variables used in the model, exports and foreign direct investment contributed more towards innovations in economic growth during the forecast period. Initially, exports and foreign direct investment dominated over the forecast horizon with each contributing almost an equal share of over 5 percent after 12 quarters.

Thereafter, exports' contribution relatively exceeded that of foreign direct investment. Fifthly, it is particularly important to note that the exchange rate variable made the weakest contribution towards explaining economic growth for the forecast period of 24 quarters.

In consideration of the general constraints associated with this study, the thesis puts forward a number of proposals for possible further investigation by any theorist who is keen about probing the issue that the thesis investigated. The thesis considers the following as its significant contributions to the existing literature:

First, this study primarily examined the relationship between exports and economic growth. By adding the effect of foreign direct investment and exchange rate to the analysis, this study became more comprehensive. This further widens the scope for policymaking for Namibia, as well as other developing economies on a similar route. Secondly, the study employed two modern econometric time series techniques, namely VAR and ARDL models in investigating the research topic under consideration. Most of the related studies that were reviewed either utilised ordinary least squares (OLS) or VAR or ARDL approach on its own. By implication, the results obtained from this study, therefore, are from a technical point of view more robust. Thirdly, through constructive comments, this thesis made valuable contributions to the relevant empirical literature as reviewed during the course of the study.

Fourthly, since this study has a focus on Namibia, it provided the opportunity for the thesis to present a comprehensive analysis on issues pertaining to Namibia specifically. Lastly, the various recommendations put forward by this thesis will assist Namibia, as well as other developing countries, on a related path when it comes to formulating policies for the promotion of exports in particular and economic growth in general.

Keywords: foreign trade, economic growth, macroeconomic time series data, Namibia, vector autoregression technique, autoregression distributed lag technique, causality, cointegration

OPSOMMING

Buitelandse handel raak sonder twyfel al meer invloedryk in die bevordering van ekonomiese groei in modern ekonomieë. Dit is veral duidelik wanneer die huidige toename van globalisering in ag geneem word. Hierdie proefskrif het ten doel gehad om die impak van buitelandse handel op die groeiproses van Namibië se ekonomie tydens die periode van 1990 tot 2012, met bogenoemde in ag geneem, te ondersoek. Hierdie hoofdoel is verder uitgebrei in primêre, teoretiese en empiriese doelwitte.

Om hierdie veelvuldige doelwitte te verwesenlik, is twee moderne ekonometriese tydreeks-metodes gebruik, naamlik Vektor Outo-regressief (Afrikaans VOR, Engels VAR) en Outo-regressiewe Verspreide Nalope (Afrikaans ORVN, Engels ARDL). Met gebruik hiervan is die volgende prosedures gedurende hierdie studie ten toon gestel: Stasionêre toetse, Foutregstelling-modellering, Mede-integrasie toetse, Granger-oorsaaklikheidstoetse, Algemene Impulsreaksie-funksies en Algemene voorspelling foutvariansie-ontbinding.

Die volgende hoofbevindinge kan uit hierdie studie gelig word: Eerstens, het die studie bevind dat ekonomiese groei reageer op skokke in uitvoere, direkte buitelandse belegging en die wisselkoers – op ’n positiewe manier. Hierdie positiewe reaksie dui aan dat Namibië se ekonomie moontlik deur middel van buitelandse handel uitgebrei kan word. Hierdie bevinding volg algemene ekonomiese teorie. Tweedens, wys die empiriese bevindinge ook dat uitvoere, direkte buitelandse belegging en die wisselkoers op endogene wyse reageer op skokke in ekonomiese groei. Derdens, was ekonomiese groei self verantwoordelik vir meeste van die opgemerkte veranderinge wat tydens die relevante periode plaasgevind het. Vierdens, is daar opgemerk dat uit die drie verklarende veranderlikes wat in die model gebruik is, uitvoere en direkte buitelandse belegging in ’n meerdere mate bygedra het tot innoverings in ekonomiese groei gedurende die voorspellingtydperk.

Aanvanklik het uitvoere en direkte buitelandse belegging die vooruitskattingsuitsig oorheers, met elkeen wat amper in gelyke deel bygedra het tot meer as 5 persent na 12 kwartale. Na hierdie tydperk het uitvoere se bydra heelwat meer geraak as dié van direkte buitelandse belegging. Vyfdens, is dit beduidend om te merk dat

die wisselkoers-veranderlike die swakste bydra gemaak het ter verduideliking van die ekonomiese groei wat in die voorspellingstydperk van 24 kwartale plaasgevind het. Laastens, met die algemene beperkinge wat met hierdie studie gepaard gaan in ag genome, bring die proefskrif ’n aantal voorstelle na vore; vir moontlike verdere ondersoek deur enige teoretikus wat graag dieper wil delf in hierdie kwessie.

Die volgende aspekte word beskou as belangrike bydraes deur die proefskrif tot die bestaande literatuur: In die eerste plek het die studie die verhouding tussen uitvoere en ekonomiese groei ondersoek. Die studie is toe selfs meer omvattend gemaak deur ook die effek van direkte buitelandse belegging en die wisselkoers deel te maak van die analise. Hierdeur word die omvang vir beleidskepping in Namibië en ander ontwikkelende ekonomieë selfs verder vergroot. Tweedens, het die studie gebruik gemaak van twee moderne ekonometriese tydreeks-metodes, naamlik VOR en ORVN, om die navorsingsonderwerp te ondersoek. Meeste van die verwante studies waarna gekyk is, het óf die gewone kleinstekwadratemetode, óf VOR, óf ORVN alleen gebruik. Gevolglik kan gesê word dat die resultate van hierdie studie, vanuit ’n tegniese oogpunt, meer robuus is.

Derdens, het die proefskrif, deur middel van konstruktiewe kommentaar, waardevolle bydraes gemaak tot die relevante empiriese literatuur wat deur die loop van die studie geraadpleeg is. Vierdens, het hierdie studie gefokus op ’n enkele land, in hierdie geval Namibië. Dit het die geleentheid geskep om ’n omvattende analise te doen van verskeie kwessies wat spesifiek op Namibië van toepassing is.

Laastens, sal die verskeie aanbevelings wat deur die proefskrif voorgestel is, Namibië, sowel as ander ontwikkelende lande en ekonomieë, help in die formulering van beleid vir die bevordering van spesifiek uitvoere en ekonomiese groei in die algemeen.

Sleutelwoorde: Buitelandse handel, ekonomiese groei, makro-ekonomiese tydreeks-data, Namibië, vektor outo-regressiewe metode, outo-regressiewe verspreide nalope-metode, oorsaaklikheid, mede-integrasie

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LIST OF ACRONYMS AND ABBREVIATIONS

ACP	Africa, Caribbean and Pacific countries
ADF	Augmented Dickey-Fuller method
AIC	Akaike information criterion
ARDL	Auto-regression distributed lag
BoN	Bank of Namibia
BLNS	Botswana, Lesotho, Namibia and Swaziland
CP	Consumer price index
CMA	Common monetary area
CUSUM	Cumulative sum of recursive residuals
CUSUMSQ	Cumulative sum of squared recursive residuals
DCs	Developed countries
EU	European Union
EPZ	Export processing zones
XPORT	Export
EFTA	European Free Trade Association
EG	Economic growth
ED	Economic development
ECM	Error correction model
EX	Exchange rate
FEX	Foreign exchange rate
FDI	Foreign direct investment
FPI	Foreign portfolio investment
FPE	Final prediction error
FEVD	Forecast error variance decomposition
GATT	General Agreement on Tariffs and Trade

GDP	Gross domestic product
GFEVD	Generalised forecast error variance decomposition
GIRF	Generalised impulse response function
GNP	Gross national product
H-O	Heckscher–Ohlin theory
IMP	Imports
INF	Inflation
IRFs	Impulse response functions
ITA	International Trade Administration
ILO	International Labour Organisation
LDCs	Less developed countries
LM	Lagrange multiplier
MDGs	Millennium Development Goals
NICs	Newly industrialising countries
OLS	Ordinary least squares method
PP	Philips–Perron method
RGDPC	Real gross domestic product per capita
RGDP	Real gross domestic product
R^2	Coefficient of determination
SACU	Southern African Customs Union
SADC	Southern African Development Community
SIC	Schwarz information criterion
TFP	Total factor productivity
ToT	Terms-of-trade
UECM	Unrestricted error correction model
USD	United States Dollars

USA	United States of America
VAT	Value added tax
VAR	Vector auto-regression
VECM	Vector error correction model
WB	World Bank
WTO	World Trade Organisation
2SLS	Two stage least squares method

CHAPTER 1
RESEARCH BACKGROUND

1.1 INTRODUCTION

Trade, especially foreign trade, is increasingly becoming a potent tool in the process of promoting and stimulating economic growth processes in contemporary economies due to globalisation. Previous studies in the literature arising from development economists, social scholars, the mercantilists including the classicists and the Keynesians, just to mention a few, have long alluded to this fact. Indeed, in the face of increasing globalisation, the arguments in favour of autarky are fast weakening. This notion has gained further grounds, especially after the economic miracle that swept across Asia, notably among the economies of South Korea, Singapore, Hong Kong, Taiwan, Malaysia, including Indonesia and Thailand (Thirwall, 2011:502).

Further strengthening the case for economic growth through trade Thirwall (2011:502), using econometric procedures and a data-set based on 133 countries covering the years 1995 to 2006, observed the growth rates of individual countries to be positively related to their export performance compared to other drivers of growth in these countries. In addition, he noted that for a greater part of the period after 1950, the export performance of developing countries lagged behind that of the developed industrial countries, with their market share of the global trade declining. He, however, acknowledged that in recent years a number of developing countries, especially the Asian economic miracle countries, also referred to as the Asian tigers, have successfully reversed this trend due to the acceleration of their manufacturing activities, which has resulted mainly from government incentives.

In addition, economists have also written several articles over the years on the benefits that could be expected to arise from trade and subsequently enjoyed by countries participating in trade. Historically, trade has remained a powerful propeller of economic growth. This is so, since it has contributed significantly to the effectiveness and efficiency of allocation of resources, as well as transmitting growth from one part of the world to another (Thirwall, 2012:195). In specific terms, the strong demand in Europe and in Britain in particular, for food and raw

materials in the nineteenth century led to a “big push” in economic activities on the part of countries such as Canada, Argentina, South Africa, Australia and New Zealand just to mention a few (Medina and Chaido, 2013:50-67). It was consistently observed that as the demand for these countries’ exports increased, investment in these economies also rose. Trade was also observed to have the connotation of being a non-zero sum game in terms of its benefits to trading partners. That is, trade was considered to be beneficial to both countries that are involved in international trade. These facts have also been widely acknowledged in the work of Manni *et al*., (2012:154-158). Unfortunately, countries belonging to the southern hemisphere are not getting an equitable share of the anticipated benefits from trade. This is mainly due to a weakening demand for developing countries’ traditional exports, including the uncompetitive nature of a majority of their exports in foreign markets (Schipke, 2005:30-33). This thesis investigated the influence of trade on economic growth with the use of appropriate econometric methods. Namibia is used as a case study in this thesis. Furthermore, this thesis uses the terms international trade and foreign trade interchangeably.

1.2 MOST IMPORTANT CHARACTERISTICS OF NAMIBIA

Namibia became an independent country on 21 March 1990 after a protracted struggle that lasted for about 106 years. A map of Namibia is displayed in Figure 1.1. In geographic terms, the country is bordered by Angola and Zambia to the north, Botswana and Zimbabwe to the east, South Africa to the south, with the Atlantic Ocean constituting its western frontier. Namibia covers a landmass of approximately 24,268 square kilometres. The country is dichotomised further into 15 political regions for administrative conveniences (Ministry of Land and Resettlements, 2013:15-32).

Namibia is classified as an upper-middle-income country and has a per capital income of approximately USD 6,800 per annum based on 2014 data. In Namibia, the public sector is the largest employer of labour accounting for about 60 percent of those gainfully employed (Government of Namibia, 2014:8-11). The economic system of Namibia is anchored on the principles of market forces. Namibia is often described as a mineral paradise. This is because of the presence of many

minerals such as diamonds, gold, copper, uranium and zinc. Namibia is heavily dependent on the extraction and processing of these minerals for export.

According to the Government of Namibia (2009:16-27) the mining sector is the main propeller of its economy. The mining sector alone accounts for about 50 percent of the revenue accruing to the government treasury. However, its contribution of about 8 percent to the country's total gross domestic product (GDP) is rather low. The sector also employs only about 3 percent of the country's total labour force.

Figure 1.1: Map of Namibia

Source: Namibia Ministry of Lands and Resettlements (2013).

The low absorption capacity of this sector is mainly due to the high capital-intensive technology that is utilised in the mining sector by most of the companies operating in this sector. Namibia is the fourth leading producer of uranium in the world. Fishing and tourism are two other pertinent sectors in the economy of Namibia in respect of receipts to the government treasury. Namibia depends heavily on international trade, especially imports, for the continuity of its economy. Over 50 percent of its cereal needs are imported (Schlettwein, 2013:12-15). This

is even higher during drought years. The country's Gini coefficient of 0.7 makes income gap a fundamental development issue in its economy (Government of Namibia, 2014:8-11). Contemporaneously and surprisingly, the country also has a high per capita income, especially when compared to the rest of Africa (Government of Namibia, 2010:25-32).

The current unemployment figure of 52 percent is very high and has led to a series of debates (Government of Namibia, 2014:66-79). Classifying subsistence farmers, as well as those in the informal sector as part of the unemployed is highly controversial and lacks economic reasoning. The leading sectors in Namibia, namely mining, tourism, livestock and meat production, as well as fisheries, are highly vulnerable to external economic and ecological shocks. Foreign demands in all these sectors are cyclical, seasonal and highly unpredictable (Government of Namibia, 2012:87-131).

As a result of historical factors, the Namibian economy is still very much connected to the South African economy. For instance, the Namibia dollar is pegged to the South African Rand on the basis of one-to-one mainly for economic reasons, making monetary policy management a very tricky issue for the Bank of Namibia (BoN) to handle (Bank of Namibia, 2010:6-23). Namibia, including South Africa, Botswana, Lesotho and Swaziland are all bona fide members of the Southern African Customs Union (SACU). Namibia obtains about 40 percent of its budget revenues from the common revenue pool of SACU (Sherbourne, 2010:37-50). In 2007, Namibia for the first time since attaining an independent status, achieved a budget surplus. However, Namibia could not sustain this development in the years that followed mainly as a result of the global recession that inevitably led to a reduction of its income from the common SACU revenue pool.

The Bank of Namibia (2012:11) reported that the domestic and external debts of the country based on 2012 data are respectively USD2.8 billion and USD1.1 billion. In addition, its major trading partners are South Africa, the European Union (EU), Angola, Botswana, Germany, the United States of America and more recently China, while imports are made up principally of foodstuffs, construction materials and manufactured goods. Similarly, the country's exports are essentially solid minerals, beef, cattle, fish, karakul pelts and grapes. The total population of

Namibia is about 2.2 million people with a labour force of approximately 870,000. The government is increasingly relying on the strategy of export processing zones (EPZs) as a way of boosting industrialisation activities, especially manufacturing. However, the imbursement from this process is still highly unsatisfactory and unstable.

Other major socio-economic challenges currently facing the economy of Namibia, besides low industrialisation activities are poverty, natural disasters (especially drought and flooding), rural-urban dichotomy, heavy dependence on mining, high capital outflows, highly skewed income distribution, exchange rate volatility, the HIV/Aids pandemic, inflation (especially imported inflation), cross-border smuggling (especially tobacco products and marijuana) and human capital constraints (Government of Namibia, 2014:8-11). The various efforts on the part of the Namibian government to respond to these challenges through its various National Developments Plans (NDPs) seem not to be yielding fruitful results. Namibia has made some effort in order to meet the Millennium Development Goals (MDGs) on education, environment and gender but the severity of the HIV/AIDS epidemic is increasingly hampering the realisation of the MDGs goals four, five and six. Additional discussions regarding the Namibian economy using selected macro-economic parameters with the assistance of graphs are presented in Chapter 2 of the thesis.

1.3 PROBLEM STATEMENT

A number of practical studies have been completed over the years to establish the connection between trade, economic growth and development. It is, however, instructive to note that a greater amount of such studies have attempted to investigate the possibility of a relation between exports in particular and economic growth in general (Mina, 2011:202-218). Most of the early studies in this regard, linking various measures of export growth with growth in income, suggested that they were significantly and positively correlated Medina and Chaido (2013:50-67). Furthermore, exports appear to be the “engine of growth” (Fratianna and Marchionne, 2012**:**137-163). However, more recent studies have questioned this relationship and have raised many pertinent questions about the impact of trade on economic growth (Appleyard, Field and Cobb, 2008:434-435). Simultaneously,

several econometric studies of individual countries over time using time series techniques, as well as other studies that made use of cross-sectional techniques have suggested statistically significant relationships between growth in both exports and imports in relation to income growth (Greenaway *et al*., 2002:78-79). A number of these studies, particularly for middle-income countries, seem to suggest a strong positive correlation between trade and economic growth. This is as a result of the direct effect of export earnings on gross national product (GNP), as well as the indirect effects (balance-of-payments effects) often associated with the increased capacity to import needed capital and intermediate inputs. However, it is instructive to note that these empirical results are not conclusive (Smith, 2006:249-251).

Furthermore, there is the possibility that increased income could lead to greater imports and increased efficiency could lead to greater exports. Thus, the causality may run from growth to trade rather than from trade to growth (Chow, 1987:55-60). Another argument in the literature concerning the relationship between trade and growth points to the fact that growth in exports generally has a positive effect on a country's growth and development, since it stimulates increased savings and investments (Krueger, 1998:234-238). The effects on aggregate saving could arise in two ways. First, it could arise from a higher inclination to save in the export sector. Secondly, it could also result from the impacts on total saving of any changes in the distribution of income tied to the growth in the export sector. Again, these empirical results are not conclusive (Edwards, 1993:1358-1364).

More recently, researchers have seen the emergence of another argument in the literature regarding the connection between trade and economic growth. The proponents of this school of thought maintained that institutions such as property rights, contracts, macro-economic stabilisation tools, as well as regulatory agencies for transport and finance are more important in explaining a country's growth process and indeed the connection between trade and economic growth. However, studies based on institutional factors are not also conclusive (Rodrik and Subramanian, 2003:32).

Despite the controversies in the existing literature concerning the relationship between trade and economic growth, a number of growth models that place the

emphasis on endogenous technological change, could be more helpful in demonstrating the link between foreign trade and economic growth (Romer, 1986:1002-1037).

With respect to the Southern African Development Community (SADC), including Namibia, trade will undoubtedly continue to play an important role in the growth of their economies. This is for the following interrelated reasons: First, it is pertinent to these economies in view of the wealth it generates through receipts and various specialised taxes for the state treasury. Besides, it creates jobs for a number of people and, therefore, supports livelihoods for many households. With the concepts of globalisation and export-led growth model increasingly gaining ground in the world, there is the urgent need for Namibia to give more appropriate attention to its export sector, if it is indeed serious about realising the full benefits of trade (The Bank of Namibia, 2012:11). Given the background, the fundamental issue that this thesis seeks to address is "What is the impact of foreign trade on Namibia's economic growth for the period running from 1990 to 2012?" In consideration of this fact, the thesis tackled the following specific research questions:

- What is the behavioural relationship between trade and economic growth?
- What are the important factors contributing to Namibia's economic growth?
- Is there any long-run relationship between foreign trade and Namibia's economic growth?
- Is trade a major driver of economic growth in Namibia?
- What is the responsiveness of economic growth to changes in the explanatory variables used in the study?
- What strategies can be adopted to increase the competitiveness of Namibia's exports in the international market?
- What strategies can be recommended to assist policy makers in maximising Namibia's benefits from participating in international trade?
- What strategies can be utilised in order to speed up the process of economic growth in Namibia?

The study period of 1990-2012 was chosen owning to the following considerations: Firstly, Namibia attained her independence in the year 1990. Before this development, Namibia was a province under the administration of South Africa. It was only after the attainment of independence that a system was put in place to ensure the collation of specific macroeconomic data, which relates to the country. Secondly, most modern econometric time series studies suggest a minimum period of fifteen years annual datasets in order to proceed with econometric estimation of models. Therefore, the study period stretching from 1990 to 2012 was also chosen as a matter of technical necessity. It is also important to note that the data for the years 2013 and 2014 is not available yet.

1.4 OBJECTIVES OF THE STUDY

The overall objective of this study was to determine the nature of the connection between foreign trade and economic growth in Namibia in general through the application of two modern econometric time series techniques, namely vector autoregression (VAR) and autoregression distributed lag (ARDL) models. Specifically, the study is aimed at achieving the following interrelated objectives:

1.4.1 Primary objectives

- To determine the impact of foreign trade on Namibia's economic growth for the period 1990 to 2012 and make appropriate recommendations
- To assess if foreign trade is a major driver of economic growth in Namibia.

1.4.2 Theoretical objectives

In order to achieve the above-mentioned primary objectives, the following theoretical objectives are formulated for the study:

- To present and discuss a number of international trade theories that are relevant to the research topic under consideration, as well as assessing their robustness
- To review the performance of macroeconomic variables concerning Namibia
- To discuss important issues concerning Namibia's trade policies and agreements in the context of SACU.

1.4.3 Empirical objectives

To accomplish the following empirical objectives in the context of Namibia, the following empirical objectives are formulated:

- To test the relevance of the export-led growth model in respect of Namibia
- To carry out a causality test between foreign trade and economic growth in respect of Namibia by employing VAR and ARDL techniques
- To econometrically estimate a long-run relationship between trade and economic growth in Namibia
- To econometrically evaluate if trade is a major propeller or driver of economic growth in Namibia.

1.5 SIGNIFICANCE OF THE STUDY

Trade, particularly international trade, will remain an engine of growth in modern economies of today. This fact has even become stronger in the face of globalisation (Thirwall, 2011:502). Therefore, it is important for countries to put strategies in place that would enable them to realise their benefits from participating in international trade. Given these facts, this study was driven by the following considerations:

First, the study will assist the Namibian government with a strategy, which it can consider adopting that may in turn lead to export-led growth. Secondly, the researcher will through comments contribute to the relevant empirical literature when reviewing them. Thirdly, the study hopes to show the exact connection between trade and economic growth in Namibia, which policymakers could in turn capitalise on when it comes to trade policy formulation and implementation.

Fourthly, in recognition of deficiency in modelling the study considered applying two modern time series econometric techniques, namely VAR and ARDL techniques to ensure robustness of the results. Lastly, it is envisaged that this study will put forward trade policy options and recommendations for Namibia in general, and in specific terms that would in turn assist the country in its export drive, as well as improving upon the country's competitiveness in foreign markets in terms of its exports.

1.6 ETHICAL CONSIDERATIONS

The study relied essentially upon secondary data sources. Interviewing respondents was not part of the research design of this study. However, in situations that involved interviews respondents' confidentiality was assured and protected. In this regard, respondents' participation was on a voluntary basis.

1.7 ORGANISATION OF THE STUDY

This thesis consists of eight chapters and a summary is presented per chapter:

In Chapter 1, the introductory issues leading to the study are presented. In this regard, the chapter presented and subsequently elaborated upon the general introductory issues leading to the thesis. Issues such as the background of the study, problem statement, research questions, objectives of the thesis, and justification for the study are discussed. In addition, the chapter presented the most important economic characteristics of Namibia. Indeed, this chapter symbolises the foundation of the thesis.

Chapter 2 considered selected macro-economic variables in Namibia, bearing in mind the driving objective of this study. Specifically, gross domestic product, inflation, foreign direct investment, exchange rates, imports, as well as exports are reviewed. The discussion was carried out with the assistance of tables, figures and graphs. The primary objective was to show the trends in respect of these variables over the period covered by the study.

Chapter 3 discussed Namibia's trade policy instruments and agreements. First, the discussion distinguished between trade policies and trade agreements. This was accompanied with a discussion concerning the arguments for interventionist trade policies, as well as Namibia's bilateral and multilateral trade agreements with the use of relevant tables. Finally, the chapter identified and subsequently elaborated upon Namibia's trade policy instruments.

Chapter 4 identified and subsequently elaborated upon important trade theories in a selective fashion, beginning with the Mercantilists views' on trade through the classicalist period up to modern time. Specific trade models considered are those of Adam Smith, David Ricardo, Vernon, Linder, Posner and Porter among others.

In addition, the thesis evaluated the robustness of the various trade models that have been presented, as well as the lessons arising from these trade models. This provides a logical basis for the thesis to review related empirical studies.

Chapter 5 reviewed the empirical literature of the study. The various discussions presented in this chapter followed a chronological order. In addition, it was observed that the early contributors to this literature relied heavily on the use of Ordinary Least Squares (OLS) technique, while recent studies concerning the issue under investigation use co-integration techniques and procedures in various ways in carrying out their research works. This thesis made use of the latter technique due to its robustness. Regarding the connection between trade and economic growth, three different opinions emerged from the literature that was reviewed. First, a number of past studies supported the existence of a positive relationship between trade and economic growth, while the second set of empirical literature maintained a contrary view. The third set of literature contested the existence of any connection between these variables. However, it was widely acknowledged in the literature that under certain circumstances, an increase in trade, especially foreign trade, would boost economic growth.

Chapter 6 discusses the methodological framework employed in investigating the empirical relationship between foreign trade and economic growth in Namibia. In this regard, two methodological frameworks have been reviewed, namely VAR and the ARDL methods. In particular, the discussion on the frameworks touches on the various steps to be followed in respect of estimations and analyses. Finally, the chapter presents the data, data sources and data measurements. This is to inform the reader on the variables used to capture the data employed in the estimation and analysis.

Chapter 7 presents the empirical estimations and analysis. In this regard, VAR and ARDL were employed to estimate the econometric model used in the study. Further, in discussing the econometric results the study adopts the following sequence: Vector autoregression (VAR), Vector error correction model (ECM), co-integration tests, Granger causality tests (GC), generalised impulse response function (GIRF) and generalised forecast error variance decomposition (GFEVD), as well as the cumulative sum of recursive residuals (CUSUM) and cumulative

sum of squared recursive residuals (CUSUMSQ) procedures. The results obtained from employing these procedures enabled the researcher to make logical conclusions and inferences. In addition, the analysis in Chapter 7 assisted in responding effectively to the various research questions and objectives that are presented in Chapter 1 of the thesis.

Chapter 8 provides the findings arising from the study, and subsequently puts forward appropriate policy recommendations. Furthermore, the chapter reflects upon the limitations of the study, and thereafter creates opportunities for further research concerning the issue under consideration. The contributions of the study to the literature relating to foreign trade and economic growth nexus are also highlighted in this chapter.

1.8 SUMMARY AND CONCLUSION

This chapter identified and subsequently elaborated upon the introductory issues leading to the study. In specific terms, issues such as the background of the study, problem statement, research questions and objectives of the thesis, ethical issues, the problem statement of the study, the anticipated benefits arising from the study, as well as the justification of the study are discussed. Chapter 1 further grouped the driving objectives of the study into primary, theoretical and empirical objectives. The chapter discusses the striking economic characteristics of Namibia and symbolises the foundation of the thesis. The next chapter reviews useful macroeconomic parameters in Namibia in a selective fashion.

CHAPTER 2
MACRO-ECONOMIC VARIABLES TRENDS IN NAMIBIA

2.1 INTRODUCTION

This chapter reviews selected macro-economic variables for Namibia with the assistance of tables, figures and graphical presentations. The number of macro-economic variables in any modern economy are quite numerous. No single study can review all the macro-economic variables in any modern economy. Therefore, the following important macro-economic variables are considered in this chapter bearing in mind the driving objective of this study namely gross domestic product (GDP), inflation, foreign direct investment, exchange rates, imports, as well as exports. In addition, the chapter focuses on basic trend analysis in respect of the variables under consideration.

2.2 TREND ANALYSIS AND DISCUSSION OF MACROECONOMIC VARIABLES

2.2.1 Gross domestic product (GDP)

GDP is the broadest quantitative measure of a nation's total economic activity. More specifically, GDP represents the monetary value of all goods and services produced within a nation's geographic borders over a specified period of time (Bojanic, 2012:51-70). In Namibia, as in many other countries, GDP is computed primarily with the production approach, since it is considered as the most reliable approach in the existing literature.

Government of Namibia (2009:16-27) argues that changes in respect of a country's GDP could be interpreted in the following ways: It is either that the actual output of goods and services has changed, or the prices at which they are selling have changed, or both situations have occurred simultaneously. The important issue is that, while real GDP takes cognisance of current outputs as well as price changes, nominal GDP does not reflect price changes. Given this fact, economists have found it increasingly useful to rely upon the concept of real GDP as an indicator of economic growth, as well as an indicator of economic recession. Further, the rate of growth of the national economy is seen as the annual rate of change of real GDP.

Mankiw (2000:34) also stated that an economy is generally considered to be officially in a recession if its real GDP declines successively over two or more quarters. He also alluded to the fact that despite the wide use of real GDP figures as a way of measuring the general welfare of a country, it is nevertheless open to a number of loopholes. For example, real GDP could be misleading. In addition, GDP figures ignore most transactions that do not take place in legal markets. Furthermore, it excludes important developmental issues, such as life expectancy, literacy level, nutrition, sanitation just to mention a few from its computation. Table 2.1 reflects GDP and real GDP growth rate data for Namibia for the period running from 1990 to 2012.

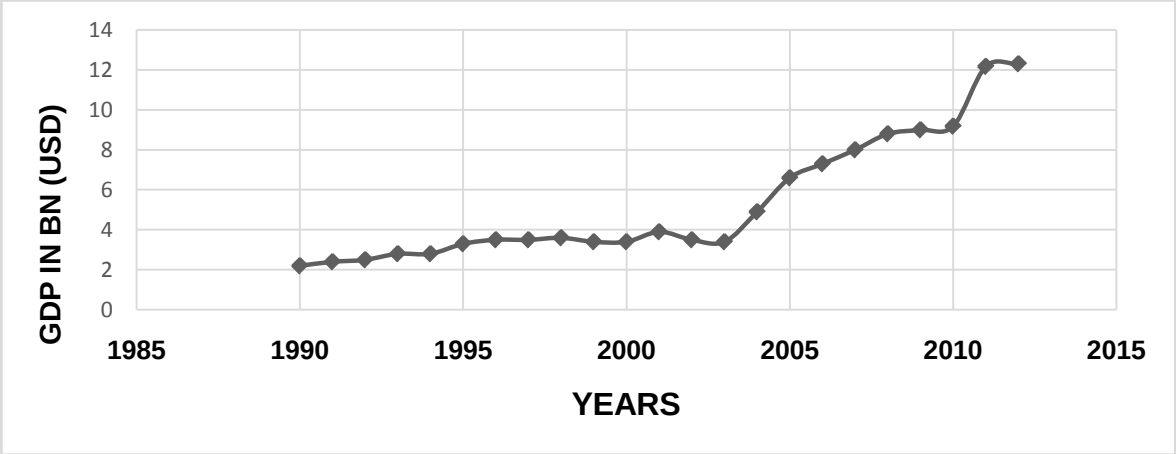
Table 2.1: Annual GDP figures for Namibia 1990 to 2012

YEAR	GDP (US bn)	GDP growth rate (%)	YEAR	GDP (US bn)	GDP growth rate (%)
1990	2.2	2.49	2002	3.5	4.79
1991	2.4	8.17	2003	3.4	4.24
1992	2.5	7.19	2004	4.9	12.27
1993	2.8	-2.01	2005	6.6	2.53
1994	2.8	7.32	2006	7.3	7.07
1995	5.5	4.11	2007	8	5.37
1996	3.5	3.2	2008	8.8	4.3
1997	3.5	4.22	2009	9	-0.7
1998	3.6	3.29	2010	9.18	4.8
1999	3.4	3.37	2011	12.17	3.8
2000	3.4	3.49	2012	12.301	6.6
2001	3.9	1.18			

Source: Author's compilation from Namibia statistical agency bulletin, (2013).

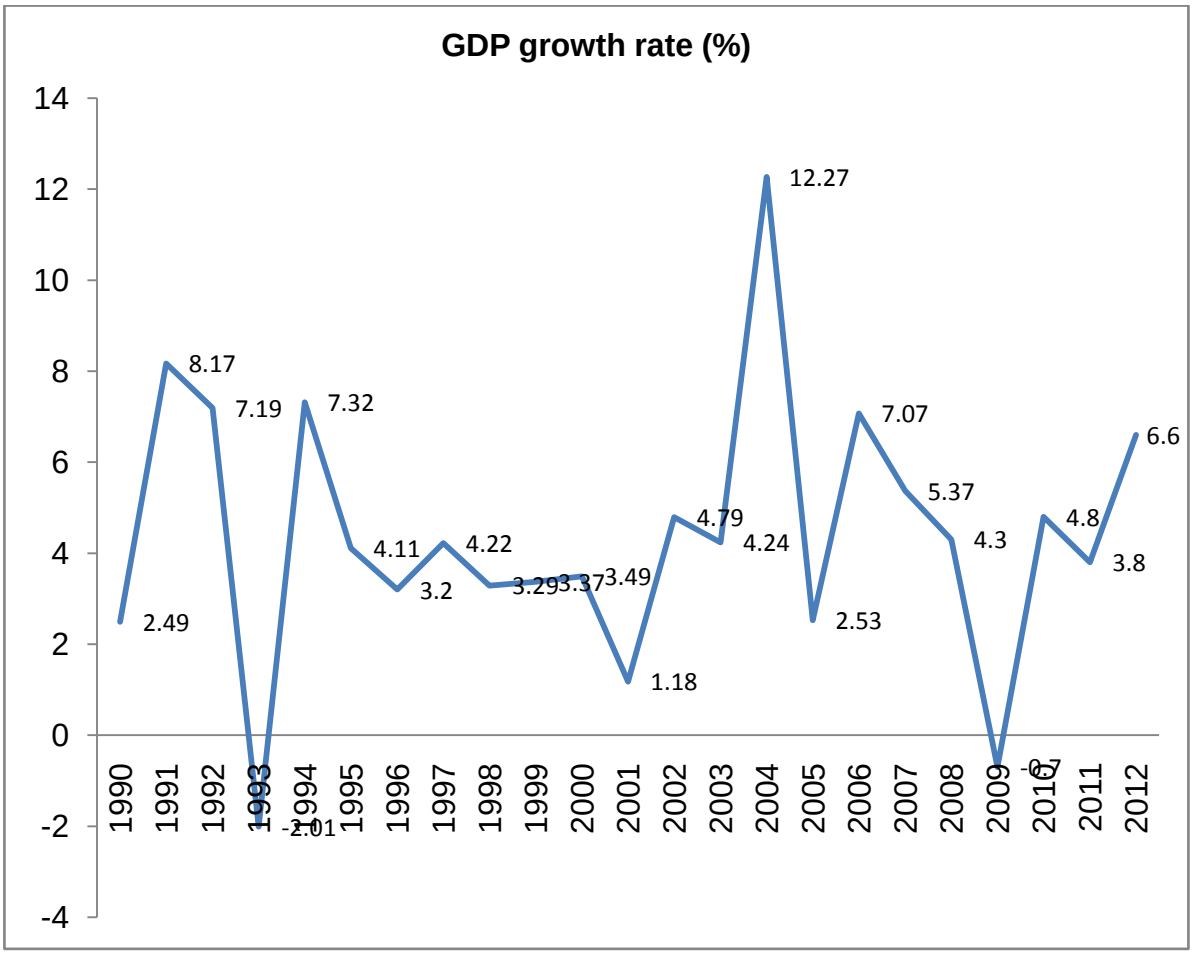
Based on Table 2.1 two graphs are generated to show Namibia's GDP, as well as its GDP growth rate in that order. These are displayed in Graphs 2.1 and 2.2.

Graph 2.1: Namibia's real GDP 1990 to 2012



Source: Author's construct from Namibia statistical agency bulletin (2013).

Graph 2.2: Namibia's real GDP growth rate 1990-2012



Source: Author's construct from Namibia statistical agency bulletin (2013)

The GDP growth rate for Namibia for the period 1990 to 2012 oscillated between 1.18 and 12.27 percent with negative growth rates for the periods 1993 and 2009.

The 1993 decline was attributed mainly to a falling price in the international market for its primary products, especially gold and diamonds, as well as a general reduction in their demands. It is also important to note that notwithstanding the encouraging economic growth that Namibia recorded for the period under scrutiny, poverty remains a challenge in the country (Bank of Namibia, 2013:21-27). In addition, wide income disparity is also prevalent in the economy of Namibia. In realisation of these facts, the government of Namibia has consistently invested massively in physical capital and human resources since the attainment of the country's independence in the year 1990. However, challenges such as poverty, wide income gaps between the poor and the rich just to mention a few, are still visible in Namibia despite the various government efforts to address these issues. It is particularly important to also mention that the economic growth that has been experienced in Namibia in the last decade has been driven mainly by developments in the mining sector. The current situation in the mining sector, especially with respect to uranium mining provides a stronger hope for a sustained increase in the country's economic growth aspirations (Government of Namibia, 2009:16-27).

Consistently, the biggest contributor to GDP in Namibia is the tertiary sector, closely followed by the primary sector with the secondary sector coming third. The primary sector grew quite well up to 1996 and experienced a decline in 1997 and 1998. The decline was attributed to the general sluggishness in the mining sector. Fishing production was steady up to 1996 but declined in 1998 due to the fall in the demand for fish and a simultaneous reduction in the total allowable catches for major fish species. During the period of 1991 up to the year 1998, as well as the year 2002, the secondary sector performed well. The main reason was that the country imported less energy in form of electricity. Further, the tertiary sector experienced constant growth. This was driven mainly by developments in the tourism sector. As a small, open economy with a number of its major trade partners in Europe, the economic cum financial crises that swept across the whole of Europe, including the rest of the globe, resulted in a dampening effect on its domestic performance. In fact, its domestic economy contracted to the tune of 0.7 percent in 2009. Afterwards, the economic performance of the Namibian economy improved. It registered between 4.8 and 6.6 percent in its GDP growth rate between 2010 and 2012.

2.2.2 Inflation (INF)

Cui and Shen (2011:220-224) explained the term inflation as a general tendency for prices of goods and services to rise. Further, this can be expressed generally as an annual percentage increase in the consumer price index (CPI) of a country. In Namibia, the compilation of relevant data relating to the country's inflation is in the hands of a number of government agencies like the Namibia Statistical Agency. Table 2.2 reflects annual inflation rates data for Namibia for the period 1990 to 2012.

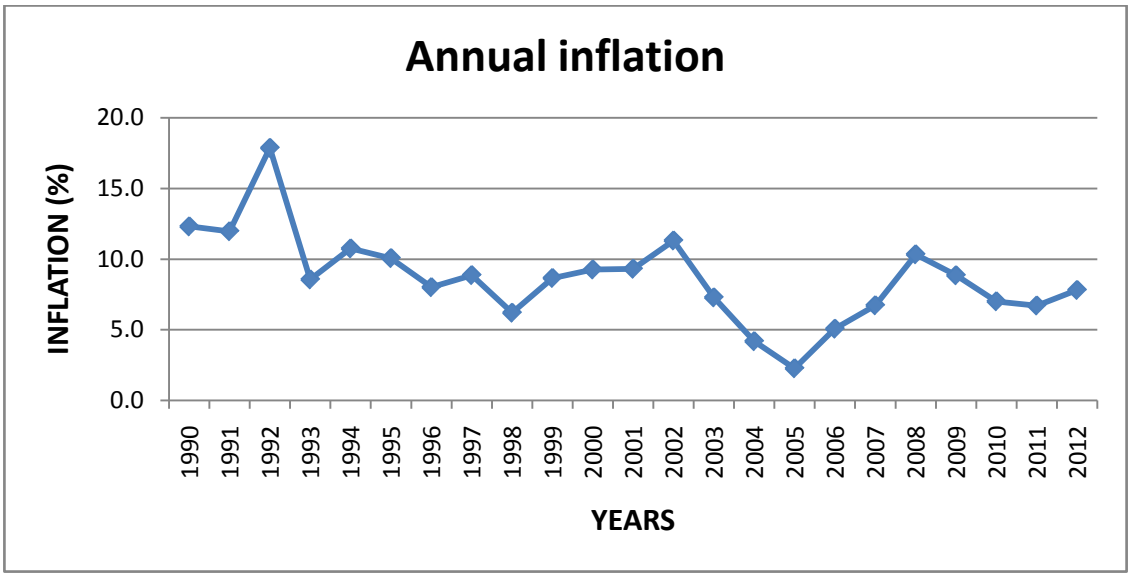
Table 2.2: Annual inflation rate data 1990-2012

YEAR	ANNUAL INFLATION RATE (%)	YEAR	ANNUAL INFLATION RATE (%)
1990	12.3	2002	11.3
1991	12	2003	7.3
1992	17.9	2004	4.2
1993	8.5	2005	2.3
1994	10.7	2006	5.1
1995	10.1	2007	6.7
1996	8	2008	10.3
1997	8.9	2009	8.8
1998	6.2	2010	7
1999	8.6	2011	6.7
2000	9.2	2012	7.8
2001	9.3		

Source: Author's compilation from Namibia statistical agency bulletin (2013).

Based on Table 2.2, a graph showing Namibia's inflation trend for the period under consideration was drawn. This is displayed in Graph 2.3.

Graph 2.3: Namibia's inflation 1990 to 2012



Source: Author's construct from Namibia statistical agency bulletin (2013).

The Annual Economic Development Report (Government of Namibia, 2013:77-121) reported that Namibia's inflation is mainly import-driven. This is due to the high volume of import of goods mainly from South Africa. However, differences in the CPI weights and domestic factors may result in inflation running above or below that of South Africa. Namibia's inflation rate has been under control due to the relatively strict monetary policy stance followed by the Bank of Namibia, especially after 1995. However, inflation increased in the years 2002, 2007 and 2008 principally due to a sharp depreciation in the Namibian dollar and rising international oil prices.

Natural disaster, especially drought, which swept across the region for the past decade in addition to oil price volatility, further compounded the food security problem of Namibia during the period under review. Inflation in Namibia has been ranging between a single and double-digit figure for the period under scrutiny (Government of Namibia, 2014:68-93). This report also attributed Namibia's inflation partly to the high cost of transporting food, the increasing substitution of food as a source of energy, as well as the rising cost of food production. Furthermore, the report widely acknowledged the fact that Namibia's membership of the common monetary area (CMA), has in a way assisted in controlling inflation in its economy, as well as in the other CMA countries, namely South Africa, Lesotho and Swaziland. Besides, the thesis observed that, the Bank of Namibia

engages instruments such as open market operations, bank rate, legal reserve requirements, as well as inflation targeting as techniques of controlling and maintaining price stability in the economy of Namibia.

2.2.3 Foreign exchange rate (FEX)

Morris (1984:2-6) maintains that foreign exchange rate (FEX), which is sometimes referred to as FOREX rate or currency rate or the price of a country's currency is very vital to the functioning of modern economies. The author further emphasised that in the face of increasing globalisation and international trade among the countries of the world, exchange rates will continue to perform a greater role in the management of modern economies. Besides, the exchange rate of a currency represents the value or price of that particular currency compared to that of another country. Furthermore, since the exchange rates play such an important role in a country`s competiveness level, currency exchange rates are amongst the most analysed and predicted indicators on the globe. The author went further to maintain that this market is usually very volatile. The author further mentioned that exchange rates of currencies are usually driven by demand and supply factors, as well as social, political, institutional and psychological factors. The author also acknowledged that the currency markets are the most liquid in the world with a daily turnover of approximately 2 trillion USD, which compares to 500 billion USD for the United States of America (USA) government bond market based on 2012 datasets.

Hardwick *et al*. (1999:250) asserted that foreign exchange rates are needed to be channelled into investments projects, which benefits the poorer sections of the population by way of a reduction in relative poverty. Whether the objective of poverty reduction as put forward by Hardwick *et al*. (1999) is being realised in modern economies of our time or not is an empirical issue that would require further probing. Table 2.3 reflects annual foreign exchange rates data for Namibia for the period 1990 to 2012.

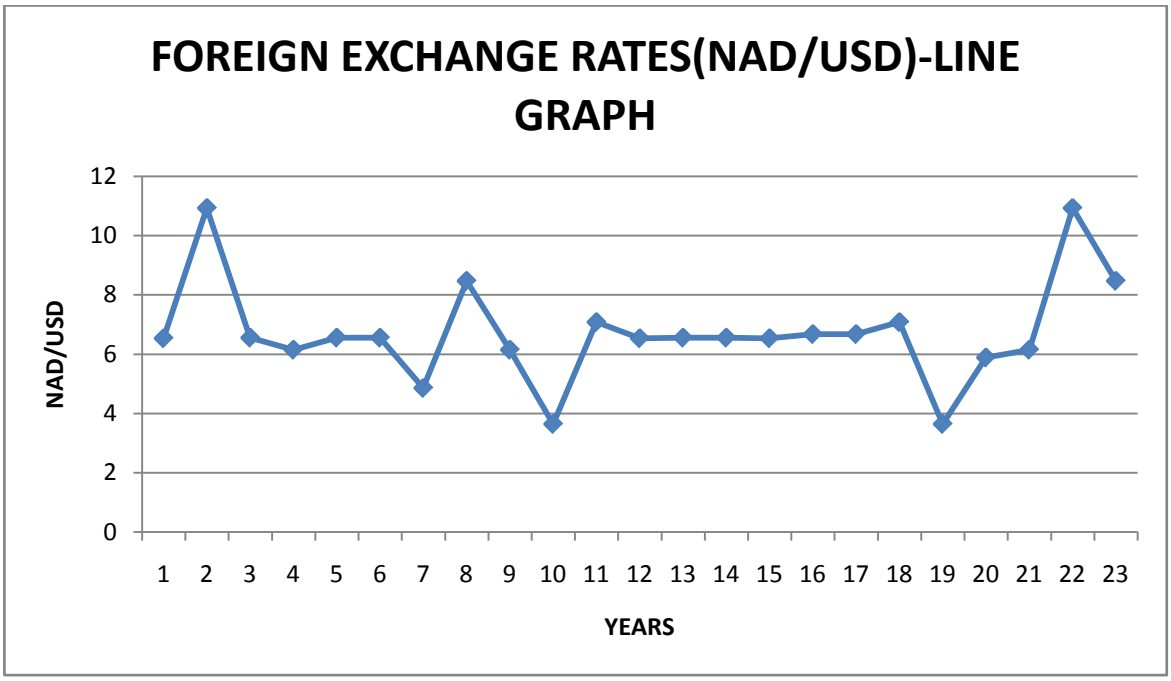
Table 2.3: Annual foreign exchange rate data for Namibia 1990 to 2012

YEAR	FOREX (NAD/USD)	YEAR	FOREX (NAD/USD)
1990	6.5373	2002	6.55692
1991	10.929	2003	6.55692
1992	6.55692	2004	6.5373
1993	6.15	2005	6.6773
1994	6.55692	2006	6.6773
1995	6.55692	2007	7.08226
1996	4.86	2008	3.6455
1997	8.473	2009	5.8875
1998	6.15	2010	6.15
1999	3.6455	2011	10.929
2000	7.08226	2012	8.473
2001	6.5373		

Source: Author's compilation from Namibia statistical agency bulletin (2013).

Based on Table 2.3, a graph was generated to show Namibia's foreign exchange rate movements to cover the period under consideration. This is shown in the Graph 2.4 below. The Namibian currency is usually paired with the USD. First, the USD is the language of international commerce and almost all the invoices used in international trade nowadays are denominated in USD.

Graph 2.4: Namibia's FEX 1990 to 2012



Source: Author's construct from Namibia statistical agency bulletin (2013).

Undoubtedly, the Namibian dollar, in terms of its value, has undergone a number of depreciations and appreciations over the period under review. The periods 1990 and 1991 were characterised by a high level of depreciation in terms of the value of the Namibian dollar. Further, between the periods 1996 and 1999 the Namibian dollar either depreciated or appreciated in its value compared to USD. However, it is pertinent to mention at this juncture that the Namibian dollar in terms of its price in relation to USD, was generally stable between the years 1992 and 1995, as well as the years 2000 and 2007. In 2008, the Namibian dollar appreciated again. Since 2009, the Namibian dollar has consistently depreciated in value up to 2011, and subsequently started appreciating again in 2012.

The factors responsible for the movements in respect of the foreign exchange rate of the Namibian dollar during the period covered by the study cut across the following: demand and supply factors, interest rates, inflation rates, speculators' activities, competitiveness of the national economy, developments in Namibia, South Africa and the rest of the world, as well as the financial and economic crises that swept across the globe, especially between the years 2008 and 2011 (Mishkins, 2009:433-435).

2.2.4 Namibia's imports (IMP)

Government of Namibia (2009:16-27) explain that imports are generally classified as goods and services produced by foreign countries and subsequently purchased by the domestic economy. Alternatively, imports are considered as goods purchased from other countries. Further, Namibia continues to depend largely on international trade, especially imports from South Africa, for its economic survival. This is due to historical, political and economic factors. For several years, Namibia was part of apartheid South Africa. Although Namibia attained its political independence in 1990, it continues to rely on imports mainly from South Africa because of the reasons earlier mentioned. Besides, Namibians still finds it cheaper to import most goods from South Africa as against producing them locally. Indeed, its economy remains highly integrated with the economy of South Africa, as the bulk of Namibia's imports originate in South Africa (Government of Namibia, 2009:16-27).

Government of Namibia (2012:87-131) alluded to the fact that South Africa is Namibia's major import partner accounting for approximately 66 percent of Namibia's total imports, closely followed by Germany, the Netherlands, the United Kingdom and the Peoples' Democratic Republic of China. Namibia's imported items consist mainly of food products, petroleum products, fuel, construction and building materials, machineries and equipment, as well as chemicals. It is also observed from Table 2.4 that imports for Namibia has consistently been on the rise with the average annual growth rate swinging between 3 and 6 percent. This development further reinforces the heavy dependence of Namibia on imports for its economic survival. Table 2.4 depicts Namibia's annual import data for the period from 1990 to 2012.

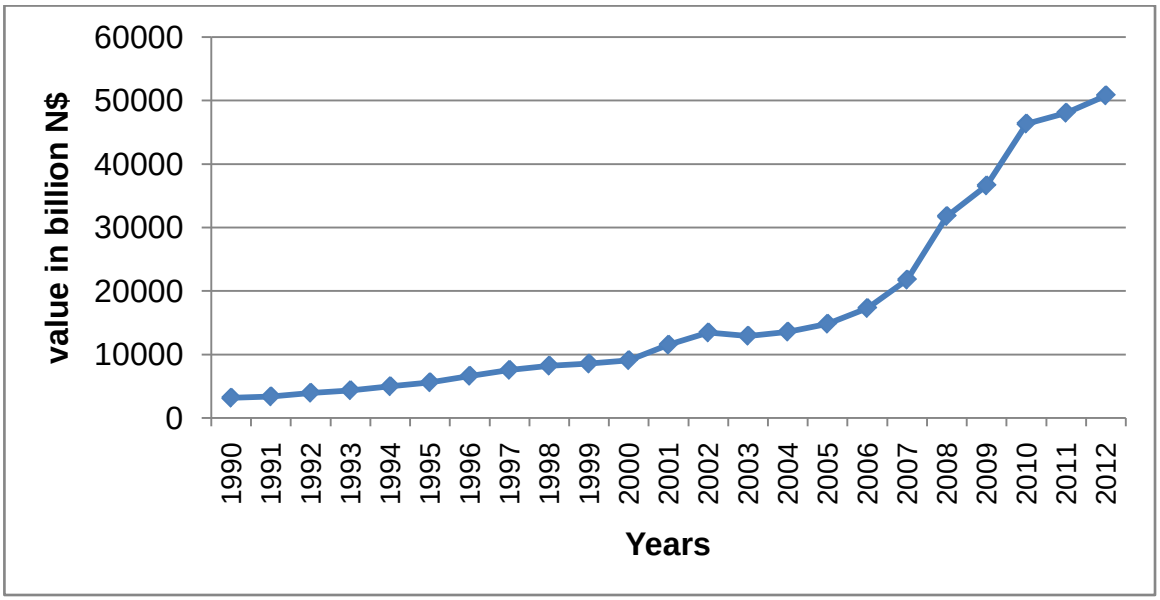
Table 2.4: Annual import data for Namibia 1990 to 2012

YEAR	IMPORTS (N$b)	YEAR	IMPORTS (N$b)
1990	3183.03	2002	13460.84
1991	3391.91	2003	12944.01
1992	3961.7	2004	13589.88
1993	4362.251	2005	14836.53
1994	4993.447	2006	17307.05
1995	5615.266	2007	21780.46
1996	6635.657	2008	31788.99
1997	7566.426	2009	36614.46
1998	8235.454	2010	46359.71
1999	8562.191	2011	48064.89
2000	9096.968	2012	50804.11
2001	11533		

Source: Author's compilation from Namibia statistical agency bulletin (2013).

Based on Table 2.4, a line graph to show Namibia's imports trend for the period covering 1990 to 2012 was produced. This is displayed in Graph 2.5.

Graph 2.5: Namibia's Imports 1990 to 2012



Source: Author's construct from Namibia statistical agency bulletin (2013).

It is evident from the line Graph 2.5 that Namibia's imports bill has consistently be increasing since 1990 reaching a peak in 2012. In particular, Namibia's imports bill increased more than expected in 2001, 2008 and 2010, which was mainly due to the appreciation of the South African Rand (Namibian Dollar). This appreciation in turn made imports appear cheaper and more competitive compared to its exports. Besides, these periods were characterised by high domestic demands that could not be met by local production. The high import bill was further compounded by an increased importation of machinery, helicopters and fishing vessels (Government of Namibia, 2012:87-131).

Despite a number of industrialisation policies that the Government of Namibia has implemented since the attainment of its political independence in 1990, exports processing zones scheme in particular in order to improve upon local production capacities, the country's economic survival is still largely depended on imports mainly from South Africa.

2.2.5 Namibia's Exports (EX)

In general terms, exports consist of goods that a country produces and in turn sells in foreign markets (Government of Namibia, 2012:87-131). Namibia is a mineral paradise. No wonder that its primary exports are mainly solid minerals, such as diamonds, gold, uranium, zinc, as well as beef, fish, live animals and manufactured products. Further, Chow (1987:57) identified Namibia's major export partners as South Africa, Germany, USA and the UK with South Africa still playing the major role when it comes to markets for Namibia's exports. Table 2.5 depicts Namibia's annual export data for the period 1990 to 2012.

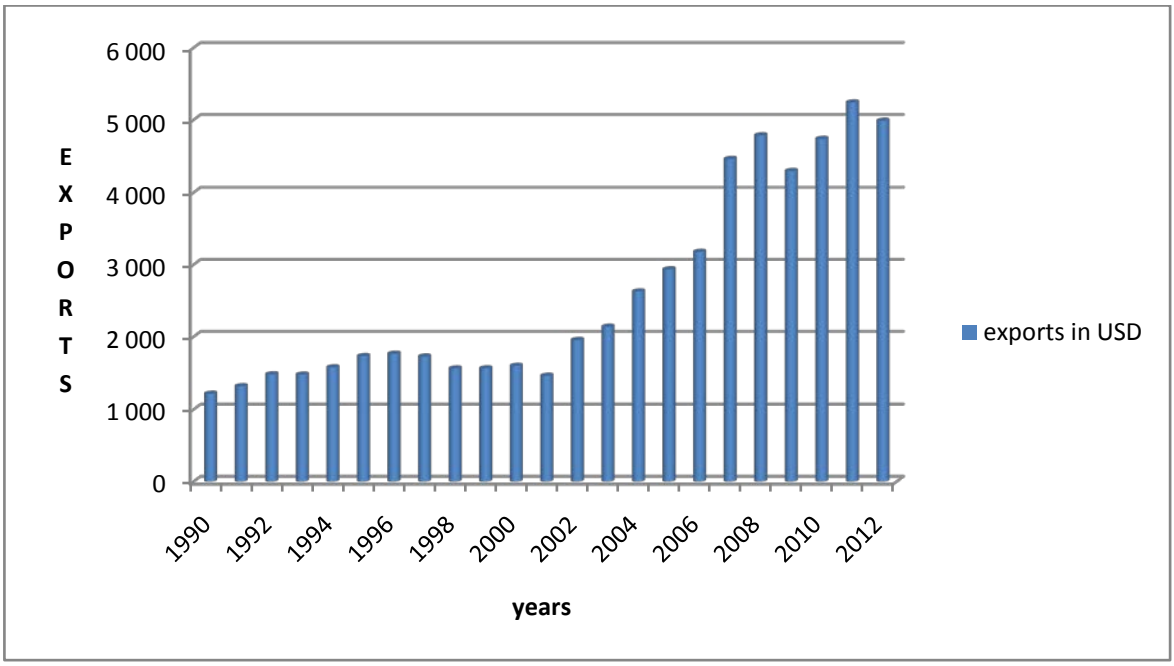
Table 2.5: Annual export data for Namibia 1990 to 2012

YEAR	EXPORTS IN BILLIONS USD	YEAR	EXPORTS IN BILLIONS USD
1990	1,220	2002	1,957
1991	1,324	2003	2,141
1992	1,481	2004	2,630
1993	1,477	2005	2,937
1994	1,577	2006	3,180
1995	1,734	2007	4,468
1996	1,766	2008	4,787
1997	1,728	2009	4,301
1998	1,562	2010	4,738
1999	1,563	2011	5,243
2000	1,598	2012	4,990
2001	1,460		

Source: Author's compilation from Namibia statistical agency bulletin (2013).

Using the information in Table 2.5, a graph showing Namibia's exports trend for the period 1990 to 2012 was produced. This is shown in Graph 2.6.

Graph 2.6: Namibia's exports 1990 to 2012



Source: Author's construct from Namibia statistical agency bulletin (2013).

An examination of Graph 2.6 shows that Namibia's export revenue was relatively stable between 1990 and 2001 due mainly to a consistent demand for its exports, especially solid minerals. However, there was a continuous rise in Namibia's exports revenue between the periods 2002 and 2006 due principally to the depreciation of its national currency, which ensures that its exports were cheaper in foreign markets. A much greater and continuous increase in its exports revenue was observed between the years 2007 and 2012 due mainly to developments in its mining sector, especially the increase in foreign investment in uranium mining. The various free trade agreements that Namibia signed with some of its major trading partners did contribute to the rise in its exports revenue between 2007 and 2012. It is also pertinent to note that Namibia's export and import growth rates for the period under review have been on the increase with exports growing faster than imports in monetary terms in most of the years. This has in turn led to trade imbalances for most of the years under discussion.

2.2.6 Foreign direct investment (FDI)

Biswas (2002:500-502) cautioned that, when it comes to the issue of international movement of capital, it is certainly advisable to draw a line of demarcation between two types of capital movements: foreign direct investment (FDI) and

foreign portfolio investment (FPI). The author explains that FDI is used to describe a movement of capital that involves ownership and control. It could take the form either of a Joint venture or through the establishment of a subsidiary or associate company in the foreign country, as well as acquiring shares of an overseas company. By implication, participants in FDI are also co-owners of such businesses and, therefore, have an element of control in the day-to-day operations of such businesses. In some countries, there are laws to ensure that the locals also have the opportunity to participate effectively in the ownership and control of FDIs. In contrast, FPI does not involve ownership or control. It simply involves the flow of financial capital. Examples of FPI are deposits of funds in a French bank by a Namibian company or the purchase of a debenture (a loan certificate) of a Swedish company by a citizen or company based in Botswana.

Further, the author succinctly points out the following as constituting the benefits FDI on the part of host countries: it improves the competitiveness of the host countries' economies in the international arena, as well as better access to global markets. Further, FDI improves the quality of products and processes across sectors. Besides, profits generated by FDI contribute to corporate tax revenues of the host country. Employment opportunities are created, especially in sectors that are heavily driven by labour intensive technologies. The agriculture sector is a case in point. In addition, FDI in manufacturing will in most cases boost the level of productivity in the local economy.

Also contributing to this discussion the Bank of Namibia (2006:9-10) maintained that FDI allows the transfer of technology, particularly in the form of capital inputs, which cannot be achieved through financial investments or trade in goods and services. Upon the attainment of independence in 1990, the Namibia Investment Centre (NIC) was established under the Foreign Investment Act No.27 of 1990 specifically to promote, attract, encourage and facilitate FDI to Namibia. Indeed, this investment centre has so far succeeded in attracting a number of FDIs to Namibia, especially through the export processing zones scheme of the country. Table 2.6 depicts Namibia's FDI annual data for the period stretching from 1990 to 2012. The data are expressed as a percentage of GDP.

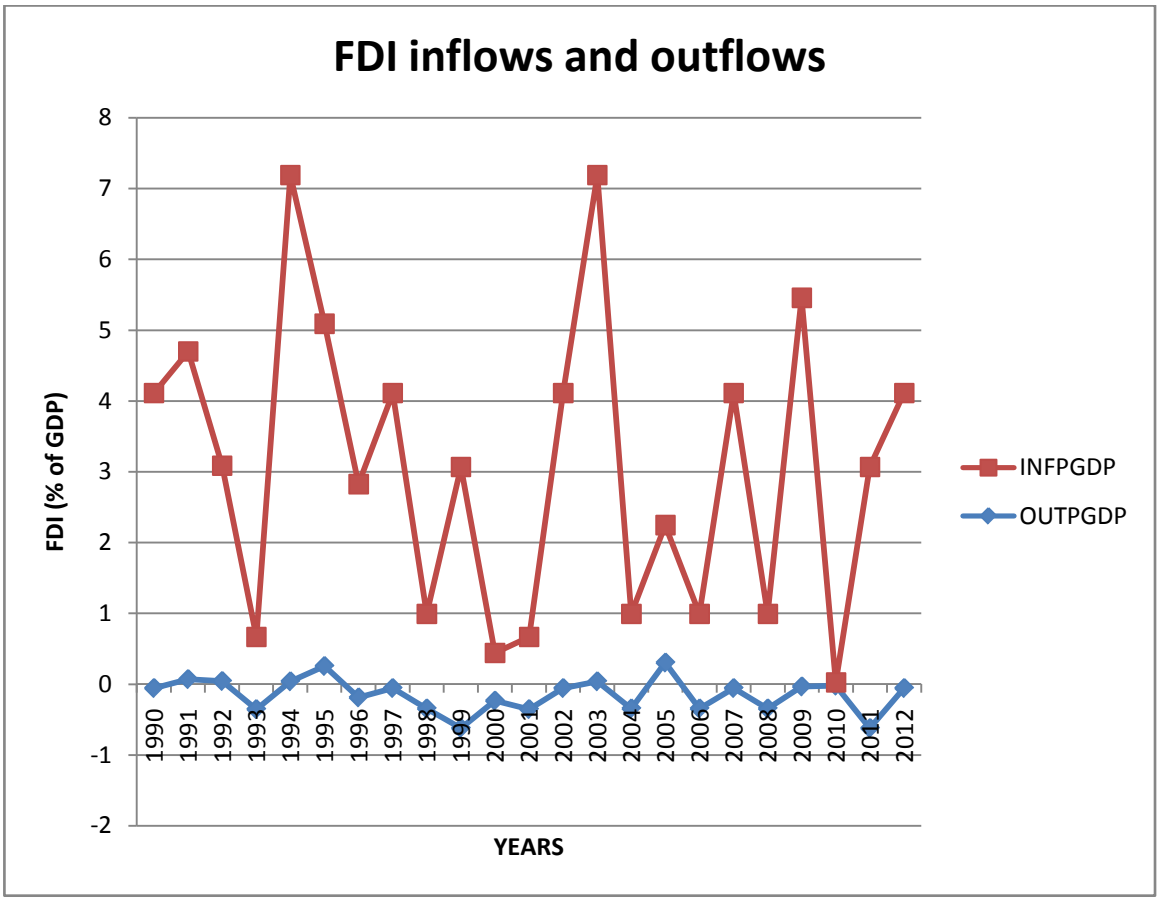
Table 2.6: FDI annual data for Namibia 1990 to 2012

YEAR	FDI INFLOWS (% of GDP)	FDI OUTFLOWS (% of GDP)	Net FDI (% of GDP)
1990	4.166563	-0.0556	4.222167
1991	4.626818	0.070515	4.556303
1992	3.041132	0.043503	2.997628
1993	1.01886	-0.35293	1.371794
1994	7.148466	0.039632	7.108833
1995	4.832897	0.25574	4.577158
1996	3.012904	-0.18793	3.200831
1997	4.166563	-0.0556	4.222167
1998	1.335244	-0.34378	1.679023
1999	3.685963	-0.62088	4.306841
2000	0.674006	-0.23356	0.907567
2001	1.01886	-0.35293	1.371794
2002	4.166563	-0.0556	4.222167
2003	7.148466	0.039632	7.108833
2004	1.335244	-0.34378	1.679023
2005	1.941518	0.304236	1.637283
2006	1.335244	-0.34378	1.679023
2007	4.166563	-0.0556	4.222167
2008	1.335244	-0.34378	1.679023
2009	5.489037	-0.03335	5.522389
2010	0.047035	-0.02185	0.068886
2011	3.685963	-0.62088	4.306841
2012	4.166563	-0.0556	4.222167

Source: Author's compilation from Namibia statistical agency bulletin (2013).

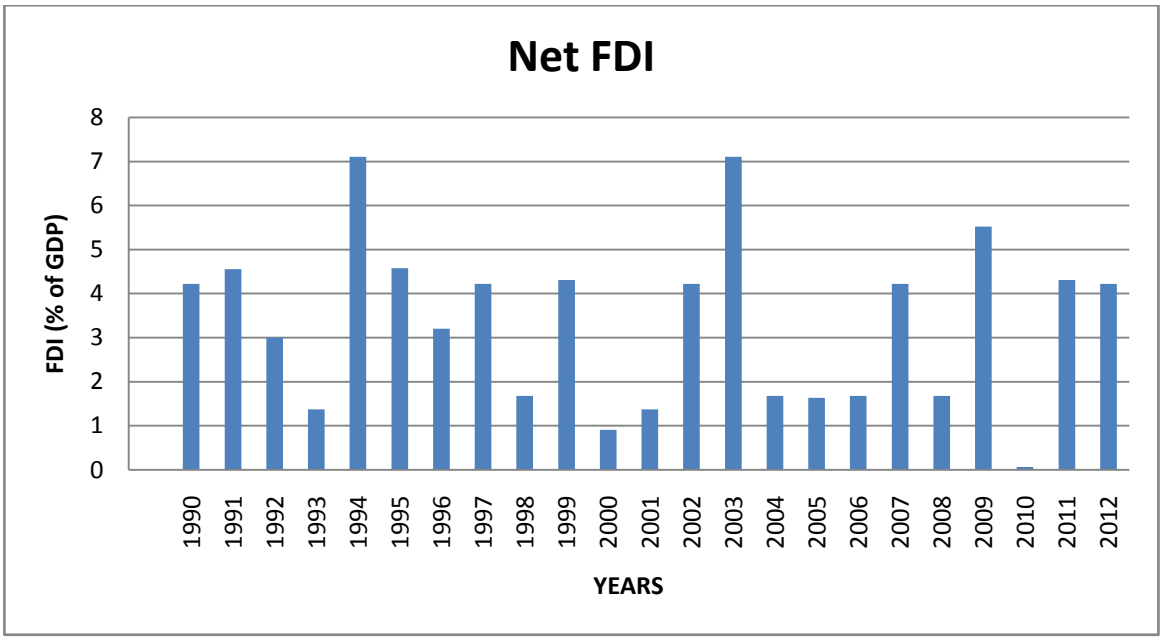
Using figures contained in Table 2.6, Graphs 2.7 and 2.8 were produced.

Graph 2.7: FDI inflows and outflows in Namibia 1990 to 2012



Source: Author's construct from Namibia statistical agency bulletin (2013).

Graph 2.8: Net FDI in Namibia, 1990 to 2012



Source: Author's construct from Namibia statistical agency bulletin (2013).

Upon inspecting Graph 2.7, it is observed that FDI outflows were more stable compared to FDI inflows during the period under review. In particular, there was a rapid increase in FDI inflows between the periods 2000 and 2003. This was ascribed mainly to the increased borrowing on the part of subsidiaries from their parent companies abroad. The establishments of the Ramatex manufacturing company as well as the Scorpion zinc mine also contributed significantly to the rise in FDI inflows to Namibia between the years 2000 and 2003. In a dissimilar fashion, FDI outflows from Namibia between 1990 and 2012 in most cases were negative. This was principally due to the fact that investors generally preferred to reinvest their profits in Namibia instead of taking it out to other destinations during the period under review. Further, net FDI in Namibia during the period under consideration as presented in Graph 2.8, displays many fluctuations. In particular, the years 1993, 1998, 2000, 2001, 2004, 2005, 2006 and 2008 recorded low net FDI flows, while the years 1990, 1991, 1992, 994, 1995, 1996, 1997, 1999, 2000, 2003, 2007, 2009, including 2011 and 2012 registered high net FDI flows. A combination of developments in the domestic and international fronts contributed to these fluctuations in net FDI in Namibia during the period under scrutiny (Government of Namibia, 2012:87-131). Perspective

2.3 ADDITIONAL FACTS CONCERNING THE ECONOMY OF NAMIBIA

Chapter 1 section 1.2 of the thesis, highlighted the important economic characteristics of Namibia. In this section, the thesis provides more information on the Namibian economy with a specific consideration of the economic size of Namibia, manufacturing activities, as well as trade-related infrastructural issues. As earlier mentioned in Chapter 1, Namibia's economy rests upon three key sectors, namely, mining, fishing and tourism. The size of its economy is small compared to most of the economies in Africa. The 2014 macroeconomic data for the country shows its total GDP in monetary terms to be equal to US$13.43 billion. In the same vein, the selected GDP figures for some other countries in Africa for the year 2014 are the following: South Africa US$349.82 billion, Angola US$131.40 billion, Nigeria US$568.51 billion, and Gabon US$22.34 billion (Government of Namibia, 2014:66-79).

The manufacturing sector accounts for only 15 percent of the GDP of Namibia. Meat processing, fish processing, food and beverages, and mineral processing

are the main manufacturing activities in the country. Manufactured goods account for approximately 36 percent of total merchandise exports. Its manufacturing sector is highly vulnerable to trade both in terms of import of inputs and export of finished products. This is further complicated by the absence of economies of scale in the domestic market as a result of the smallness of its population. Besides, its population is sparsely distributed. Further, the dependence on external markets also makes the manufacturing sector prone to external shocks like the global financial and economic crises that led to a high reduction in demand for Namibia's exports, especially mineral exports (Government of Namibia, 2014:8-11)**.**

Infrastructure, especially transport infrastructure and network for a developing country like Namibia are well-developed. The country's two main seaports are located in Walvis and Luderitz. The Walvis Bay port serves mainly serves as the entry points for trade with the rest of the world. It is currently under a comprehensive renovation. The country can boost of the following transport corridors: The Trans-Kalahari Corridor, the Trans-Caprivi Corridor, the Trans-Cunene Corridor, as we as the Trans-Oranje Corridor. The Trans-Kalahari Corridor comprises a tarred road linking the Port of Walvis Bay with Botswana and Gauteng, the industrial powerhouse of South Africa. The Corridor stretches over 1,900 km from Walvis Bay to Windhoek in Namibia, Gaborone in Botswana and Johannesburg/Pretoria in South Africa (Schlettwein, 2013:12-15).

The Trans-Caprivi Corridor links the Port of Walvis Bay with Zambia, the southern Democratic Republic of Congo (DRC) and Zimbabwe. The Corridor enters Zambia via the northeastern part of Namibia. The Corridor stretches over 2,500 km, and is supported by a railway line between Walvis Bay and Grootfontein where transshipment facilities are available. The Trans-Cunene Corridor links the Port of Walvis Bay with southern Angola up to Lubango, covering a distance of over 1,600 km. The Corridor road infrastructure is supported by the northern railway line, which presently extends from the Port of Walvis Bay to Ondangwa (SACU Trade Policy Review Report, 2013:7-21).

Notwithstanding such extensive trade-related infrastructure developments, there exist management-related challenges that could undermine subsequent gains. An area of particular concern is railway development, which has been adversely

affected by mis-management and bad judgment over procurement. Development of the railway infrastructure, particularly in Namibia's trade corridors, is vital as it is relatively the most efficient and effective way of transporting goods in bulk (The Bank of Namibia, 2012:11).

2.4 SUMMARY AND CONCLUSION

Chapter 2 discussed in a selective fashion macro-economic variables in Namibia, bearing in mind the driving objective of this study. Specifically, GDP, inflation, foreign direct investment, exchange rates, imports, as well as exports are reviewed. The discussion concerning these variables was done with the assistance of tables, figures and graphs. The primary objective was to show the trends in respect of these variables over the period covered by the study. In addition, the various factors influencing the movements of the macroeconomic variables reviewed during the period under scrutiny are identified and discussed. Some of the variables that have been reviewed are characterised by increasing tendency over time, while the others are oscillatory in their movements. The ensuing chapter reviews Namibia's trade policy instruments and agreements. Tables and figures in respect of Namibia's trade policies and agreements constitute an important part of the discussion that took place in Chapter 3.

CHAPTER 3

NAMIBIA'S TRADE POLICY INSTRUMENTS AND AGREEMENTS

3.1 INTRODUCTION

This chapter considers Namibia's trade policies and agreements. The chapter starts with a discussion of pertinent theoretical concepts relating to trade policies and agreements and then delves into specific trade policy instruments and agreements issues in the context of Namibia in particular and SACU in general.

3.2 TRADE POLICIES AND TRADE AGREEMENTS

In spite of the convincing arguments in the literature detailing the benefits arising from unrestricted international trade, countries continue to impose various forms of artificial or trade barriers with the overall goal of either restricting imports or enhancing the competitiveness of a country's exports in foreign markets. Such protections and restrictions are undertaken often through trade policies, as well as trade agreements (Ratha, 2005:42-43). The thesis now attempts to draw a line of dichotomy between trade policies and trade agreements.

On the one hand, trade policies refer to actions, decisions or rules that a country uses to either influence or interfere with free foreign trade (Bradford, 2003:24-37)**.** The overall objective of this is for a country to maximise, protect and sustain its gains from participating in foreign trade. The literature further recognises three main categories of instruments that can be used when it comes to influencing free foreign trade. These are import tariffs, export taxes and import quotas. Import tariffs are specialised taxes that are imposed on incoming goods. Examples of import tariffs are specific tariffs, *ad valorem*, and preferential duties (White, 2007:839-852). A specific tariff is usually imposed on the physical number of goods entering a country, while an *ad valorem* is imposed on the value of the imported goods. Preferential duties are generally imposed as a result of the geographical sources of the imported goods (Anderson and Nearly, 2005:130-141)**.** An export tax, which forms the second category of instruments that are used to interfere with free foreign trade are usually directed at outgoing goods. It could also be either specific or *ad valorem* in practice. The third category is referred to as import quotas. This represents a quantitative restriction. In other

words, the government limits the quantity of an imported item entering its economy (Irwin and Pavcnik, 2004:223-245)**.**

On the other hand, trade agreements generally refer to any contractual arrangement that takes place among countries in respect of their trade relations. It can be either bilateral or multilateral. It is a bilateral agreement when only two countries are involved in the agreement, while it is referred to as a multilateral agreement if more than two countries are involved (Bradford, 2003:19-39)**.** Trade agreements are targeted primarily at reducing the various obstacles to trade and consequently paving way for the parties to such agreements to increase the volume of trade among them. Two common features of trade agreements that need further elaborations are the principles of reciprocity and the most-favoured nation treatment. Reciprocity means that any existing mutual concession is not supposed to be generalised or extended to other countries with which the contracting parties already have commercial treatise. The most-favoured nation treatment clause is meant to prevent the possibility of one of the parties, in respect of the trade agreements, offering lower tariffs to another country at a later stage. A classic example of a multilateral trade agreement in history was the General Agreement on Tariffs and Trade (GATT), which was replaced by World Trade Organisation (WTO) in 1995 (Amiti and Shang-Jin, 2004:36-39).

3.2.1 Arguments for interventionist trade policies

It is instructive to note that on one hand the literature widely acknowledges that completely free foreign trade is in the long-run the safest and best way of integrating a nation's economy into a long-lasting international division of labour (Field and Umaporn, 2007:361-380). On the other hand, the literature argues that, free foreign trade has the potential to either delay or act as an obstacle, and in extreme cases prevents the fulfilment of pertinent national economic goals altogether (Coe, 2008:48-51). No wonder that protectionism is still being practiced in today's world in various forms. Since tariffs constitute the most important and commonest form of trade barriers in history (Grossman and Sykes, 2005:41-67), the thesis, for analytical purposes, now discusses the various arguments advanced in the literature for the imposition of trade policies.

3.2.1.1 Revenue tariffs argument

Its advocates maintain that tariffs constitute an abundant source of revenue for the state when it comes to running its day-to-day functions, as well as financing various forms of projects**.** Further, in the context of fiscal policy implementation, tariffs can be used in a counter-cyclical way. For instance, in a period of recession, tariffs could be introduced or increased in order to boost domestic total demand, which will in turn be expected to have a positive multiplier effect on domestic production and employment levels as a result of a fall in imports. The reverse is expected to occur during a period of economic boom (Brown and Stein, 2008:331-357)**.** Therefore, along the revenue raising argument, tariffs will not only promote the overall macro-economic objectives of full employment and price stability, but will also promote equilibrium in respect of a country's balance-of-payments position in a way.

3.2.1.2 Infant industry tariffs argument

The infant industry argument emphasises the need to protect a particular industry of the economy from foreign competition for a specified period of time, until the industry is mature enough to successfully compete with their foreign counterparts in the domestic market. This is a very common practice among the developing countries (Mastel, 2006:42-57). The danger often exists that an industry might insist on a permanent protection, instead of the original temporary infant industry tariff. Realistically, while it is in some cases politically straightforward to introduce infant industry tariffs, it can, however, be very tricky to lift them, especially in the face of organised special interest groups in the form of labour unions, as well as the presence of strong opposition political parties (Field and Tansin, 2007:361-380).

3.2.1.3 Protective tariffs argument

Magee (2001:105-125) stated that protective tariffs are generally designed in order to serve the interest of a particular sector or industry of the economy. Protective tariffs could also be considered as an attempt on the part of a country to shift the terms-of-trade (ToT) at the expense of its trading partners. A classic example of this was the situation that the USA found itself in during the years

1981 to 1984 in respect of its weak automobile industry. During these three protective years, the USA automobile producers made huge revenues and profits. About 30,000 additional workers were employed gainfully in this industry. However, the unfortunate side of it was that the purchasing power of consumers was deeply eaten into as a result of having to pay a higher price for made-in-USA automobiles, due to the ban on imported automobiles during the three protective years. Therefore, the protective measure that was in place during the three-year period did not actually benefit the workers, since their purchasing power was vandalised by higher prices that they had to pay for locally-produced automobiles. The opinion is therefore that protective tariffs could potentially be counter-productive if not carefully implemented and managed.

3.2.1.4 Preferential tariffs argument

This type of tariff, in most cases, arises as a result of the geographical origin of the goods. Under a preferential tariff regime a country sets at will various import duties for each individual supplier country and in certain cases the same level of import duties across the board (Hoekman, Will and Aaditya, 2010:505-530). Whenever, certain countries are granted some forms of tariff reductions, it is referred to as a preferential duty. In the past, preferential duties were common practices among the countries that shared similar ideological-orientation, especially after the end of the second world war (Laboarde *et al*., 2012:1-25). In modern time, such practices between the European Union (EU) and the ACP (African, Caribbean, and Pacific Countries) are common. Further, the EU has similar pacts with the European Free Trade Association (EFTA), whose members are Iceland, Liechtenstein, Norway and Switzerland (Limao, 2006:17-34).

3.2.1.5 Allocation tariffs argument

Allocative tariffs are imposed primarily to check, fight or prevent social and environmental dumping. On one hand, such tariffs are expected to either control or prevent the consumption of goods that are harmful to our health. Example of harmful goods are cigarettes and liquor (Hartman, 2011:5-34). On the other hand, they are used as a mechanism of controlling environmental dumping. A carbon dioxide or energy tax is a good example of such tariffs. Further, this kind of tax could serve two purposes. First, it has the potential to slow down the warming of

the atmosphere. Second, it can help in ensuring that such goods are cautiously used as a result of paying a higher price for them (Stiglitz, 2002:24-31).

3.2.1.6 Retaliatory tariffs argument

Retaliatory tariffs as the name implies are tariffs imposed by country A against goods arising from country B, since country B has also done the same to the goods arising from country A. Indeed, it is a retaliatory measure. The EU and the USA trade relationships are continually characterised by this kind of practice. On several occasions, the EU has threatened to increase tariffs on USA pasta products as a result of the USA tariffs on steel. Most of the time, the two parties simply agree not to carry out such threats (Finger, 2008:887-904).

3.2.1.7 Anti-dumping tariffs argument

Anti-dumping tariffs are driven by two primary reasons. First, it is used as a mechanism of protecting a country against its domestic market being used as a dumping ground by cheap foreign products. Secondly, it is a way of making locally produced goods potentially competitive in the domestic market in the face of cheap foreign substitute goods. By imposing a tariff on an imported good, its potential competitive advantage in the domestic market will be offset in some way. In this way, non-subsidised locally produced goods can reasonably compete with their foreign counterparts in the domestic market (Brown and Stern, 2008:331-357).

3.2.1.8 3Politically-motivated tariffs argument

This type of tariff is imposed usually in order to fulfil the interest of individuals, a particular group or groups, and in most cases at the expense of the entire country. The logic behind the imposition of this kind of tariff is the need to build local capacity, so that in the event of a crisis, the country will be in a position to provide its citizens with its own products. In this way, a country will avoid making itself vulnerable to political opponents, especially during a crisis period (Madsen, 2001:848-868). The author went further to note that in most cases those groups advocating or lobbying for this kind of tariff either implicitly or explicitly are more enthusiastic about the economic benefits that they will derive from such tariffs.

3.3 NAMIBIA'S TRADE AGREEMENTS

Over the years, Namibia has signed a number of bilateral and multilateral trade agreements. These agreements are mainly to promote, increase and strengthen the existing economic ties among all the parties that are signatories to such trade agreements. Further, Namibia has been an active participant in international trade, especially after attaining independence in 1990 (Coe, 2008:48-51). Namibia trades mainly with the SADC trade bloc, Asia, the European Union, North America, including Latin America (Bank of Namibia, 2009:22-25). The thesis now presents the country's various trade agreements beginning with those that are bilateral in nature. The entire list of trade agreements of Namibia with various countries over the years is certainly beyond the scope of this thesis. Only those that are currently in force are discussed in this thesis for apparent reasons. Therefore, the presentation relating to Namibia's trade agreements follows a discerning approach.

3.3.1 Namibia's bilateral trade agreements

Namibia's trade agreements, be they bilateral or multilateral are guided by two important principles (Bank of Namibia, 2010:10-15). These are the principles of reciprocity and the most-favoured nation treatment. In addition, it is important to note that the lists of trade agreements presented are not exhaustive. The thesis considers only those that have been ratified and are currently in-force, as well as a few cases of those that are yet to be ratified. Table 3.1 depicts Namibia's bilateral trade agreements.

Table 3.1: Namibia's bilateral trade agreements

Countries	Type of bilateral trade agreement	Date of ratification	Current agreement status
India	Trade agreement	27 November 1995	In force
Zimbabwe	Preferential trade agreement	17 August 1992	In force
Turkey	Draft agreement on trade and economic co-operation	Not yet ratified	Not yet in force

Countries	Type of bilateral trade agreement	Date of ratification	Current agreement status
China	Agreement on trade and economic co-operation	1994	In force
Congo Brazzaville	Trade agreement	26 January 1991	In force
Democratic Republic of Congo	Agreement on general cooperation and creation of Namibia Congolese joint commission of cooperation	8 July 1997	In force
	An abridged trade agreement	7 Feb 2011	In force
Angola	Agreement on trade and economic cooperation	2004	In force
Ghana	Agreement on trade and economic technical cooperation	December 2006	In force
Russia	Trade and economic cooperation agreement	22 May 1997	In force
Liberia	Framework agreement on economic, technical, scientific, cultural and tourism cooperation	2008	In force
Indonesia	Trade and economic cooperation agreement	April 1997	In force
Malaysia	Trade agreement	12 August 1994	In force
Vietnam	Trade agreement	30 May 2003	In force
Nigeria	Trade agreement	2002, 2008 and 2014	In force
Kenya	Trade agreement	1990	In force
Cuba	Trade agreement	21 January 1994	In force
Brazil	Trade agreement	2010	In force

Source: Author's compilation from Namibia trade policy review documents (2013).

The Namibia–Zimbabwe Preferential Trade Agreement was signed in 1992 and provides for the reciprocal duty-free market access subject to rules of origin of 25% percent local content for manufactured goods. More importantly, either Namibia or Zimbabwe as an exporter should be the last place of this substantial manufacturing. This is the only bilateral trade agreement Namibia maintains on a preferential basis. There were also negotiations to establish a bilateral agreement with Zambia, which was subsequently elevated to SACU-Zambia negotiations. This negotiation, however, collapsed due to the establishment of the SADC free-trade area that effectively became operational in September 2000, under the SADC protocol on trade (Bank of Namibia, 2011:9-30).

Therefore, Namibia was only able to conclude bilateral agreement with Zambia mainly on general cooperation and such agreement is governed by a Memorandum of Understanding (MoU) between the two countries. This was the only way Namibia could do that because as regards to the provision of Article 31 of 2002 SACU agreement, members of the SACU can no longer conclude or alter preferential bilateral trade agreements individually without the consent of others. However, they can maintain those agreements that had already existed prior to the 2002 SACU agreement such as Namibia-Zimbabwe PTA (World Trade Organisation, 2012:23-41). Besides, Namibia has an extensive bilateral trade agreement with countries listed in Table 3.1. These bilateral agreements are all on general co-operation matters mainly in the following areas: trade and investment, capacity building and training, small and medium enterprises, information communication technology, mines, fisheries, defence, education etc. In these agreements, Namibia reiterates the most-favoured nation (MFN) principle in its trade relations. These MFN-type or non-preferential agreements are currently maintained with DRC, China, Cuba, Indonesia, Malaysia, Kenya, the People's Democratic Republic of Korea and Russia. All these agreements were signed during the first decade of Namibia’s attainment of independence, with the exception of the agreement with Angola, Brazil, Ghana, Liberia, Nigeria and Vietnam, which was signed in the second decade after the country attained an independent status (Government of Namibia, 2012:7-12).

3.3.2 Namibia's multilateral trade agreements

Table 3.2 depicts multilateral trade agreements in respect of Namibia:

Table 3.2: Namibia's multilateral trade agreements

Type of multilateral trade agreement	Date of ratification on the part of Namibia	Current agreement status
SADC treatise on forming economic bloc	1992	In force
SADC Protocol on Trade	1996	In force
SACU Agreement	2002	In force
SACU- EFTA FTA	2006	In force
SACU-MERCOSUR PTA	2008	In force
SACU-INDIA PTA	Not yet ratified	Negotiation at an advanced stage
ACP-EC Cotonou Partnership Agreement	28 November 2012	In force
Agreement establishing the WTO	1995	In force
Africa Free Trade Zone Agreement consisting of SADC, COMESA and EAC	2011	In force

Source: Author's compilation from Namibia trade policy review documents (2013).

3.3.2.1 The SADC Treaty, 1992

The treaty of Windhoek established the SADC in 1992, replacing the former Southern African Development Coordinating Conference (SADCC), which was established by the Lusaka Declaration of April 1980 in Lusaka, Zambia. The aim of this transformation was to adopt a new approach of concluding SADC protocols in various areas of cooperation. These protocols are provided for under Article 22 of the SADC Treaty (Government of Namibia, 2004:8-11).

3.3.2.2 The SADC Protocol on Trade, 1996

The SADC Protocol on Trade is one of the protocols provided for under Article 22 of the SADC Treaty. The protocol aims at liberalising intra-SADC trade amongst the 15 SADC member states so that goods traded among these member states are granted a duty-free status. Currently, the region has achieved a notable tariff liberalisation in which 85 percent of tariff lines have obtained a duty-free status. Namibia as part of SACU has achieved a single tariff liberalisation of up to 99.7 percent duty-free under the SADC protocol on trade (Government of Namibia, 2006:22-25).

3.3.2.3 The SACU Agreement, 2002

The SACU agreement of 2002 is the latest in the series of agreements binding on all member states of the SACU. The first agreement establishing SACU was signed in 1910. Subsequently, this was revised twice in 1969 and 2002. SACU members are Botswana, Lesotho, Namibia, South Africa and Swaziland. In terms of Article 31 of this agreement, SACU members can no longer conclude or alter bilateral trade agreements individually without the consent of the other members of the economic bloc. However, they can maintain those agreements that had already existed prior to the 2002 SACU agreement (Government of Namibia, 2008:40-46).

3.3.2.4 The SACU-EFTA FTA, 2006

In June 2006, members of SACU signed a free trade agreement with the European Free Trade Association (EFTA). This agreement came into force on 1 May 2008. In terms of notification procedures, this agreement was notified to the WTO Committee on Regional Trade Agreements (CRTA) on 29 October 2008 under Article XXIV of the GATT 1994. This agreement covers trade in industrial products, including fish and other marine products, and processed agricultural products (SACU, 2009:1-18).

3.3.2.5 The SACU-MERCOSUR PTA, 2008

This is a type of PTA. Its negotiations were concluded in 2008 between SACU and MERCOSUR member states (Argentina, Brazil, Paraguay and Uruguay). The

agreement was signed by the MERCOSUR member states on 15 December 2008 and by SACU member states on 4 April 2009. It aims at promoting trade between the two parties on a selected number of products. In addition, it contains provisions on rules of origin and methods of administrative cooperation, trade remedies, technical barriers to trade, sanitary and phytosanitary measures, further market access, settlement of disputes, mutual administrative assistance between customs authorities, as well as legal and institutional provisions (Government of Namibia, 2010:3-11).

3.3.2.6 The ACP-EC Cotonou Partnership Agreement

The ACP-EC Cotonou Partnership Agreement, which is now known as the Economic Partnership Agreement (EPA) between the African, Caribbean, Pacific and EC countries is yet to be concluded. Currently, Namibia has initialled the agreement in order for its exports, mainly fish, meat and grapes to continue to enjoy duty-free and quota-free market access into the EU markets. Namibia believes that the negotiation of EPA with the EU provides an opportunity for SACU countries to harmonise their trade relations with the EU, which would in turn facilitate and support the SACU integration agenda (SACU Trade Policy Review Report, 2013:7-21).

3.3.2.7 The agreement establishing the World Trade Organization (WTO), 1995

The WTO was established in January 1995 following the Marrakesh Declaration in 1994 to replace the GATT. Namibia has been a WTO member from its inception. Therefore, its trade policies are influenced heavily by virtue of its membership of WTO. Namibia attaches enormous importance to its membership of this body mainly for economic reasons (World Trade Organisation, 2009:15-29).

3.3.2.8 The Africa Free Trade Zone Agreement consisting of SADC, COMESA and EAC 2011

The draft agreement establishing the tripartite free trade area among the 26 members of COMESA, EAC and SADC also known as the COMESA-EAC-SADC

tripartite FTA was produced in 2009 by experts from these three regional economic blocs. The first meeting of this tripartite entity took place in Kampala, Uganda on 22 October 2008. Subsequently, a second meeting took place in June 2011 in Johannesburg, South Africa, where the modalities in respect of establishing the tripartite FTA were negotiated and consequently launched. The driving intention of this tripartite entity is to constitute a single market for all its members. Namibia has been part of this negotiation process from the onset. It should be noted that the various efforts of these three economic blocs to form a single market is yet to materialised. COMESA, EAC and SADC need to be committed to the idea of constituting a single market in order for these three economic blocs to successfully translate this idea into practical terms (SACU, 2011:19-26).

3.4 NAMIBIA'S TRADE POLICY INSTRUMENTS

It should be acknowleged that Namibia does not have its own set of trade policy instruments (Bank of Namibia, 2011:9-30). Namibia's trade policy instruments are derived mainly from those guiding the day-to-day operations of the SACU because of its membership of this regional economic bloc. The other four countries making up this economic bloc are South Africa, Lesotho, Swaziland and Botswana (Government of Namibia, 2004:8-11)**.** Discussions concerning harmonised trade policy instruments within SACU are presented as follows.

3.4.1 Excise Duties

All SACU member countries apply similar excise duties or rates on specified products (Government of Namibia, 2006:22-25). These excise duties can be either specific or *ad valorem*, depending upon the nature of the goods under consideration. These refer to indirect taxes applied on the consumption of certain products such as alcoholic drinks and tobacco products. In contrast to value added tax (VAT), they are mainly specific taxes, *inter alia* expressed as a monetary amount per quantity of the product. With regard to SACU, member countries apply similar excise duties on specified products and these excise duties can be specific or *ad valorem* depending upon the goods, and are applied at the same rate on imported and domestically produced goods. Table 3.3 provides a comprehensive list of goods where SACU excise duties are applicable:

3.4.2 Refunds, duty rebates, and drawbacks

These three terms are related closely to each other. In the context of SACU, a drawback refers to a refund either in respect of a custom duty or an excise duty that is chargeable on imported, as well as on indigenous materials used in the manufacture of exported goods. Under the duty drawback scheme, exporters are provided with rebate of customs and central excise duties incurred on the inputs used in the production of goods exported to a foreign port. In addition, the drawback scheme emphasises that any rebates, refunds or drawbacks of customs duty or sales duty on imported goods granted by Botswana, Lesotho and Swaziland in respect of such goods for use in, or used in, any industry shall be regarded as being identical to any such rebates, refunds or drawbacks in force in South Africa in respect of such goods for use in or used in, a corresponding industry in South Africa (Government of Namibia, 2008:40-46)**.**

3.4.3 Customs valuation

In SACU, a customs valuation represents a technique that is used for purposes of determining the value of imported merchandise based on the actual value of the imported merchandise on which duties are assessed. According to the WTOs General Agreement on Tariffs and Trade, customs valuations should be guided in some ways by the legislation of the country of importation (Government of Namibia, 2010:3-11).

3.4.4 Contingency trade remedy measures

The SACU trade policies also make provision for Botswana, Lesotho, Namibia and Swaziland (BLNS countries) to apply contingency trade remedy measures against South Africa, if it is established that South Africa has either implicitly or explicitly imposed any trade measure that is inimical to the economies of the BLNS countries (Government of Namibia, 2012:7-12). However, it is important to note that the applications of contingency trade remedy measures on the part of the BLNS countries would depend on the outcome of an investigation that is usually conducted by the ITA of South Africa on behalf of SACU. The BLNS countries, it should be noted, do not have trade remedy legislations or institutions charged with such responsibilities. Hence, such investigations are in most cases

conducted by South Africa. This will soon be outdated, since the new SACU agreement provides for the creation of national bodies in each of the BLNS countries in order to enable them to conduct their own individual investigation should it be required. Further, the new SACU agreement equally makes provision for countervailing investigations on issues concerning subsidised goods that are imported by SACU, if such subsidies are judged to be harmful to the industry that produces similar products in SACU. Specific discussions concerning contingency trade remedy measures or actions are the following (World Trade Organisation, 2012:23-41).

3.4.4.1 Dumping

Investigations concerning dumping in SACU are usually initiated upon written application by or on behalf of the SACU industry. SACU also makes provision for ITA to initiate such investigations as well, provided it has a *prima facie* evidence of dumping, material injury or causal link to justify the initiation of such investigation (SACU, 2009:1-18).

3.4.4.2 Subsidy

A subsidy is considered to be countervailing if it causes material injury to the SACU industry producing similar products (SACU, 2010:6-13). In such a case, countervailing investigations will be initiated upon receiving a properly documented application on behalf of the SACU industry. ITA may initiate an investigation only if it has convincing evidence of the existence of subsidised goods entering into SACU that are harmful to the industry that produces similar products in SACU. Prior to the initiation of an investigation, a notification must be served on the foreign country inviting it for consultations in order to determine if the allegations are, indeed, genuine and to seek a mutually agreeable solution. In this regard, all investigations and reviews are expected to be finalised within eighteen months from the date of initiation of the investigation process. Further, ITA is entitled to take into account and add up any subsidy found during the course of the investigation even if the SACU industry has not officially reported or mentioned it in the application (SACU, 2011:19-26).

3.4.4.3 Safeguard measures

The SACU Trade Policy Review Report (2013:7-21) maintains that SACU allows safeguard measures to be invoked and subsequently imposed in response to a rapid and huge increase in imports of products as a result of an unforeseen development, where such increased imports threatens the continuity of the industry that produces similar products in SACU. In determining the seriousness of the issue the following information is taken into consideration: the rate and volume of the increase in imports of the products concerned (in absolute terms or relative to the production and demand in SACU) and whether there have been significant changes in the performance of the SACU industry in respect of sales volume, profit and loss, output, market share, productivity, capacity utilisation, and employment over time. Table 3.3 depicts SACU's excise duties.

Table 3.3: SACU excise duties

Tariff heading	Description	Rate
Specific excise duties		
	Prepared foodstuffs	
19.01	Malt extract; food preparations of flour, groats, meal starch or malt extract, not containing cocoa or containing less than 40% by mass of cocoa calculated on a totally defatted basic, not elsewhere specified or included; food preparations of goods of headings Nos. 0401 to 0404, not containing cocoa or containing less than 5% by mass of cocoa calculated on a totally deflated basis or elsewhere specified or included	
	Traditional African beer powder	R 0.347/kg
	Beverages and spirits	
22.03	Beer made from malt	
	Traditional African beer	R 0.0782/l
	Others	R 46.41/l[a]
22.04	Wine of fresh grapes, including fortified wines; and grape (excluding heading No. 20.09)	
22.05	Vermouth and other wine of fresh grapes flavoured	

Tariff heading	Description	Rate
	with plants or aromatic substances	
	Sparkling wine	R 6.16/l
	Unfortified wine	R 1.98/l
	Fortified wine	R 3.72/l
22.06	Other fermented beverages (e.g. cider and mead); mixtures of fermented beverages; and mixtures of fermented beverages and non-alcoholic beverages, not elsewhere specified or included	
	Traditional African beer	R 0.0782/l
	Other fermented beverages, unfortified	R 2.33/l
	Other fermented beverages, fortified	R 4.73/l
	Mixtures of fermented beverages, and mixtures of fermented beverages and non-alcoholic beverages	R 2.33/l
	Others	R 4.73/l
22.08	Ethyl alcohol of an alcoholic strength by volume of less than 80% volume; spirits, liqueurs, and other spirituous beverages	
	Wine spirits, manufactured by the distillation of wine	R 77.67/l[a]
	Spirits, manufactured by the distillation of any sugar cane product	R 77.67/l[a]
	Spirits, manufactured by the distillation of any grain product	R 77.67/l[a]
	Other spirits	R 77.67/l[a]
	Liqueurs and other spirituous beverages	R 77.67/l[a]
	Tobacco	
24.02	Cigars, cheroots and cigarillos of tobacco or of tobacco substitutes	R 1,951.43/kg net
	Cigarettes, of tobacco or of tobacco	R 3.85/10 cigarettes
24 03	Other manufactured tobacco and manufactured tobacco substitutes; homogenised or reconstituted tobacco; and tobacco extracts and essences	
	Cigarette tobacco and substitutes thereof	R 183.04/kg

Tariff heading	Description	Rate
	Pipe tobacco and substitutes thereof	R 100.10/kg net
	Mineral products	
27.10	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by mass 70% or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations	
	Petrol	R 0.03909/l
	Aviation kerosene	Free
	Illuminating kerosene, marked	Free
	Illuminating kerosene, unmarked	R 0.03817/l
	Distillate fuel	R 0.03817/l
	Specified aliphatic hydrocarbon solvents, marked	Free
	Specified aliphatic hydrocarbon solvents, unmarked	R 0.03817/l
	Products of the chemical or allied industries	
29.03	Halogenated derivatives of hydrocarbons	
	Carbon tetrachloride	R 5/kg
	1,1,1-Trichloroethane (methyl chloroform)	R 5/kg
	Chlorotrifluoromethane	R 5/kg
	Pentachlorofluoroethane	R 5/kg
	Tetrachlorodifluoroethane	R 5/kg
	Heptachlorofluoropropane	R 5/kg
	Hexachlorodifluoropropane	R 5/kg
	Pentachlorotrifluoropropane	R 5/kg
	Dichlordifluoromethane	R 5/kg
	Tetrachlorotetrafluoropropane	R 5/kg
	Trichloropentafluoropropane	R 5/kg
	Dichlorohexafluoropropane	R 5/kg

Tariff heading	Description	Rate
	Trichlorofluoromethane	R 5/kg
	Chloroheptafluoropropane	R 5/kg
	Trichlorotrifluoroethane	R 5/kg
	Dichlorotetrafluoroethane and chloropentafluoroethane	R 5/kg
	Bromochlorodifluoromethane, bromotrifluoromethane, and dibromotetrafluoroethane	R 5/kg
38.24	Prepared binders for foundry moulds or cores; chemical products and preparations of the chemical or allied industries (including those consisting of mixtures of natural products), not elsewhere specified or included; residual products or the chemical or allied industries, not elsewhere specified or included	
	Mixture containing acyclic hydrocarbons perhalogenated only with fluorine and chlorine (excl. mixtures containing chlorodifluoromethane, dichlorodifluoromethane or trichlorofluoromethane)	R 5/kg
	Mixtures containing dichlorodifluoromethane or trichlorofluoromethane	R 5/kg
	Other mixtures containing perhalogenated derivatives of acyclic hydrocarbons containing two or more different halogens	R 5/kg
Ad valorem excise duties		
33.03	Perfumes and toilet waters	7%
33.04	Beauty or make-up preparations, and preparations for the case of the skin	5%
36.04	Fireworks	7%
43.03	Articles of apparel, clothing accessories, and other articles of fur skin	7%
43.04	Artificial fur and articles thereof	7%
84.15	Air conditioning machines	7%
84.18	Refrigerators, freezers, and other refrigerating or freezing equipment, electric or other; heat pumps other than air conditioning machines of heading No. 84.15	7%

Tariff heading	Description	Rate
85.17	Cordless phones, fax machines, modems	7%
85.18	Microphones, loudspeakers, amplifiers	7%
85.21	Video recording	7%
85.25	Cell phones, video cameras	7%
85.27	Reception apparatus	7%
85.28	Reception apparatus (television)	7%
87.02	Motor vehicles (taxi)	{(0.00003 x A) – 0.75%}% with a maximum rate of 20%
87.03	Motor vehicles	{(0.00003 x A) – 0.75%}% with a maximum rate of 20%
87.04	Bakkies (trucks/pick-ups)	{(0.00003 x A) – 0.75%}% with a maximum rate of 20%
87.06	Chassis	{(0.00003 x A) – 0.75%}% with a maximum rate of 20%
87.11	Motorcycles	7%[b]
89.03	Water scooters	7%
93.02	Revolvers, pistols	7%
93.03	Other firearms and similar devices	7%
93.04	Other arms	7%
95.04	Articles of funfair/table games	7%
95.06	Golf balls	7%

Source: Author's compilation from SACU customs and excise tariff books (2013).

Besides the various trade policy instruments that relate to SACU that have been discussed in this chapter, it is pertinent to provide the following explanation in respect of Table 3.3. The Table presents different commodities and their applicable specific excise duties. Excise duties usually are imposed on commodities such as tobacco, alcoholic beverages and toxic or chemical products in order to discourage the importation of these products due to their harmful effects on human life. As stipulated in the schedules in respect of the South African Customs and Excise Act 91 of 1964 as amended, certain products are subject to VAT and excise duties. SACU members bound other duties and charges (ODCs) at the time of the Uruguay round conference. Lesotho bound ODCs on all tariff lines at zero per cent. Botswana, Namibia, South Africa, and Swaziland bound them for all tariff lines at zero, with the exception of 49 tariff lines (at the eight-digits level) that have higher bound rates (World Trade Organisation, 2009:15-29).

In terms of excise duties, all SACU countries apply the same excise duties on specified products as indicated in Table 3.3. Excise duties may be specific or *ad valorem*, depending upon the goods, and are applied at the same rate on imported and domestically produced goods. The table 3.3 also depicts that the rates applied on beverages and spirits differ depending on the level of alcohol concentration (the higher the percentage of alcohol the higher the rates and vice-versa). The table 3.3 also shows that excise duties applied on chemical products amount to R 5.00 per kilogram.

3.5 SUMMARY AND CONCLUSION

This chapter discussed Namibia's trade policy instruments and agreements. It started by first drawing a line of demarcation between trade policies and trade agreements. A brief discussion concerning examples of trade policies and trade agreements also came under scrutiny. This was followed with a discussion concerning the various arguments for interventionist trade policies. Further, the chapter discussed Namibia's bilateral and multilateral trade agreements. In consideration of Namibia's membership of SACU most of the trade policies and agreements discussed in this chapter are influenced by developments in SACU. The subsequent chapter discusses the theoretical literature of the study.

CHAPTER 4
THEORETICAL LITERATURE REVIEW

4.1 INTRODUCTION

In this chapter, the relevant theoretical literature concerning the study is reviewed. It begins by first distinguishing between the terms economic growth and economic development. Further, a review of the important theories relating to economic growth, development and trade are presented. The thesis acknowledges that the theoretical literature on economic growth and trade are enormous. Any attempt to exhaustively present and review such a vast amount of literature in any single study is practically not feasible. Indeed, it would tantamount to an exercise in futility. Therefore, such an exercise is beyond the scope of this thesis. This chapter attempts to present and review the theoretical literatures that are relevant to this study in a selective fashion, without necessarily compromising the quality of the thesis.

4.2 THE DISTINCTION BETWEEN ECONOMIC GROWTH AND ECONOMIC DEVELOPMENT

Although the terms economic growth (EG) and economic development (ED) are highly connected, both terms are, however, not synonymous. The literature provides a variety of definitions regarding the term economic growth. However, for purposes of this study, the thesis makes use of two of such definitions. Todaro and Smith (2006:811) consider the term economic growth as a steady process by which the productive capacity of the economy is expanded upon over a given period of time in order to bring about rising levels of national output and income.

Also contributing to the meaning of the term economic growth McConnell and Brue (2002:136-137) explain economic growth in terms of an outward shift in the production possibilities curve of a nation or society. The authors maintained further that the outward shift in the production possibilities curve could result from the following sources: It could be as a result of an increase in resource supplies or quality or an improvement in technology. Furthermore, it could result from an increase in a country's real gross domestic product (RGDP) or real gross domestic product per capita (RGDPC).

It is pertinent to note that these two definitions of economic growth as presented above are quantitative in nature. In addition, it does not address the issue of spread of wealth. In other words, it does not tell us if a country that experiences economic growth will necessarily enjoy a general improvement in terms of the general welfare of its people. Therefore, the fundamental question that arises from the discussion regarding the meaning of the term economic growth that needs further interrogation is presented as follows: Are the terms economic growth and economic development synonymous? The answer to this fundamental question is brought to light in the following discussion.

In general terms, the term economic development is regarded in the literature as a process that leads to a general improvement in the quality of life on the part of a society, community or country. This process should also leads to improvements in the economic health of the people, as well as greater access to the basic needs of life (clean water, shelter/housing, sanitation, education and health). This process should also be sustainable over a protracted period of time (Lucas, 1988:3-42). Further, economic development can also be seen as a process leading to a general improvement in a country's human capital capabilities and capacity, physical infrastructure, regional rankings and competitiveness, environment, social inclusivity, health facilities, security needs, literacy level, and welfare schemes (Meier, 1968:112-134). The literature also alluded to the fact that economic growth is one aspect of the process of economic development.

Goulet (2006:11-18) identifies and explains the three basic components or core values of economic development (life-sustenance, self-esteem and freedom) in the following way: Life-sustenance is concerned with the provision of basic needs. The basic needs approach to development places emphasis on the following basic needs of life: shelter, clothing, portable water, cleanliness, food and education, especially primary education. It is pertinent to re-echo the fact that no country can be regarded as economically developed if it cannot provide its entire people with these needs. Therefore, a cardinal objective of development must be to liberate people out of primary poverty, as well as provide them with basic needs. Self-esteem is concerned with the feeling of pride, confidence, dignity and independence. No country can be regarded as economically developed if it is exploited by others and does not have the capacity, capabilities, power and

influence to conduct relations on equal footings. In view of this fact, developing countries are in continuous search for economic development in order for these countries to experience greater economic opportunities that would lead to the eradication of opportunistic diseases, reduce their dependence on the developed world, as well as having greater access to freedom. Freedom in this context implies the ability of a society or country to plan for its own future and make choices on its own.

The three fundamental aspects of economic development so far explained, namely, life-sustenance, self-esteem and freedom are highly related to each other (Galbraith, 1980:23-40). The study also observed that these three aspects of economic development are similar to Sen's own explanation of economic development. Sen (1999:22-31) considers economic development as a process that should always lead to improvements in the quality of life, greater privileges, as well as a general improvement in the capacity of a society to create things, while Goulet (2006:11-18) emphasised the importance of the basic need components in the process of economic development. The thesis observed that both authors as a matter of facts did stress the importance of a nation improving upon the general welfare of its citizenry in the process of economic development.

Based on Goulet (2006) and Sen (1999) concept of development, the thesis inferred that development is generally a situation, which is characterised by an improvement in basic needs, as well as a greater sense of expanded people's entitlements, capabilities and freedoms. Given the distinction made regarding the terms economic growth and economic development the following inferences are worth noting: First, the terms economic growth and economic development are not synonymous. Secondly, whereas economic development is a policy intervention endeavour with the aim of improving upon the general economic and social well-being of the people, economic growth on the other hand is a phenomenon of the market productivity and rise in gross domestic product. Further, whereas economic development addresses the issue of spread, economic growth often does not. Besides, in order to have economic development, economic growth must first occur. However, it is possible for a nation to experience economic growth without necessarily achieving economic development.

4.3 THEORETICAL REVIEW OF ECONOMIC GROWTH THEORIES

The previous section drew a line of dichotomy between the terms economic growth and economic development. This makes it logical for the researcher to present and discuss the core theories of economic growth and development. It is pertinent to note that all growth theories, be they classical, neoclassical or modern in nature, recognise the need for every society to strive at attaining continual and sustained levels of economic growth. This is principally because economic growth is seen, among other things, as a necessary condition to eliminate poverty, raise the quality of life and influence the level and distribution of wealth within a country. Economic performances differ from one country to another. Hence, the impact of economic growth on developmental issues such as poverty alleviation, the standard of living, and the distribution of wealth usually is expected to differ from country to country.

More fundamentally, it would depend on the capacity, abilities, as well as the willingness of the political leadership of that country to translate economic growth into addressing these developmental issues. Other economic growth studies have concerned themselves with issues such as: Why have some countries grown at more rapid rates than others? What are some of the critical factors that impact economic growth within an economy? Should countries converge to steady state paths and at what rate, or diverge? In search of answers to these questions, various theories have been advanced to provide a theoretical foundation for the empirical analysis of economic growth. The neoclassical theory and endogenous growth models (often called new growth theories) have received the widest attention in the literature. This thesis acknowledges that a complete and exhaustive discussion of the economic growth literature in a single study will be too ambitious. Given this fact, the thesis considered essentially the neoclassical and endogenous growth theories, since they furnish the theoretical foundations to most of the empirical models found in the literature on growth. It is also instructive to note that the theoretical approaches have examined two key issues: convergence and diversity, as well as the sources of economic growth.

4.3.1 Neo-classical growth theory

In a sense, the neo-classical growth theory essentially expanded upon the Harrod-Domar formulation by bringing into the model two extra factors, namely labour and technology in the growth equation (Rebelo, 1991:500-521). Solow's neo-classical growth model manifested waning returns to labour and capital, when both factors are separated from each other, as well as constant returns when both factors are combined. According to traditional neo-classical growth theory, output growth arises from one or more of three factors. These factors are, namely, labour availability, capital stock and technology. Closed economies with lower saving rates, *ceteris paribus*, are generally characterised by sluggishness when it comes to economic growth, especially in the short-run in relation to those experiencing high savings. Open economies, however, whether with low or high saving rates demonstrate greater level of economic growth in both short-run and long-run periods. Further, openness could potentially lead to improvements in technology (Bhagwati, 1958:201-205).

The neo-classical approach to economic growth usually begins with an examination of Solow (1956:65-94) and Swan (1956:334-361). In view of this, the model is often referred to as the Solow-Swan growth model. An important aspect of Solow's work was the incorporation of factor substitutability to generate a stable equilibrium growth path. Subsequently, a huge amount of the literature has been developed overtime, representing various adaptations to the basic neoclassical framework. The neo-classical approach is anchored on a simple aggregate production function that takes the following form:

$$Y = AF(K, L)$$

Where F *i*s a functional notation, which relates national income or output (Y) to technological change (A) and two basic factors of production (physical capital, K and labour, L). Solow maintained that technical change is any development that shifts the production function. This change could be as a result of improvement in education or technology. In addition, the production function is assumed to exhibit constant returns to scale.

Over the years, the neoclassical approach has faced a number of criticisms. The most significant one being the huge amount of the focus on achieving some degree of consistency with one or more of the stylised facts rather than developing models that are amenable to empirical estimation and evaluation (Arora and Athanasios, 2005:48-50).

Easterly (2001:177-219) succinctly identified five stylised facts pertaining to total factor productivity (TFP). These are specified as follows:

- Factor accumulation does not explain the bulk of cross-country differences in the level or growth rate of gross domestic product per capita. However, TFP does. By implication, factor accumulation cannot be used to account for most of the differences that occur amongst countries, when it comes to accounting for their growth rate, while the concept of total factor productivity could easily be rely upon as a way of accounting for most of the differences that do exist amongst countries pertaining to their level of growth rate in terms of gross domestic product per capita.
- Differences in GDP per capita among countries will always exist. Therefore, studies should focus more on isolating the reasons for these differences as against attempting to narrow them.
- Growth is not importunate over time, but capital accumulation is. In other words, growth does not come to premature end overtime, while capital accumulation could terminate overtime. This is because innovative techniques can be used to sustain growth even in the absence of more capital availability or expansion.
- All factors of production usually flow to the same destinations, suggestive of imperative externalities. Usually destinations that are attractive to factors of production would serve as a pulling factor, when it comes to factors of production movements.
- National government policies do influence growth, especially in the long-run. However, whether government policies would lead to greater growth or dampened economic growth will be a function of the policy direction of the government.

In response to the above-mentioned issues Mankiw, *et al*., (1992:407-437) formulated a model based on the neo-classical theory that paved way for econometric estimations and investigations. The main challenge of this approach lies in the fact that, in order to estimate the rate of depreciation for example, one would need to rely on approximated figures. Temple (1999:112-156) subsequently responded to this weakness by suggesting an alternative approach in dealing with the issue.

Contributing to the discussion, Renelt (1991:42) assessed the theoretical and empirical literature concerning economic growth. He observed that one significant reason for the success of the standard neoclassical growth model is that it provided a convenient approach for organising data regarding the sources of economic growth. However, the model did not account for much of the growth taking place. An implication of the model is that countries with similar technologies and preferences will converge to the same steady state output levels. While this is true for some countries, there is little evidence of convergence, particularly in developing countries. Furthermore, some empirical findings have clearly shown that the gross national product (GNP) could display long-term resistance to shocks (Helpman, 1999:111-125).

In similar fashion, McCallum (1996:41-71) was of the opinion that the main issue arising from the neo-classical theory was its inability to explain several basic issues relating to the process of economic growth. Given the essential premise upon which the neoclassical notion was built, this theory tended to suggest either equal or different growth rates for all countries, which the model itself is unable to explain. The truth of the matter is that different economies have in fact achieved different growth rates in the long-run.

4.3.2 Endogenous growth theory

Endogenous growth economists generally believed that improvements in productivity are generally enhanced by innovation and human capital investment. Further, they stressed the involvement of the public, as well as the private sector in the process of innovation. In addition, they recognised knowledge as a factor that can contribute significantly to the growth process of a country (Grossman and Helpman, 1994:23-44).

Besides, the proponents of endogenous growth theory stated that a knowledge-based economy is in a better position to maintain and sustain its competitive advantage in foreign markets, especially in fast-growth industries (Pack, 1994:55-62). Furthermore, the endogenous growth economists regarded technology as a variable rather than a constant term in growth models. This is because changes in policies can either suffocate or promote innovation and production.

Madsen *et al*., (2010:37-48) stated the other important economic ideas flowing from the proponents of endogenous growth theorists as follows: Firstly, they believe that either every market or industry has the potential to experience economies of scale or increasing returns to scale. Secondly, they consider investment in research and development as an effective source of technical progress. Thirdly, they advocated for government policies that would encourage entrepreneurs to create new businesses and also expand upon existing businesses in order to stimulate employment opportunities in the economy.

As earlier alluded to, this approach generally linked permanent changes in certain policy variables to permanent changes in economic growth rates. Endogenous growth models may be dichotomised further into two groups. The early sets of models were driven by the works of Lucas (1988), Rebelo (1991) and Romer (1986 and 1987). Subsequently, the writings of Aghion and Howitt (1992) and, Grossman and Helpman (1994), which elaborated more specifically on endogenous technological change followed (Oviatt and McDougall, 1994:45-64). These later models also emphasised the role of research and development in technological change and promotion of economic growth. In contrast with the neo-classical model, endogenous growth theory regarded technical change as an endogenous variable (Melitz, 2003:1695-1725).

Romer (1986:1002-1037) maintained that the generation of knowledge is positively linked to the scale of economic activity, which is in turn assumed to be proportional to capital accumulation. In order to achieve sustained growth, constant returns to the reproducible factors are needed. Furthermore, he recognised the possibility of knowledge spill over, which may cause a single firm to experience diminishing returns to capital. However, in general there would still

be increasing returns to scale. In similar fashion Lucas (1988:3-42) invoked and subsequently applied an aggregate production function approach that gave room for externalities to human capital.

Also contributing to the literature on endogenous growth, Aghion and Howitt (1992:323-351) advanced a Schumpeterian model of growth through creative destruction, allowing for learning-by-doing, as well as the fact that new innovations may make old ones out-of-date. Hufbauer (1991:11-25) in his contribution maintained that, like the neo-classical model, the endogenous growth theory has been attacked on several grounds. First, the challenge with measuring human capital has led to the use of various proxies for this particular variable. Examples of such proxies are primary and secondary enrolment ratios, literacy rates, and expenditure on education. Secondly, it is very doubtful if any of the proxies used are consistent with the theoretical meaning of human capital. Further, the absence of a standard definition of human capital has led to wide disparities in the definition and measurements of the various proxies used over time and across various countries.

4.3.3 Selected empirical studies concerning economic growth models

It is instructive to remind ourselves that growth theories, whether in specific or broad terms, do not provide conclusive answers as to which exogenous variables should be included in an empirical model (Jones, 1999:15-21). There are several growth theories and competing models, some consistently emphasise the domestic resources base, while others give prominence to the openness of markets, as well as the extent of international trade. Furthermore, the existing literature have other growth theories that highlight the significance of factors such as human capital, infrastructures, good governance, domestic and foreign investment, and the level of international debt (Neary, 2010:1-11). Although trade, especially foreign trade, as well as diversification for apparent reasons are expected to play a leading role in the economic growth process of LDCs, Namibia inclusive. The omission of some other important variables from the empirical growth model could lead to misleading results. Rogers (2003:112-135) observed that most empirical models are not based on a specific theoretical specification. While this should not be encouraged, the reality on the ground, the complexity of

economic growth, as well as the lack of an inclusive model sometimes makes this inevitable.

Furthermore, growth theories in most cases are silent about the functional form of a model. Therefore, in the absence of any previous or existing theoretical knowledge requiring specific functional forms, any functional form that makes logical sense in the context of the issue under study could be utilised. In addition, researchers should rely heavily upon available literature on the issue under investigation in order for them to determine and subsequently specify the functional forms of the models to be estimated. In this regard, linear, semi-log, double-log, quadratic and cubic are all examples of various functional forms that have been useful in past studies. However, the appropriateness of a functional form would, in many ways, depend on the nature of the study, the driving objective of the study, the research question under investigation and the ingenuity of the researcher, amongst others.

In the context of empirical methodologies regarding the study of economic growth, Svedberg (2002:22) presented five techniques: simulations of growth models, growth accounting, time-series regression, cross-country studies, and panel data regressions. Brief discussions of these five techniques are presented in sections 4.3.4 to 4.3.8.

Durlauf and Quah (1998:113) observed that the significant empirical inference arising from the neoclassical theory rested exclusively upon the nature of the production function and preferences. Some writers have questioned the reason behind regarding the technical change variable as an endogenous variable. According to them, while that approach might have been useful for fitting the regression model, results became difficult to interpret in relation to the underlying economic analysis.

Contributing to the discussions, Easterly (1993:187-212) identified two significant deficiencies often associated with growth models. First, the models were mis-specified, because they often regress stationary growth rates over dynamic variables. Second, most of the growth models failed to take cognisance of the impact of external factors, such as the industrial slowdown and the world interest rate. Further, the lack of a general consensus on the source of economic growth

left many economists, as well as other social scholars to wonder whether economic growth is really the outcome of good economic policies or not.

4.3.4 Simulations' techniques

This technique assesses the economic growth process based on various circumstances (Koop, 2000:52-61). For example, this methodology could be applied to ascertain the impact on economic growth of differences in the quality of labour. Furthermore, the approach allows for an evaluation of the robustness of various model specifications by investigating the performance of each model using different combinations of independent variables and different assumptions concerning the evolution of the growth process. Anderson and Strutt (1999:8) represent a good example of the usefulness of this kind of approach for analysing economic growth.

4.3.5 Growth accounting technique

In broad terms, the growth accounting technique provides a useful guide for organising and analysing, in order to describe the economic growth process in a logical way. Its driving objective is to measure the contribution of the various factors of production to economic growth. The growth accounting exercises usually work with time-series data for a single country. The flexibility of this approach allows for the incorporation of the impacts of increasing returns and externalities on economic growth. The literature on growth accounting procedures particularly acknowledges the valuable contributions of Denison, Kendrick, and Solow to the growth accounting technique (Chen, 1977:121-143).

4.3.6 Time series regression technique

Aigner (1971:74-86) acknowledges that time series regression is a powerful tool when it comes to obtaining useful information pertaining to a particular country's economic growth process over a specific number of years. The technique is applied mostly to identify the sources of growth, as well as to model the behavioural relationship between economic growth and variables, such as foreign capital, exchange rates, exports, openness and imports. Since, cross-sectional regressions ignored pertinent information, while panel data analysis unjustifiably

assumes parameter homogeneity, econometricians argued that it was necessary for growth models to be estimated for individual countries, using time series regression procedures. The main challenge in using this technique has to do with the issue of spurious results (Dutta, 1975:35-44). A high coefficient of determination (R^2), for example, does not necessarily imply a significant relationship between the dependent and independent variables. A high coefficient of determination may be reflecting common trends in the time series. This problem can, however, be resolved by eliminating the trend component of the time series through the application of certain technical procedures. If the trend is removed, the de-trended series may become stationary. A stationary series will then satisfy all of the required properties of regression analysis, namely constancy of the mean, constancy of the variance, and constancy of the auto-covariance (Gujarati, 2003:201-204).

Temple (1999:112-156) isolated several major challenges that are often associated with the use of time series regression techniques. These are:

- The absence of quality data, and long data sets, particularly for developing countries
- Long lags of the regressors are required in order to prevent the occurrence of short-run business cycle effects, which could in turn lead to long-run correlations, as well as, to degrees of freedom problems.
- Time series data do not provide sufficient basis for examining the determinants of long-run growth with any degree of confidence.
- Linear and nonlinear models do give varying degree of results, when it comes to forecasting.
- The absence of quality data, and long data sets, particularly for developing countries
- Long lags of the regressors are required in order to prevent the occurrence of short-run business cycle effects, which could in turn lead to long-run correlations, as well as to degrees of freedom problems
- Time series data do not provide sufficient basis for examining the determinants of long-run growth with any degree of confidence

- Linear and nonlinear models give varying degree of results when it comes to forecasting.

Despite the above-mentioned criticisms, the regression technique is still a very popular component of the techniques used in most empirical econometric studies (Mina, 2011:202-218).

4.3.7 Cross sectional methods

The absence of sufficiently long time series data for many variables over a wide range of countries makes the use of this method attractive. Cross-sectional regression techniques are deeply rooted in the neo-classical growth theory (Hu, 1973:34-40). At the most rudimentary level of analysis, the growth rate is regressed on a number of explanatory variables. The list of explanatory variables depends on the nature of the issue under investigation.

Dielman (1991:132-154) noted that cross-sectional studies often concern itself with the following issuess: First, the evolution of world income, that is, whether or not poor countries have been catching up with rich countries. Secondly, will countries necessarilly converge to steady state paths and at what rate? Fourthly, the rate at which returns to various inputs such as human and physical capital diminish. Fifthly, are countries poor because of a lack of inputs or major differences in technology? Lastly, differences in growth rates, as well as economic growth performance in the long-run.

Despite the wide use of this technique in studying issues relating to convergence and divergence in economic growth, it has come under several attacks for the following reasons (Draper and Smith, 1981:34-40):

First, a major limitation of cross-sectional studies is the notion that most of these studies fail to address the simultaneous equation problems that are often inherent in the analysis. Simultaneity bias arises because the basic model treats the independent variables as exogenous. However, many explanatory variables in growth equations may very well be endogenously determined. This potential creates bias in OLS estimates. Second, another criticism is that in many applications of this approach, heterogeneous countries are treated as if they were homogeneous. This allows for the use of a single model specification across all

countries in the analysis. Some writers have argued that the results from cross-section studies could be improved upon significantly, if mechanisms are developed to allow for differences among the countries in the group.

Third, because most cross-sectional studies within the neoclassical tradition simply run economic growth over a number of independent variables, the results usually appear reasonable, but the analyses ignore the potential problems of reverse causality and spurious correlation. Lastly, linearity in the specified regressions presents yet another methodological problem, when using the cross-sectional approach. The literature does raise the possibility of non-linear relationships between independent variables and growth, as well as the existence of threshold effects and low level traps (Peracchi, 2001:144-161).

4.3.8 Panel data regression method

The panel data regression technique uses a combination of both time series and cross-sectional data. Berndt (1991:113-118) observed that the use of this technique reduces the accuracy of estimated results in cases where time series data on individual countries are limited to only a few years. Further, it is considered sometimes more appropriate for the analysis of growth dynamics.

Also contributing to the literature concerning this technique Brooks (2002:142-166) pointed out the following: First, it allows the researcher to exercise control over omitted variables that are persistent over time. Secondly, the use of several lags of the explanatory variables is instrumental when it comes to overcoming the problems of measurement error and endogeneity biases. Thirdly, panel data analysis can be used to investigate the determinants of total factor productivity growth, while avoiding the complexities of dynamic models.

Despite the various advantages associated with the use of this technique, the literature also raises the following fundamental issue, when it comes to the use of panel data. The presence of cyclical effects raises doubts over the use of annual data covering a long period as opposed to splitting the data set into various intervals over which the analysis should be conducted. Therefore, given the possibility of heterogeneity, the modelling of the short-run dynamics may be extremely helpful (Wooldridge, 2003:169-177).

4.3.9 Fundamental issues in growth empirical studies

Over the years, many issues have been raised in the literature, especially by applied econometricians, with respect to growth studies. Harvey (1990:99-112) summarised these challenges as: Firstly, the issues of omitted variables and parameter heterogeneity, which arise due to differences in social, political, and institutional features across countries. Secondly, the issue of inappropriate functional form of the model and measurement errors in the data. Thirdly, endogeneity, simultaneous and specification errors. Fourthly, serial correlation issue.

Nonetheless, over the years a huge amount of progress has been made by growth researchers in response to most of the above-enumerated issues. At the technical level, the inability of growth theory to suggest appropriate independent variables for inclusion in growth regressions and a specific functional form leave these issues to be opened to several interpretations. In the absence of a generally accepted specification for a growth model, empirical research will continue to be conducted using a variety of models and estimation techniques consistent with the objective of the research (Stock and Watson, 2003:117-132). The specific model to be chosen and used will, however, depend on a number of factors, which should include the experience and skills of the investigator, data availability, the research question, the driving objective of the study, the nature of the issue under investigation, time factor, as well as environmental factors (Davidson and MacKinnon, 2004:249-265). The bottom line, in the opinion of this thesis, is to design models that are simple, consistent with theory, and capable of providing answers to the questions of interest to the researcher. The thesis made use of these principles and facts in developing the methods and materials presented in Chapter 6 of the study.

4.4 THEORETICAL REVIEW OF ECONOMIC TRADE THEORIES

Since trade constitutes an important issue in this study, it makes sense to review some of the major trade theories in the existing literature as well. As alluded to in the thesis earlier, no single study can completely review all the trade theories in the literature. Therefore, this thesis attempts to review some of the important trade theories found in the literature in a selective manner. It begins with a

discussion of the mercantilists' views on trade. Note that the mercantilists' view on trade is not considered as a trade theory *per se*. However, the economic ideas arising from the mercantilists did influence the economic policies of nations at that time, especially in Europe (Coats, 1975:218-233).

4.4.1 A summary of the mercantilists' economic doctrine about trade

The Mercantilists economic ideas were very popular in the 16th and 17th centuries. The salient economic ideas of the mercantilists are the following: First, the mercantilists believed that the strength, power, capabilities, wealth, as well as the capacity of a nation depend on the amount of precious metals in its possession. In this regards, silver and gold were considered to be more valuable in relation to any other precious metal. As a result of this kind of orientation, the mercantilists advocated for a process that is popularly referred to in the literature as bullionism (Heckscher, 1935:11-15). In other words, countries should concentrate on acquiring precious metals as much as possible, especially silver and gold in the process of participating in international trade. Further, the mercantilists advocated that countries that have goods for exports should always demand for their payments in terms of silver and gold. In addition, the mercantilists encouraged exports and discouraged the importation of goods at the same time, since exports are good for the national economy, while imports are harmful to a country's economy (Smith, 1776:9-23). The mercantilists viewed trade as a zero-sum game. In other words, only one particular country benefits from participating in trade at a time in relation to its trading partner (Irwin, 1996:68-99).

Along the philosophy of the mercantilist school, most countries in Europe started imposing various trade restrictions in the form of tariffs, quotas, as well as other prohibitions in order to control and regulate the amount of goods entering their economies. This was simultaneously complemented through the granting of subsidies to local manufacturers in order to improve upon the competitiveness of these countries exports' in foreign markets (Mill, 1920:31-59).

4.4.1.1 Criticisms of the mercantilists economic philosophy

Although the mercantilists' economic ideas influenced the economic policies of a number of countries especially those belonging to Europe, it has nevertheless

been attacked on several fronts. Viner (1937:77-92) a classical economist considers the following as important criticisms of the mercantilist economic doctrine:

First, he challenged the idea that the wealth of a nation is measured by the amount of the precious metals in its possession. Second, he also challenged the notion that trade is a zero-sum game. In his words, trade could be of mutual benefit to the two trading partners, when freely initiated. Third, he argued that specialisation in production allows for economies of scale, which in turn improves efficiency and growth. Lastly, he maintained that the collusive relationship between government and industry was harmful to the general population. Further Viner (1937) maintain that while the mercantilists policies were essentially designed to benefit the government and the commercial class, the idea of free markets or invincible hands, which is one of the key underlying principles of the classical economic thinking, will have a greater positive impact on the economic welfare of the entire population of a nation.

Although the mercantilist era is now history a number of policies meant for the promotion of trade, especially international trade in modern times have some of the mercantilists' economic ideas embedded in them. Indeed, the impositions of various restrictions in trade in form of tariffs, quotas amongst others on the part of contemporary economies have the connotation of the mercantilists' economic philosophy (Chipman, 1965:447-461).

4.4.2 The classical contributions to trade theory

A greater part of this economic philosophy emerged from the United Kingdom. Its principal proponents were the likes of Adam Smith, David Ricardo, and Robert Thomas Malthus amongst others. Two subgroups in terms of differences in economic thoughts are noticeable among the proponents of the classical school of thought. There are those who support Adam Smith's absolute advantage theory, and the second group that followed David Ricardo's comparative advantage viewpoint. It is, therefore, necessary, at this juncture to highlight the salient issues underlying these two paradigms.

4.4.2.1 Adam Smith's absolute advantage theory

Put in simple terms, the absolute advantage theory explains that countries should specialise in the production of those goods in which they have an absolute advantage. In turn, they should export such goods to their trading partner and should import those goods in which their trading partners have an absolute advantage. Put in another way, the theory of absolute advantage states that each country should export those goods it produce more efficiently and in turn import those commodities that it produce less efficiently **(**Allen, 1965:101-112). This process will lead to efficiency and specialisation. Efficiency is expressed in terms of the number of hours (man-hours) needed for the production of a unit of item (Heller, 1973:10-22)**.** The following are some of the important underlying assumptions of the absolute advantage theory as pointed out by Leamer and James (1995:169-195): a 2x2 country assumption, the absence of transport costs, unit costs arising from production are constant, identical technology, full employment, perfect competition and labour theory of value is applicable among others. Table 4.1 is used for illustrative purposes.

Table 4.1: Hypothetical illustration of the absolute advantage theory

	Cutlery	Wheat
Germany	50hrs/unit	38hrs/bushel
Sweden	40hrs/unit	35hrs/bushel

Source: Author's construct.

It is apparent from Table 4.1 that Sweden consistently has an absolute advantage in the production of both goods (cutlery and wheat) since it uses less man hours in their production compared to Germany. Given this situation, Germany will need to import these two goods from Sweden as long as this situation prevails.

4.4.2.2 Criticisms of the Adam Smith's theory of absolute advantage

Although the Adam Smith's absolute advantage theory throws some light on the causes of trade, it has been criticised on the following grounds (Tinbergen, 1962:211-224). First, the absolute advantage theory only offers explanation as to

the reasons behind trade between developed and developing countries, however, trade among developed nations could not be explained by this theory. Secondly, the theory failed to realise the fact that developing countries' industries are less efficient than industrialised countries in the production process and, therefore, requires preferential treatment in the market of the industrialised world in order for such industries to be competitive. Thirdly, almost all the underlying assumptions of the theory have been widely criticised as unrealistic.

4.4.3 The comparative advantage theory of David Ricardo

Ricardo (1817:9-27) effectively responded to the weaknesses of the Adam Smith absolute advantage theory by putting forward his theory of comparative advantage. Unlike the absolute advantage theory, the Ricardian framework advocates that countries should fully specialise in the production of goods, where they had a greater comparative advantage instead of concentrating on the production of a wide range of goods. If this occurs, trade will easily take place between one country and another. In addition, the Ricardian model does not directly consider factor endowments, such as the relative amounts of labour and capital within a country. This represents one of the most penetrating laws of economics, with far-reaching practical applications (Salvatore, 2007:102-112).

Referring to Table 4.1 it would be advisable for Germany to specialise in the production of cutlery, while Sweden in turn specialises in the production of wheat as far as the comparative advantage theory is concerned. This is because Germany has a greater comparative advantage in the production of cutlery compared to wheat. If this situation occurs then both countries will be able to trade with each other through imports and exports of their goods. Through this process, efficiency and specialisation will further occur in both countries.

4.4.3.1 Assumptions of the theory

Zacharakis (1977:23-39) listed the following as the assumptions of the theory of comparative advantage:

- Only two nations and two commodities are involved in trade
- No restrictions to trade

- Labour moves freely within a country but not between two countries
- The costs of production are constant
- Zero transport cost
- Technology is same in both countries
- The labour theory of value is applicable

The assumption seven In particular needs further explanation. The assumption seven carries a message that the value or price of a commodity depends exclusively on the amount of labour going into the production of that particular commodity. This has two implications. First, it implies that either labour is the only factor of production or labour is used in the same fixed proportion in the production of all commodities. Second, labour is homogeneous. In fact, the theory does not provide an adequate explanation to justify why countries trade with each other (Mayer, *et al*., 2011:4-27).

4.4.3.2 Criticisms of the comparative advantage theory

The theory has been attacked from the following perspectives, despite its beauty (Markusen, *et al*., 1995:43-54). First, it ignores the idea of economies of scale and how this will change cost differences and affect specialisation. Second, trade usually has an effect on income distribution in the world and within a country, and that fact is not considered in this theory. Third, the theory suggests that trade is based on differences in cost, but it does not explain what leads to these differences in comparative costs. Fourth, most of the underlying assumptions of the theory are not realistic.

In realisation of the general inadequacies of the classical trade theories, the Hechscher-Ohlin theory of trade emerged in the literature. The H-O theory explains that comparative cost differences arise as a result of differences in the proportion in which nations are naturally blessed with factors of production (Enders and Lapan, 1987:123-144). Further, the theory stated that the pattern of international trade existing in the world is as a result of differences in factor endowments among countries. Therefore, the theory reasoned that countries that are rich in capital compared to labour will specialise in and export capital-

intensive goods, while those that are rich in labour compared to capital will specialise in and export labour-intensive goods (Mayer *et al.,* 2011:4-27).

4.4.4 The assumptions of the H-O theory

The theory rests upon the following interconnected suppositions as pointed out by Fisher and Kathryn (2007:3-12): There are two nations, two commodities and two factors of production, namely labour and capital. Both nations use the same technology in the production process. The concept of constant returns to scale in the production process is applicable to both nations. The tastes in both countries are similar. Factor movement within a country is unrestricted but not across international frontiers. There are no barriers such as transportation costs and tariffs just to mention a few either obstructing or undermining the free flow of international trade. In addition, all resources are fully employed in both nations.

4.4.4.1 The implications of the H-O theory

A number of implications could be inferred from the H-O theory. These are succinctly put forward by Krugman (1991:13-35): First, both countries gain from trade. Secondly, there is the absence of a complete specialisation scenario due to diminishing marginal rates of transformation. Thirdly, given the same technology, the factor prices will be the same between the two countries. Fourthly, within countries, the economic return to owners of the abundant resources will rise in relation to the owners of scarce resources. In addition, trade is expected to stimulate economic growth and subsequently lead to economic development, if the growth is well managed by a nation.

4.4.4.2 Weaknesses of H-O theory

Although the H-O theory is one of the highly celebrated theories in economic literature, it has been criticised for the fact that there is nothing making it compulsory for a country to export those goods that make intensive use of locally abundant factors. The remaining criticisms of the theory relate to its assumptions (Feenstra, *et al*., 2001:430-447).

4.4.5 The gravity trade model

The gravity model postulates that the bilateral trade between two countries is expected to be proportional, depending on the size of that particular country's GDP, as well as the geographical distance existing between them (Wang, *et al*., 2010:894-915). Therefore, it is possible to construct an equation that can be used to predict the volume of trade between two countries. Biswas (2002:492-504) stated that the variables that are needed so as to construct such an equation are the following: Information on the national income for countries 1 and 2, information concerning the geographical distance between country 1 and country 2, as well as an estimation of the transport cost between both countries. Branstetter and Feenstra (2002:335-358) contributing to the discussion stated that population size or any other variable reflecting a regional economic coalition arrangement can be accommodated in the construction of the model/equation if this is considered to be a *sine qua non*.

It is particularly significant to note that the gravity trade model works more efficiently for countries that do experience large volume of intra-industry trade with each other, as well as having similar factor endowments rather than a contrasting situation (Dean, *et al*., 2009:1-13).

4.4.5.1 The usefulness of the gravity trade model

The literature alludes to the following usefulness of the gravity trade model as pointed out by Graham and Krugman (1995:113-125): It helps countries to appreciate the factors influencing the volume of trade. In addition, it explains in some ways the causes of trade. Besides, it plays a useful role in focusing on the volume of trade and in attributing such volume to specific and important economic variables.

4.4.5.2 Criticisms of the gravity trade model

The main criticism in the existing literature concerning the gravity model is that it takes no account of comparative advantage, which still forms the bedrock of economists' appreciation of international trade. This critique is particularly

important when the gravity model is considered for policy applications such as identifying priority markets (Grossman and Sykes, 2005:41-63).

4.4.6 Vernon's product life cycle theory

This theory was developed by Vernon (1966:190-205). The theory recognises that all new products pass through five stages during their life span. In specific terms the theory stresses that trade patterns are influenced mainly by innovation, economies of scale, ignorance, uncertainty and knowledge (Wells, 1969:152-161). Further, the theory assumes that existing differences between countries in terms of technology will always occur because of sluggishness in the diffusion of new technologies. In addition, the theory is only applicable to innovation that takes place in some definite products and specifically those products in demand by those belonging to high-income group (Bhagwati, *et al*., 1998:142-158).

4.4.6.1 Stages concerning the product life cycle theory

Bhagwati and Srinivasan (1983:204-230) identify five distinct stages in the life cycle of a product. These are presented below:

Stage 1

During this stage, the product is produced and consumed only in the innovating country. The product is supposedly invented by a country with high technology advantage in response to domestic demand, and marketed only in that particular domestic market for a period of time , thereby allowing the production techniques and the product itself to be well tested.

Stage 2

Usually referred to as the product growth phase, production during this stage is perfected in the innovating country, and also is expected to increase rapidly in order to accommodate rising demand at home and abroad. In addition, during this stage, there is no other foreign producer of the product. As a result of this situation, the innovating country has monopoly in both the home and export market.

Stage 3

During this stage, the product becomes highly standardised. An imitating country is expected to emerge with the intention to produce the same product for domestic consumption. Economies of scale play a significant role during this stage.

Stage 4

During this stage, the imitating country starts underselling the innovating country's product in third markets. As a result of this, the production of the product in innovative country will start to decline.

Stage 5

The imitating country becomes more aggressive by selling the product much cheaper compared to that of the innovative country in the latter's market. Given this fact, one could observe a simultaneous and rapid decline in both production and sales on the part of the product in the innovating country.

4.4.6.2 Advantages of the theory

Broda and Weinstein (2004:139-144) puts forward the following as the advantages of the theory: The decrease in the average cost as a result of economies of scale helps to reduce the prices of the product, thus making it affordable and acceptable. Less developed countries with abundance of semi-skilled labour may be attractive options for foreign subsidiaries. Besides, employment opportunities are likely to be created.

4.4.6.3 Disadvantages of the theory

Dhanaraj and Beamish (2003:242-261) lists the following as the main weaknesses of the theory: First, it does not explain the size of the technological gaps. Secondly, it does not explore how technological gaps arise or exactly how they are eliminated. Thirdly, either implicitly or explicitly, there is an existence of increasing returns to scale. Fourthly, the cost of research and development for the product could be very high. Fifthly, competitors or rivals can develop similar version of the product. Seventhly, the increasing price competition is capable of

eroding the market power enjoyed by the initiator of the project. Lastly, the nation that developed the product, expanded sales through exports, may end up as a net importer of that particular product.

4.4.7 Linder's preference similarity trade model

Essentially, this theory states that a country will export manufactured products for which it has a good domestic market (Hanink, 1988:322-334)**.** There are three reasons for this as observed by Hoftyzer (1975:694-698): First, a good domestic market gives producers a greater awareness of the opportunities for profit with their product. Secondly, any research and development undertaken by firms is aimed at satisfying needs made obvious by the domestic markets. Thirdly, it is expensive to develop or adapt a product to fit into an unfamiliar international market without first testing it within its own domestic market.

Therefore, the range of products a country exports will be influenced by the range supplied and consumed in the domestic market. Similarly, the product a country imports will have a closer resemblance to the product it already consumes. Whether these products are imported or produced domestically will depend on the relative prices of imports and domestic goods. Implicitly, this theory suggests that trade is likely to take place between countries with similar tastes and products (Chacholiades, 1990:84-120).

Furthermore, demand structure is determined by differences in *per capita* income. The higher *per capita* income, the higher the demand for high quality and luxury consumer goods and more sophisticated capital goods. The opposite will be the case when *per capita* income is low. If a country is rich, it will have a comparative advantage in the quality of goods for the above reasons, and, therefore, will export them to other richer countries, which make up its big export markets due to their overlapping demand structure (Greytak and Ukrist, 1990:50-58)**.** In addition, an overlap of demand in rich and poor countries is caused by unequal distribution of resources within each country. Therefore, those who are comparatively rich in less developed countries buy luxury goods from the developed countries, and those who are comparatively poor in developed countries will buy goods that are more basic. Therefore, factors such as income, taste and demand patterns generally determine trade. This leads to the conclusion that the closer the overlap

between two countries' consumption patterns, the greater the potential for trade (Greytak and Richard,1977:1386-1389).

4.4.7.1 The weaknesses of Linder's model

Linder's theory attempts to explain trade in the context of manufactured goods. However, it does not cover trade in primary products. The theory also explains intra-industry trade from the demand side and ignores the supply side (Rauh, 2010:136-141). Therefore, this theory raises the following fundamental questions: Is it realistic to assume that countries cannot appreciate foreign demand and respond to it, or that a country's natural advantages in some goods will not be exploited because of limited demand from the home market?

4.4.8 Posner's technological gap theory

Posner's technological gap theory was developed in 1961. It is sometimes, referred to as the imitating lag hypothesis. The theory suggests that innovation and imitation are two key factors leading to trade (Posner, 1961:323-341). It also assumes that technology is not the same across international frontiers. Further, when new products are developed they become profitable, thereby giving firms a temporary monopoly and leading to easy access to foreign markets. Initially the level of exports grows, but growing profits bring imitation elsewhere, gradually eroding the comparative advantage. Falvey (2008:37-48) observed that once these have been lost, the firm or industry will search for another new product and so the cycle of innovation and imitation begins again in order to have sustainable temporary absolute advantage over their own products. However, the possibilities exist for other countries to eventually produce these products more efficiently (Bonaccorsi, 1992:605-615).

4.4.8.1 Criticisms of Posner's theory

A number of weaknesses are found in the literature concerning Posner's theories, which are succinctly summarised in the work of (Brander, 1981:1-14). These weaknesses are indicated below:

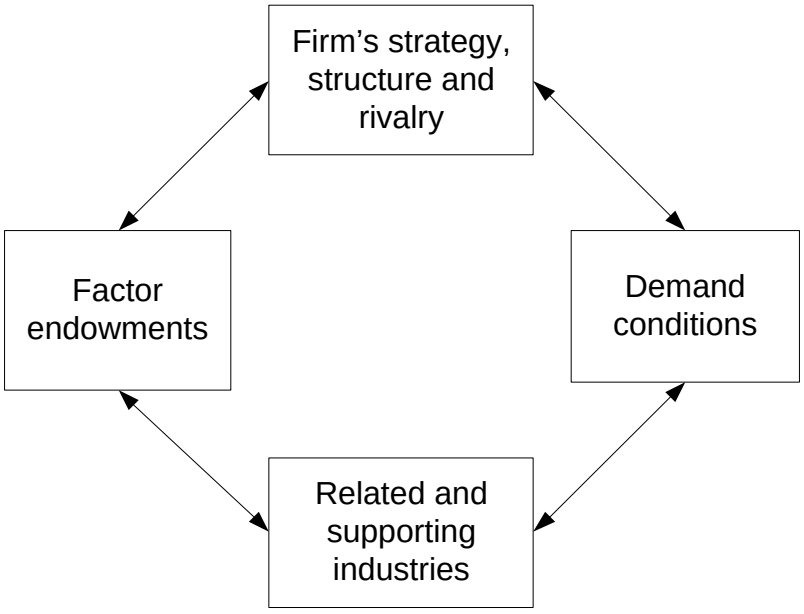
Firstly, the introduction of an export subsidy on the part of the government can only be effective if the government has powers to completely influence and

control the behaviour of the foreign markets where a domestic firm sells its products. Secondly, the export subsidy treats the number of domestic firms as constant. However, if the industry allows free entry and exit then subsidising domestic firms will increase the number of firms in the industry. This could lead to an increase in the unit cost of production and thereby weakens the argument in favour of export subsidies. Thirdly, the theory fails to provide satisfactory explanation for the existence of a technological gap and the magnitude of this gap as well. In realisation of these weaknesses, a generalised version of the theory was later suggested and subsequently elaborated upon by (Baldwin and Forslid, 2010:161-165).

4.4.9 Porter's competitive advantage theory and Porter's diamond model

Porter's theory was developed in 1990 (Jones, *et al.*, 1999:413-420). The theory suggested that there are four attributes of a nation that shape the environment in which local firms compete and can either help or hinder a nation's competitive advantage in international trade (Dinopoulos et al., 1993:49-65). This theory later became known as Porter's diamond. Figure 4.1 represents Porter's theory of competitive advantage.

Figure 4.1: Porter's diamond model



Source**:** Adapted from Porter's diamond model (1990).

The four key attributes that could either enhance or undermine a nation's competitiveness in international trade as elaborated upon by Combes, *et al*., (2005:1-29) are:

The nation's position regarding factor endowments: This links to the Heckscher-Ohlin theory, but Porter discusses them much more in-depth, and recognises a type of hierarchy among these factors of production. There are basic factors such as natural resources, climate, location and population, while the advanced factors are communication, infrastructure, skilled labour, research, and technological knowledge among others. The advanced factors are the more significant for competitive advantage according to Porter. Furthermore, individual companies and governments, rather than natural endowments, often create them through investment. The relation between advanced and basic factors is complex. Basic factors can provide initial advantage, which is re-enforced and increased by advanced factors. Similarly, a disadvantage in basic factors can create a motivational tension, which is directed towards investing in advanced factors instead. Furthermore, sometimes the absence of certain resources can assist countries to eventually become competitive in foreign markets. The reason is that scarcity generates innovation, while abundance could promote wastages. The thesis is, however, of the opinion that these statements should be open to further empirical investigation in order to authenticate their validity.

The nature of the home market demand for the product: Home demand is the impetus for high-grade competitive advantage, according to Porter. Firms are sensitive to the needs of home customers, so their demand will shape domestic-made products and bring pressure for innovation and quality. If there are sophisticated and demanding consumers, then there will be higher standards, better quality, and more and sustained innovation.

The presence or nature of suppliers and related industries, which are necessary to be competitive internationally: Investment in advanced factors by related suppliers and supporting industries can spill over into the main industry and bring a strong competitive position.

The condition governing how companies are created, organised and managed, as well as the nature of domestic rivalry (the strategy, structure and rivalry of firm).

With strategy, different nations have different management ideologies, which can help or hinder their performance. Rivalry means that competition increases, which in turn leads to more efficiency, innovation, higher quality, lower costs and investment in order to upgrade advanced factors.

4.4.9.1 The weaknesses of Porter's theory of trade

Although Porter's theory is widely acknowledged in the literature, it nevertheless has a number of weaknesses. These shortcomings are captured clearly in the work of (Reeve, 1998:124-149)**.** These are indicated as follows: First, the theory was developed based on case studies in developed countries. Therefore, its relevance in the context of developing countries, remains doubtful. Secondly, the theory claims that only outward FDI contributes towards the creation of a competitive advantage as against inbound FDI. Again, there is no *prima facie* empirical evidence in the existing literature to back-up this claim. Thirdly, the theory either implicitly or explicitly does not explain the important role of the multinational corporations in trade, especially foreign trade. There is also the possibility that, the diamond could have been influenced by factors outside the home country.

Porter further argued that countries would succeed if the diamond were favourable. The factors in the diamond also are re-enforced mutually. One attribute can affect the others. In addition, Porter indicated that there are two variables that influence competitive advantage, namely, chance and government. Chance can lead to discontinuities, which reshape industry structure and allow one nation's firm to supersede that of another country. Similarly, government choice of policy can help or hinder national advantage. Government can influence in a positive or negative manner through subsidies, capital market policies, education etc. and subsequently shape demand via product standards and regulations, support related industries leading to a change in competition via tax and competition policies.

In addition, if Porter's diamond model is correct, then countries will export products from industries where the four points in respect of the diamonds are favourable and then import from where they are not favourable (Hill, 2005:61-67).

4.4.9.2 General remarks regarding trade theories

Trade plays a vital role in the global village. Various theories have attempted to explain why trade occurs between countries. The more traditional and older theories of absolute and comparative advantage, including the Heckscher-Ohlin have provided the foundation for newer trade theories of increasing returns and imperfect competition. Briefly, the newer trade theories have concentrated much more on explaining the changing patterns of trade among countries, as well as across the globe (Muriel and Terra, 2009:15-27).

4.5 SUMMARY AND CONCLUSION

This chapter reviewed the relevant theoretical literature concerning the study. It begins by first distinguishing between the terms economic growth and economic development. Further, a review of the important theories relating to economic growth, especially the neoclassical and endogenous growth theories were discussed with a special focus on their weaknesses, strengths, as well as their relevance. Further, this chapter successfully identified and subsequently elaborated upon important trade theories in a selective fashion, beginning with the mercantilists' views on trade through the classicalist period up to modern time. Specific trade models considered were those of Adam Smith, David Ricardo, Vernon, Linder, Posner and Porter among others. In addition, an attempt was made to evaluate the strengths and weaknesses of the various trade models that were discussed, as well as the lessons arising from these trade models. This provides a logical basis for the thesis to review related empirical studies in Chapter 5. In consideration of this, the ensuing chapter presents and discusses the empirical literature of the study in a chronological manner. In addition, as a matter of technical necessity, the empirical literature is crystallised into two main groups. That is, those that uses OLS procedures, as well as those that relied upon co-integration and error correction procedures. Therefore, the next chapter reviews related empirical studies in the existing literature regarding the relationship between trade and economic growth in a chronological fashion.

CHAPTER 5
EMPIRICAL LITERATURE REVIEW

5.1 INTRODUCTION

The previous chapter reviewed the relevant theoretical literature concerning the study. This chapter provides a logical basis for the thesis to review related empirical studies in the current chapter. The chapter divides the empirical literature into two main groups as a matter of technical necessity. That is, those that uses OLS procedures, as well as those that relied upon cointegration and error correction techniques. The literature reviewed runs from the period 1967 to 2014. The empirical literature is presented in a chronological order. Also as earlier alluded to in Chapter 4, Section 4.1 of this thesis, no single study can completely exhaust all the existing studies in the literature regarding the relationship between trade and economic growth. Therefore, this chapter presents and reviews the empirical literature in a selective style.

5.2 RELATED EMPIRICAL STUDIES BASED ON OLS TECHNIQUES AND PROCEDURES

One of the earliest empirical studies that is widely acknowledged and highly celebrated in the literature concerning the relationship between trade and economic growth is that of Emery (1967:470-486) that investigated the relationship between exports and economic growth for 48 developed, as well as 48 developing countries. He made use of time series macroeconomic annual data covering the period 1953 to 1963. He relied upon a simple regression model in pursuing his investigation. In addition, he treated gross national product as the dependent variable and total exports as the independent variable. The results indicate that there is a strong positive relationship between exports growth and economic growth. Further, his results suggest that, in order to increase economic performance, countries should emphasise export-oriented policies as against import substitution policy. One would have expected the researcher to have also made use of a multiple regression model in his study, in order to find out the effect of other macro- economic variables that influence economic growth. The period covered by the study also seems to be too short. There is a strong

possibility that the results of the study would have been different if the period of the study was extended to cover more years.

Also contributing to the empirical literature on trade and economic growth Maizels (1968:90-95) tested the relationship between the rate of change in exports and the rate of change in the GDP for nine developing countries for the period between 1951 and 1962. He observed a significant relationship between the export and GDP growth rates. However, the study did not shed light on the issue of causality. In addition, the period covered by this study should have been extended to cover more years.

Massell *et al*., (1972:208-212) studied the connection between economic growth, foreign capital and exports for a number of LDCs. The researchers postulated a relation that: GNP (aggregate) = $a_0 + a_{1Xt} + a_{2Xt-1} + a_3G_t + a_4P_t + a_5P_{t-1}$

Where:

GNP = Gross national product

X = Exports

G = Inflow of public capital

P = Inflow of private capital

t = Current period

t-1 = Lag of one year

Their main finding arising from this study was that higher rates of economic growth tend to be associated with higher rates of export growth. Conversely, most countries with low rates of export growth also tend to have low rates of economic growth. They observed that foreign capital inflow is not a major determinant of economic growth. As a rule of thumb, they suggested that countries ought to aim at 2.5 percent expansion of exports in order to achieve a 1 percent expansion of per capital real GNP. The disaggregation of foreign capital inflow into public capital and private capital inflows makes a lot of sense, given the problems that are often associated with highly aggregative macro-economic data.

Mathews (1973:195-200) probed into the relationship between Britain's economic growth, foreign trade and payments problem. Mathews used time series data covering one hundred years for the study. He observed that, a number of factors, particularly institutional factors have suffocated productivity growth in the economy of Britain during the period covered by the study. The period covered by the study seems to be too lengthy. One would have expected the author to have divided the period covered by the study into two or more periods in order to effectively analyse the changes occurring over time, as well as to carry out a comparative analysis between each of the identified sub-periods.

Voivodas (1973:337-349) made an inquest into the relationship between exports, foreign capital inflow, and domestic growth rates. He used both time series and cross sectional data for 22 less developed countries (LDCs) stretching from 1956 to 1966 in order to investigate the issue further. He observed that both exports and foreign capital inflow have a positive impact on GDP. Exports in particular were found to have a greater influence on growth.

Papanek (1973:935-940) in his study of 85 developing countries established the impact of foreign capital, foreign aid, foreign private investment and domestic savings on economic growth. His study confirmed the existence of a positive relationship between economic growth and domestic savings. Further, he observed that both foreign aid and foreign private investment positively influenced economic growth. All the independent variables taken together accounted for approximately 37 percent of the systematic variation in economic growth; implying that the explanatory power of the model used for the study is weak.

Oyejide (1974:122-133) made an inquiry into the economy of Nigeria specifically to determine the connection between exports and its economic performance. The study observed that an increase in export proceeds will lead to an expansion of the stock of money in the national economy. Further, he maintained that some parts of this increase will be devoted to consumer spending, while the remaining part will be saved. Savings, be it voluntary or forced savings, would constitute an important source of domestic capital formation, which is one of the principal agents needed to drive economic growth and development processes in all modern economies.

Syron and Walsh (1975:453-464) argued that the approach used by (Emery, 1967) was too simplistic. They attempted to extend Emery's analysis and to show that the relationship between exports and economic growth is more complex than he suggests. In light of this reasoning, they divided Emery's sample of 50 countries into two categories, namely the DC and the LDC countries. They relied upon data percentage growth in real GNP per capita and percentage growth in real exports. They concluded that the DCs and the LDCs had different growth-exports relationships, and that about 85 percent of the growth in LDCs is induced by exports, while 62 percent of growth in the DCs arises from export stimulation. The study also suggested the need to disaggregate exports into meaningful categories, and subsequently determine the impact of each of the various identified sub-sectors on the economic growth of the domestic economy.

Contributing to the literature Gupta (1975:202-208) examined the impact of foreign capital inflows on economic growth of forty developing countries. He utilised the two stage least squares (2SLS) method and cross-country data in his study. His findings indicate that economic growth as measured by growth rate of GDP is directly related to all forms of foreign capital inflows. Also, gross domestic savings rate positively influenced the growth rate of GDP. The reduced form coefficient indicated that the structural equations exaggerated the impact of the explanatory variables on growth rate of GDP. However, in both estimations, the coefficients of the independent variables maintained the expected theoretical signs.

It is pertinent to note at this juncture that both (Papanek, 1973) and (Gupta, 1975) in their studies consistently ignored the role of the public sector in the process of economic growth. Crucial variables such as world interest rate and domestic interest rate were totally excluded from their studies. Furthermore, the omission of the disturbance term from their models is a cardinal error. The omission of the error or shock term from the model specification implies that the authors assumed that there were no other factors that could influence economic growth besides the ones included in their models. This is rather misleading and not tenable from a technical standpoint.

Also contributing to the literature on trade and economic growth Ram (1976:401-410) estimated this relationship for India for the period running from 1950 to 1971. He claimed that exports performed a dominant role in the economic growth of India during the period under consideration. By utilising a double-log transformation regression model, he was able to generate elasticity values. He noted that a 1 percent increase in the earnings of total exports is associated with a 0.73 percent rise in economic growth. The use of double-log transformation regression models, which allowed the researcher to determine the responsiveness of economic growth to changes relating to the independent variables used in the model is highly commendable.

Michealy (1977:49-53) made use of 41 LDCs and macro-economic data for the period running from 1950 to 1973 in order to probe into the relationship between exports and economic growth. He applied a production function framework to test this relationship. In his study, the rate of change of *per capita* GNP was used as a measure of economic growth, while the proportion of exports in the gross national product was used as a measure of export performance. This study found evidence of a positive correlation between the growth rate of exports and the rate of economic growth for the countries that were investigated.

Balassa (1978:181-189) through the application of the production function framework determined the relationship between exports and economic growth for 11 LDCs. The following three ratios were used in his study: growth of exports versus growth of output, growth of exports versus growth of output in net export. and the average ratio of exports to output versus growth of output. Annual macro-economic data for the period running from 1960 to 1973 was also used for this study. The result indicated that export expansion affects economic growth rates positively. Besides, this study provides evidence to further support export-led strategies as against import-substitution strategies. In a way, this study also reinforced the findings of (Michealy, 1977).

Also contributing to the literature on trade and economic growth Fajana (1979:73-78) observed the existence of a positive and strong relationship between export and output changes, and hence provides empirical support for the thesis that trade has been an important factor in Nigeria's growth. His results suggest that

exports have greater impact on the economic growth of Nigeria in relation to the inflow of foreign capital. The author in his model used visible trade balances, and current account balances as measures of foreign capital inflow. It is the opinion of the writer of this thesis that the use of net capital inflow as a proxy to foreign capital inflow would have most likely produced a more robust result.

Tyler (1981:121-130) investigated the possibility of a relationship between export and economic growth through the use of 55 middle income developing countries covering the period stretching from 1960 to 1977. He made use of both simple and multiple regression models to carry out the estimation process. The study found that higher growth rate of exports is associated with a higher growth rate of GDP. Therefore, the study recommends that countries need to first, improve upon their export competitiveness in order for them to achieve a higher economic growth rate.

Feder (1982:59-73) estimated the impact of the export sector, as well as the non-export sector on economic growth for a sample of 31 semi-industrialised countries over the period covering 1964 to 1973. He dichotomised the national economy into two main sectors. The first sector produces export goods for international markets, while the second sector produces goods exclusively for the domestic market. The researcher invoked and subsequently applied a simple production function model to test the marginal factor productivities in the two sectors that were identified in the study. He noted that the factor productivity obtained in the export sector was higher if compared to the one that was obtained for the non-export sector. Further, he maintained that international competition and foreign investment were mainly accountable for this difference. Therefore, an economy could experience a higher level of economic growth by encouraging the relocation of economic resources from a less productive sector into a more productive sector.

Kavoussi (1984: 241-250) further expanded upon the work of (Tyler, 1981) by including low income countries in his sample. He made an enquiry into the relationship between export expansion and economic growth for 73 developing countries for the period 1960 to 1978. He utilised a simple production function model that incorporated manufacturing exports and total exports. The results

indicate that there is a direct relationship between exports and economic growth for both the low and middle income countries. He also alluded to the fact that export expansion raises the productivity level, which in turn leads to a positive correlation between the exports growth rates and GNP in developing countries.

Ram (1987:51-63) examined the connection between exports and economic growth for 88 LDCs. He combined time series and cross-sectional data sets that covered two different time periods, 1962 to 1972 and 1973 to 1982, in order to carry out the study. He found a positive relationship between export performance and economic growth for most countries under consideration. In addition, his results indicate that government expenditure has a positive impact on economic growth. Furthermore, his results reinforced the findings of (Feder, 1982) and (Kavoussi, 1984) in some ways.

Williamson (1993:1329-1336) assessed the impact of exports, foreign capital, as well as investment on economic growth in 22 Latin American counties for the period stretching from 1960 to 1974. He made use of both time series and cross sectional data sets in his study. His results show that exports, foreign capital, and investment have a positive impact on economic growth. However, this study suggested that, in order for a country to expand its economic growth, at least one of the explanatory variables under investigation should expand. The use of both time series and cross sectional data by the researcher is highly acknowledged.

Sosa (1994:233-246) probed into the impact of external debt on the Philippines' economic growth. The study addressed two fundamental questions. First, is external debt necessary for economic growth to occur? Secondly, will developing countries be better off without the use of external debts in their quest for economic development? Using a simple version of Harrod-Domar growth model, changes in nominal GNP were regressed over changes in outstanding foreign liabilities. The study found a positive relationship between foreign capital and the economic growth of the Philippines. Although this study noted that foreign resources lead to economic growth in the economies of the recipient countries, it neglected important factors that could also stimulate economic growth in the economies of these recipient countries. Examples of such factors are world real output growth rate and terms of trade, just to mention two of them.

Ayatepe-Coo (1996:420-432) assessed the impact of external shocks on current account balances, using Nigeria and Indonesia as case studies. The study confirmed that terms-of-trade influenced the current accounts' balances of both countries positively. Further, the current accounts' balances of the two countries under consideration were positively affected by the growth rate of industrialised countries. This result is not surprising, since developments in the international arena, especially in highly developed countries, have an impact on the rest of the world as a result of the phenomenon of globalisation.

Frankel *et al*., (1996:4-11) tested the relationship between trade and growth for selected East Asian countries by applying the gravity model. The study employed OLS methods and found a strong effect of openness on growth. Therefore, the study concludes that openness index has contributed enormously to the East Asian growth.

Further contributing to the empirical literature, Frankel and Romer (1999:379-399) evaluated the impact of trade on growth using OLS procedures. The researchers found a positive correlation between trade and growth for a number of countries that were investigated. In addition, the study found that, controlling for international trade countries that are larger have more opportunities for trade within their borders.

Giles and Williams (2000:261–337) measured the relationship between exports and economic growth for South Korea and Japan with the use of quarterly data. In both countries, the researchers observed that expanding foreign trade could have a positive influence on economic growth. Furthermore, the relationship between foreign trade and growth can be complicated and challenging. Nevertheless, the study alluded to the fact that countries that follow an export-led industrialisation strategy are better placed to achieve a higher level of economic growth.

Palley (2003:175-197) tested the validity of the export displacement hypothesis based on data obtained from Mexico. He found that Mexico is increasingly displacing the United States of America's imports from four Asian economic miracle countries (Hong Kong, Singapore, Korea and Taiwan). The study also found that products from China are specifically threatening in terms of global development. The study concludes that this is because the export-led growth

paradigm works in line with hierarchical processes. The developing countries, which are entering international markets, are displacing those countries, which have been in exporting business for a very lengthy period of time. This is so, because such countries supplies have been exhausted and simultaneously wages are increasing.

Ogbokor (2005:77-80) also tested whether the foreign sector in Zimbabwe has any connection with the economic performance of that country. He made use of time series data covering 1991 to 2003. The study found that the export sector in Zimbabwe was weakly connected to the rest of its economy. Both export and import variables were found to be poor predictors of growth in respect of Zimbabwe. This result is not surprising, since Zimbabwe has been under various forms of economic and political sanctions for the past decade or more, due mainly to the issue of land grabbing on the part of its ruling government.

Razmi and Blecker (2008:21-48) assessed the impact of introducing a constraint on the growth of manufactured exports in the developing countries. The study made use of 18 developing countries, namely Bangladesh, China, Hong Kong, India, South Korea, Malaysia, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Taiwan, Turkey, Mexico, Dominican Republic, Jamaica, Mauritius and Tunisia. The study revealed that out of the 18 countries that were investigated nine of them, namely Bangladesh, China, the Dominican Republic, India Jamaica, Sri Lanka, Pakistan, Singapore and Turkey yielded a positive result in respect of trade and growth. The study further found that only three countries, namely South Korea, Mexico and Taiwan yielded significant estimates for the relative export price relative to industrialised countries. In terms of income elasticity, the study found that they were statistically significant and correctly signed in almost all cases and had values that fell within the range suggested by previous studies. The study also observed that east and south-east Asian countries appeared to have higher income elasticities than others. The estimated coefficients also suggest that for most of the developing countries that reported a significant price coefficient in reality traded more among themselves. This further suggests that competition is more common and intense among the developing countries.

Manni *et al*., (2012:154-158) established the connection between trade and the economy of Bangladesh for the period running from 1980 to 2010 using an OLS model. This study analysed the achievements of the economy in terms of important variables such as growth, inflation, export and import after the implementation of trade liberalisation policies in Bangladesh. The analysis clearly indicates that GDP growth increased consequent to liberalisation. Trade liberalisation does not seem to have affected inflation in the economy. The analysis also suggests that greater openness has had a favourable effect on economic development. Both real exports and imports have increased with greater openness. The liberalisation policy certainly improves exports of the country, which eventually led to higher economic growth during the period under consideration. The findings of this study can be an interesting example of a trade liberalisation policy study in developing countries. It would be useful for other developing countries that are currently relying upon liberalisation policies to also conduct similar studies in order to determine the effectiveness of this policy on their economies.

5.3 RELATED EMPIRICAL STUDIES BASED ON COINTEGRATION AND ERROR CORRECTION MECHANISMS

Most of the past studies done in respect of the relationship between trade and economic growth, especially in the last two decades, have relied upon the use of cointegration techniques and error correction mechanisms. As against Section 5.2 that reviewed past studies based on the use of OLS techniques and procedures, this section reviews past studies based on cointegration techniques and error correction mechanisms. This review was done in a selective manner, since as earlier alluded that no single study can completely exhaust all the relevant studies in the literature concerning trade and economic growth.

Jung and Marshall (1985:1-12) used Granger causality test procedures to analyse the relationship between export growth and economic growth. The authors did not perform stationarity and cointegration tests throughout the study. They found that export-led growth was supported in four of the 37 countries studied, namely Indonesia, Egypt, Costa Rica and Ecuador. Further, Iran, Kenya and Thailand supported the growth-led export hypothesis. In addition, Greece and Israel

supported the growth reducing exports hypothesis. Countries with rapid growth rates, such as South Korea, Taiwan and Brazil provided no statistical evidence to support the export-led growth hypothesis.

Chow (1987:55-63) probed into the relationship between export and industrial development for eight selected newly industrialised countries (NICs), namely, Argentina, Brazil, Hong Kong, Israel, Korea, Mexico, Singapore and Taiwan. He employed macroeconomic annual time series data sets for the period, 1960-1980. No causality was found between export growth and industrial development for Argentina, while in Mexico, the study found a unidirectional causality running from exports to industrial development. In addition, the study found a bi-directional causality for Brazil, Hong Kong, Israel, Korea, Singapore, and Taiwan.

Hsiao (1987:143-159) examined the direction of causality between export growth and GDP growth for four selected Asian countries, namely Hong Kong, South Korea, Singapore, and Taiwan over the period covering 1960 to 1984. He applied Granger causality and Sims test procedures in the study. The Sims test shows the presence of a causality running from GDP to exports in Hong Kong. Correspondingly, the Sims test indicates bidirectional causality for the following countries: South Korea, Singapore, and Taiwan. The Granger-causality test indicates a unidirectional causality running from GDP to exports in the case of Hong Kong, while the remaining three countries show no causality relationship. Furthermore, the export-led growth hypothesis was only supported by Hong Kong's data sets. Therefore, the author inferred from these findings that economic growth can be driven through the combination of both export-led and import substitution policies in order for the countries under scrutiny to achieve a higher level of economic growth in their economies.

Kunst and Marin (1989:699-703) tested the direction of causality between exports and productivity, using the manufacturing sector of the economy of Austria. The period used runs from 1965 to 1985. The finding indicates that there is a unidirectional causality running from the manufacturing output per worker to manufactured exports.

Also contributing to the discussion Ahmad and Kwan (1991:243-248) investigated the relationship between exports and national income for 47 African developing

countries during the period covering 1981 to 1987. The study uses both pooled time series and cross-sectional data. Their finding suggests that, there is no evidence of causality for all the countries that were investigated. However, in some cases the study observed a very weak causality running from economic growth to exports in some of the countries used in their study.

Bahmani-Oskooee *et al*., (1991:405-415) employed the Granger causality test procedures to probe into the direction of causality between exports and economic growth for a number of developing countries using annual macroeconomic time series data covering the period stretching from 1951 to 1987. They noted the following findings from their analysis: Firstly, they found a unidirectional causality running from export growth to output growth for the following countries: The Dominican Republic, Taiwan; El Salvador, Paraguay, Peru, South Korea and Thailand. In the same vein, the study found no causality for Brazil, Ecuador, Greece, Guyana, Honduras, Jamaica, Morocco, Philippines, Sri Lanka, and Tunisia.

Sharma *et al*., (1991:679-708) examined the causal relationship among growth, exports and factor inputs, namely capital and labour. The sample used consisted of five industrialised countries, namely Germany, Italy, Japan, the UK and the USA. Quarterly data sets for the period 1960 to 1987 were utilised. They estimated the four variables used in the study for each country through the application of the VAR model. The results show that exports granger causes economic growth in the case of Germany and Japan, while in the UK and the USA the opposite was the case. No causality was observed for Italy. Furthermore, the study supported export-led growth hypothesis for only Germany and Japan. The study also reinforced the fact that, the domestic demand conditions in the UK and USA have an impact on the economic growth of these countries in various ways. By implication, the demand-led growth hypothesis is applicable to these countries.

Also contributing to the literature on trade and economic growth Afxentiou and Serletis (1991:167-179) assessed the export-led growth hypothesis for 16 selected countries classified as industrial countries, using co-integration, error correction and causality test procedures. They found that bidirectional causality is

supported in the United States and Norway, while growth-led export was observed in Canada and Japan. In general, two of the sixteen countries found statistical support for either export-led or growth-led hypothesis.

Kugler (1991:73-82) investigated the existence of short-run and long-run relationships in six developed countries (US, Japan, Switzerland, Germany, the United Kingdom and France), using quarterly macro-economic time series data stretching from 1970 to 1987. This study tested the long-run relationship between GDP, consumption, investment and export. By applying Johansen's procedure to test for a cointegration relationship, the author found that exports cannot be excluded from the cointegration relationship in the case of Germany and France, while the UK found no cointegrating relationship. In conclusion, only a weak evidence to support export-led growth hypothesis was found.

Serltis (1992:133-145) validated the export-led growth hypothesis for the economy of Canada, using gross national product (GNP), export and import variables. The author tested for stationarity and the existence of co-integration among these variables. He used the Phillips-Perron approach to test for stationarity and found that these variables were integrated of order one. However, no cointegration was detected among the variables. In addition, Granger causality was found from export growth to GNP growth, except for the period after the Second World War. The period from 1870 to 1985 and 1870 to 1944 supported the export-led growth hypothesis, while the period from 1945 to 1985 found no evidence. Therefore, the conclusion that export expansion could stimulate national income in Canada depended upon the period under investigation. There is, therefore, the need to exercise caution in interpreting the results that are usually obtained from econometric estimations.

Dodaro (1993:227-244) considered the issue of Granger causality between exports and economic growth for eighty seven selected countries across the globe. He made use of cointegration and error correction procedures in the study. He observed a very weak link between exports and economic growth for all the countries that were investigated.

In similar studies Love (1994:203-218) also used a combination of Granger causality techniques and Akaike's final prediction error to test the export-led

growth hypothesis for a number of selected countries and found a rather weak support for the export-led growth hypothesis for the countries that were studied.

Jin (1995:203-215) probed into the export-led growth hypothesis for the “four little dragons”, namely Hong Kong, Singapore, South Korea and Taiwan, using quarterly data from 1973 to 1993. He used a five-variable VAR model and the relationship between exports and economic growth was analysed though variance decomposition (VDC), impulse response function (IRF) and integration. All variables were found to be integrated of order one. Since there was no existing cointegration, no error correction terms needed to be included in the VAR model. The result also indicated that exports have a significant effect on the growth of the four economies that were investigated. Furthermore, a bidirectional relationship from economic growth to export growth was found significant in all these countries, except Taiwan. IRFs also provided feedback from export growth to economic growth and vice versa in all four countries. Therefore, the results, supported the export-led growth hypothesis.

Leamer (1995:66-106) criticised tests of causation, arguing that these studies are not identifying causal directions between exports and economic growth, but are only inquiring whether movements in one variable precede or follow movements in the others. He further questioned whether these studies actually relate at all to the growth-openness debate.

Henriques and Sadorsky (1996:541-555) assessed the export-led growth hypothesis for Canada using exports, terms-of-trade and GDP variables. He found no evidence supporting export-led growth. However, the growth–led export hypothesis was observed. The series were tested with augmented Dickey-Fuller (ADF) method and the Phillips-Perron (PP) method for stationarity. Cointegration was established among the three variables upon applying the Johansen method. This implies an existing long-run relationship between exports, terms-of-trade and GDP.

Riezman *et al*., (1996:77-113) pointed out the importance of the import variable in detecting export-led growth through the use of Granger causality techniques. They maintained that misleading results will be obtained if imports are not included in the econometric model used for the study. In their study of nine

selected countries and subsequently increased to 126 countries, they found that imports affect both income and exports. Omitting the import variable may result in a spurious rejection of the export-led growth hypothesis.

Al-Yousif (1997:693-697) made an inquiry into the relationship between exports and economic growth with the use of annual data running from the period 1973 to 1993 in four Arab gulf countries. The two models used for this analysis were the production-type framework and the model proposed by (Feder 1982). The production-type framework is a model where the level of exports, governments, and terms-of-trade are considered as inputs in the production process. The Feder model consists of export sector and non-export sector. Output in the export sector is produced with labour and capital, while output in the non-export sector is produced with labour, capital and the externality effect stemming from the export sector. There was no evidence to support a long-run relationship between exports and economic growth in the four countries selected for the study.

In similar studies Shan and Sun (1998:1055-1065) made use of a six-variable VAR model (export, import, industrial output, total personnel employed, energy consumption and gross fixed capital expenditure) to examine the causality between export growth and industrial output growth for three little dragon countries (Hong Kong, South Korea and Taiwan) with quarterly time series data. The empirical results showed that export-led growth hypothesis was supported in the case of Taiwan. A two-way Granger causality between manufacturing output and export growth was found in Hong Kong and South Korea. Therefore, it is advisable that, further tests should exercise caution in choosing the econometric model to be used, as well as the variables to be included in the model.

Islam (1998:415-425) developed a multivariate error correction model (ECM) to test Granger causality between export and economic growth in fifteen selected Asian countries. The driving objective of this analysis was to include a third variable influence on the export-growth relationship estimate the model along with the common stochastic trend in the data, provide definitions of export expansion and economic growth and then re-examine the issue of a causal link between exports and growth. The results suggest that export expansion caused economic growth in all of the countries used for the study. Bidirectional causation was found

in several of the countries that were used for the study. In general, the research observed that exports caused economic growth in eleven of the fifteen countries that were studied.

Baharumshah and Rashid (1999:389-406) measured the connection between export and income in respect of Malaysia by invoking and applying quarterly data. They included imports in the system equation in order to explain Malaysia's economic growth. The Johansen procedure and vector error correction model (VECM) also came into play in the study. The authors tested the long-run relationship between export, imports and GDP as a result of multivariate cointegration. Granger causality tests suggest that export causes economic growth and vice versa, hence a bi-directional causality relationship between growth rate of exports and growth rate of output.

Frankel and Romer (1999:379-399) attempted to find out if trade leads to growth. The researchers used OLS procedures, and indeed found that trade cause growth in a number of countries that were investigated. In addition, the study found that, controlling for international trade countries that are larger potentially have greater opportunities for trade within their borders.

Fountas (2000:211-214) tested the export-led growth hypothesis for Ireland, using two different types of data, annual data from 1950 to 1990 and monthly data from 1981 to 1994. There was no long-run relationship in the period, 1950 to 1990 between real GDP and export volume. Thus, this case did not support the export-led growth hypothesis. However, a strong evidence of long-run was found between industrial production and export volume, and Granger causality runs from export to output during the period under investigation.

Balaguer and Cantavella-Jorda (2001:681-685) tried to test export-led growth hypothesis for Spain, using domestic income and export variables. The sample was divided into two different periods, the autarkic policy period and the openness trade liberalisation policy period. They found an interesting result of a unidirectional causality running from income to export for the entire sample examination. However, the export-led growth hypothesis was supported during the economic liberalisation period, while in protectionist and autarkic period neither a short-run nor long-run relationship was observed.

Medina-Smith (2001:15-35) tested the validity of the export-led growth hypothesis for Costa Rica, using annual data from 1950 to 1997. He found a long-run relationship between GDP, investment, population and exports. It was concluded that for Costa Rica, the export-led growth hypothesis was indeed authentic.

Panas and Vamvoukas (2002:731-735) performed the cointegration procedure, error-correction model and multivariate Granger causality test in order to determine the relationship between exports and output for Greece. The authors used annual time series data covering the period 1948 to 1997. The results of this study indicate that the causality runs from output growth to export growth in the case of Greece.

Awokuse (2003:126-136) in his study, tested the validity of the export-led growth hypothesis, using Canada as a case study. The study used Canadian real GDP, real exports, and real terms-of-trade. In addition, manufacturing employment was used as a proxy variable for labour, gross capital formation as proxy for capital and industrial production index for all industrialised countries as a proxy for foreign output shock. The data covered the period, 1961 to 2000. The study found that there was strong empirical evidence that real exports Granger caused real GDP in Canada.

Phan *et al*., (2003:211-232) examined the long–term relationship between export and growth in Vietnam, using annual data from 1975 to 2001. They found no econometric evidence to support the theory that export expansion has made a dynamic contribution to the economic performance cum growth in respect of Vietnam.

Abual-Foul (2004:393-396) tested the export-led growth hypothesis in Jordan through the use of cointegration and causality tests procedures. The empirical results indicated unidirectional causality from exports to output. It also supported the export-oriented growth strategy pursued by Jordan of attracting foreign direct investment and boosting exports in order to promote a faster growing economy.

Abu-Qam and Abu-Bader (2004:1685-1695) investigated empirically the relationship between export and growth for nine Middle East and North Africa countries, using time series techniques. When they considered total exports, the

unidirectional causality runs from exports to GDP only in the case of Iran. Yet, when they considered manufactured exports, the results support the export-led hypothesis. The results show that not all exports contribute equally to GDP. However, the results also support the importance of promoting manufactured exports in order to boost economic growth in the nine countries used for the study.

Hossain and Karunaratne (2004:303-334) carried out a study to test the export-led growth hypothesis in Bangladesh, using a quarterly time series data for the period 1974 to 1999. The results indicate that both total exports and manufacturing exports are significant and positively related to economic growth. Further, there is a long-run relationship between exports and economic growth in the case of Bangladesh. In addition, the outcome of the study confirmed that Granger causality runs from exports to GDP.

Love and Chandra (2004:483-496) using cointegration procedures assessed the connection between for three countries, namely, India, Pakistan and Sri Lanka with the assistance of macroeconomic time series annual data sets for three different periods. That is, 1950 to 1998, 1970 to 2000 and 1965 to 1997. The study found that export has a positive impact on economic growth in the case of India and Pakistan. Further, the study found a bi-directional causality between exports and economic growth in the case of India. Surprising, there was no evidence of causality in respect of Sri Lanka despite the country's heavy dependence on exports, especially tea exports.

Al-Mamun and Nath (2005:361-364) employed cointegration procedures to test the validity of the export-led growth hypothesis using Bangladesh as a test centre. The study reported the following findings: Firstly, the study found a long-run relationship between exports and industrial production. Secondly, the study found a unidirectional relationship running from exports to economic growth, as well as from exports to industrial production. However, the study did not find evidence of a short-run causal relationship between exports and industrial production.

Awokuse (2005:693-696) analysed the applicability of the export-led hypothesis based on the economy of South Korea. He made use of time series data for the period running from 1963 to 2001. In addition, he used VECM, VAR and Granger

causality methodologies. The findings indicate that there is a bi-directional causality between exports and output growth. More specifically, exports Granger cause growth, and also that growth Granger cause exports. However, changes in capital levels and terms-of-trade have a strong impact on economic growth in South Korea, while exports growth is influenced mainly by GDP, income per capita and foreign output shock.

Reppas and Christopoulos (2005:929-940) carried out a study based on a combination of 22 Asia and Africa countries. The researchers made use of cointegration and OLS techniques to test the relationship between exports and economic growth for the period running from 1969 to 1999. Their finding suggests that there is a positive long-run relationship between export growth and economic growth for the majority of the countries under investigation. However, the cointegration results indicate that the causality runs from economic growth to export growth. By implication, these countries would need to, first of all, improve upon their level of economic growth in order for them to speed-up their export-drive. The use of both OLS and cointegration techniques simultaneously by the two researchers is highly commendable.

Al Mamun and Nath (2005:361-364) tested the export-led growth hypothesis in Bangladesh, using quarterly time series data for the period, 1996 to 2003. The study revealed a positive relationship between exports and industrial output. However, it did not find any evidence of a short-run causal association between exports and industrial output. The authors also observed that exports Granger cause industrial output.

Bahmani-Oskooee *et al*., (2005:40-45) by making use of panel data obtained from 62 countries tested the relationship between exports and economic growth. He considered the period running from 1960 to 1999. The authors applied a panel cointegration analysis to test a long-run relationship among the variables used in the study. The study found a long-run positive relationship among the variables used in the study, when exports were used as a dependent variable. However, this relationship disappeared when output was used as the dependent variable. The conclusion was that growth-oriented policies are expected to increase exports, at least in the long-run.

Zuniga (2005:94-102) also investigated the relationship between exports and economic growth, using selected countries in Latin America. The study used annual time series data for the following countries: Hondurus, Guatemala, El Salvador, Nicaragua and Costa Rica for the years stretching from 1970 to 2000. The study also used the following variables: real GDP, real exports, real gross fixed capital formation, labour force, GDP, exports, and gross fixed capital formation. The study found that in El Salvador, exports caused growth. In Guatemala, in the short run exports caused economic growth. In the case of Costa Rica, the contrary result was observed. Specifically, it was found that economic growth triggered exports instead of exports generating economic growth.

Awokuse (2005:693-696) explored the relationship between exports and output growth, using South Korea as a case study. He tested the following proposition: whether either the export-led growth or growth-led export hypothesis holds in South Korea. This study investigated the possibility of a dynamic causal relationship between exports, output growth, capital/investment, terms of trade, and foreign output shock by making use of quarterly data running from the year 1963 to 2001. The study relied upon the application of two theoretical methodologies, namely VECM and an augmented level of VAR. Both methods confirmed a bidirectional link between exports and GDP. This means that South Korea could either use economic growth to boost its exports or rely upon increasing its exports as a way of generating economic growth.

Love and Chandra (2005:132-143) tested the relationship between export growth and income growth in South Asia through the application of cointegration procedures and error correction mechanisms. The data used stretches from 1950 to 2000. The empirical results obtained from the study were dissimilar in some ways. For instance, while the export-led growth hypothesis was found to be supported by data based on the economies of India, Maldives, and Nepal, the results obtained in Bangladesh and Bhutan supported growth-led driven strategies. Regarding Pakistan and Sri Lanka, no causality was established. There is a possibility for the empirical results obtained from the study to change if the time series data is grouped into two distinct time periods.

Further contributing to the literature Awokuse (2006:593-602) estimated the relationship between exports and economic growth in Japan using a quarterly time series data covering the period of 1960 to 1991. The empirical results indicate that there is a bi-directional causality between exports and output in Japan, when productivity was used as a measure of output. It was also observed that the coefficient of the capital variable was positively assigned. Furthermore, capital has a significant effect on productivity. This is in conformity with the neoclassical theory, which states that aggregate productivity is a function of capital.

Siliverstovs and Herzer (2006:319-324) investigated empirically the relationship between exports growth and economic growth for Chile using annual time series data over the period covering 1960 to 2001. The authors divided exports into two categories, namely primary exports and manufactured exports. The findings indicate that both primary exports and manufactured exports are significantly and positively related to economic growth in Chile. Further, the Granger causality runs from manufactured exports to economic growth, while primary exports do not Granger cause economic growth. Therefore, if Chile is enthusiastic about boosting economic growth, it must first consider various ways of aggressively improving upon the competitiveness of her manufactured exports in international markets.

Halicioglu (2007:32-40) also attempted to prove the validity of the export-led growth hypothesis using quarterly data from 1980 to 2005 using Turkey as a case study. The author made use of a combination of cointegration and error correction modelling procedures in his study. The empirical results arising from the study indicate that a long-run relationship exists among variables in which the industrial production index is a dependent variable. In addition, augmented Granger causality suggested unidirectional causality from exports to industrial production. A change in exports and terms-of-trade through the error correction model will change the industrial production index in the long-run.

Mahadevan (2007:1080) also investigated whether export growth and trade-adjusted GDP are connected using Malaysia as a case study. The causality test arising from the study gave credence to the fact that economic growth leads to

GDP growth. Indeed, causation was a one-way traffic. It was also observed from the study that the connection between exports and labour productivity growth was bidirectional. Further, labour productivity growth was import-growth driven, and that the reverse was untrue.

Yang (2008:83-87) examined the relationship between exports and economic growth over the period 1958 to 2004 based on 44 countries. The results from most of the countries used in the study gave credence to the export-led growth hypothesis, while a few of them proved otherwise. The author also observed that due to the problem of data availability in the developing countries, the real exchange rate can serve as a good tool for distinguishing between situations of exports-driving growth and growth-driving exports' situations.

Also Mag (2010:4-16) tested whether export promotion measures led to export expansion in South Korea. He used data based on the export pattern of South Korea since the 1960s, as well as her export policies. The study found that during the period of rapid economic growth, the South Korean authorities, indeed, gave tax concessions and financial incentives. In addition, the government of South Korea established a number of export promotion agencies. All of these measures and incentives contributed significantly to a rise in respect of exports from South Korea to the rest of the world.

Cui and Shen (2011:220-224) assessed the relationship of international trade in financial services and economic growth in China through the use of multiple regression models, cointegration and error correction procedures. The results are that there is a long-run equilibrium relationship between the two modes of financial service trade, and that both of them improved the economic growth of China during the period under examination.

Mina (2011:202-218) using econometric data, measured the impact of Africa's trade with China for the period covering 1995 to 2008. The study reported four important findings. Firstly, the study did not find any evidence to suggest that exports to China helps to promote economic growth in Africa. Secondly, the study found that countries that export one major commodity to China have a greater possibility of benefitting in terms of economic growth than those with diversified export-base. Thirdly, the study found that imports from China were generally promoting

economic growth in Africa. Lastly, the finding of the study supports the hypothesis which states that the destination of a country's exports matter, especially when it comes to the promotion of economic growth.

Kehinde *et al*., (2012:73-80) studied empirically the impact of international trade on economic growth in Nigeria from 1970 to 2010. The study made use of multiple regression models, cointegration and error correction procedures. The study revealed that three variables, namely export, foreign direct investment and exchange rate are statistically significant at 5 percent. These variables were also observed to be positively related to real GDP, while other variables such as import, inflation rate, openness exert a negative influence on real GDP. The study demonstrates that increased participation in global trade helps Nigeria to reap static and dynamic benefits of international trade. Both international trade volume and trade structure towards high technology exports resulted in a positive effect on Nigeria's economy. In addition, the authors recommended that the government of Nigeria should design appropriate strategies that can boost exports, stimulate foreign direct investment and maintain exchange rate stability in order for its economy to achieve greater growth rates.

In similar fashion Bojanic (2012:51-70) assessed the relationship between economic growth, financial development and trade openness using annual macroeconomic time series data for Bolivia during the period stretching from 1940 to 2010. The study tested the possibility of a long-run relationship among the variables specified in the econometric model. Secondly, the study carried out a causality analysis among the variables used in the econometric model. Thirdly, the study estimated an error correction model in order to correct for long-run disequilibrium in the econometric model. The econometric results, indeed, suggests the existence of long-run relationships among the variables used in the study. In addition, the study found a unidirectional relationship running from the indicators of financial development and trade openness to economic growth.

Also contributing to the literature on trade and economic growth Fratianna and Marchionne (2012**:**137-163), econometrically estimated the connection between trade costs and economic development by employing macroeconomic data sets for the period stretching from 1995 to 2004 for the economy of Italy. The study

reported the following findings: Firstly, the study found that Italian provinces exhibit similar characteristics, when it comes to trade costs. In particular, the study also noted that these costs are generally influenced by factors such as per capita income, and industrial structure. Further, the study found a bidirectional relationship between trade costs and per capita income. Therefore, the study findings are consistent with the philosophy of the New Geographical Economics.

Medina and Chaido (2013:50-67) empirically probed into the relationship between financial development, trade openness and economic growth in Bulgaria by employing cointegration and Granger causality procedures. First, the study investigated the existence of long-run relationships among financial development, trade openness and economic growth. Second, the study carried out a Granger-causality analysis in order to identify the nature of causalities among the variables both in the short-run and long-run periods. The results obtained from Granger-causality tests indicate a unidirectional causation running from financial development and economic growth to trade openness in the long-run. Correspondingly, the study found a bidirectional relationship between financial development and trade openness, as well as a unidirectional causality running from economic growth to financial development in the short-run.

Arodoye and Iyoha (2014:127-129) assessed the relationship between foreign trade and economic growth in Nigeria by employing quarterly time series datasets for the period 1981 to 2010. A VAR model was used in order to account for feedbacks. The result of the study confirms a stable, long-run connection between foreign trade and economic growth. The result also confirms that the principal sources of Nigeria's economic growth variation are largely propelled by foreign trade innovations and "own shocks". The study, therefore, considers the adoption of trade as a potent policy instrument for catalysing the process of economic growth in Nigeria. The technical procedures used by the authors of this study are highly penetrating and, therefore, commendable.

5.4 PREVIOUS QUANTITATIVE STUDIES CONCERNING THE RELATIONSHIP BETWEEN TRADE AND ECONOMIC GROWTH IN NAMIBIA

Empirical literature concerning the relationship between trade and growth for Namibia are very scarce. This study only found a few of such studies, two of which are reviewed below. This, indeed, provides further justification for the study to produce high-level econometric analysis for the country.

Odada (2002:1-9) attempted to explain Namibia's growth performance and its structural transformation over a period of forty years. The study took a regional and international perspectives. The study locates the Namibian growth experience in relation to what could be expected from a country with Namibia's features. The study found that Namibia's growth experience and its economic structure significantly differ from the growth model predictions based on the experiences of a cross section of countries. Besides, trade was found to have played a significant role in explaining the growth process in Namibia during the period that the study covered.

Sheefeni and Kalumbu (2014:90-101) investigated the factors that led to changes in terms-of-trade and correspondingly how terms-of-trade had an impact on Namibia's economic growth. The study focused on the period 1980 to 2012 and employed time series techniques such as unit root, Granger causality, cointegration and impulse response functions in the context of a vector autoregression model. The results revealed a negative relationship between terms-of-trade and economic growth of Namibian. Moreover, the study found a unidirectional relationship running from economic growth to terms-of-trade.

5.5 SUMMARY AND CONCLUSION

This chapter made a valuable attempt to review a number of empirical studies that the author considers to be of value to the thesis under consideration. The various discussions presented in this chapter followed a chronological order. In addition, the thesis observed that the early contributors to this literature relied heavily upon the application of OLS techniques, while the more recent literature invoked and applied cointegration and error correction techniques in various ways in carrying out their research works. This thesis made use of the latter technique

due to its robustness. Regarding the connection between trade and economic growth, three different opinions emerged from the existing literature that this study reviewed. First, a number of past studies supported the existence of a positive relationship between trade and economic growth, while the second set of empirical literature maintained a contrary view. The third set of literature contested the existence of any connection between trade and economic growth. It is however, widely acknowledged in the existing literature that under certain circumstances, an increase in trade, especially foreign trade, will boost economic growth. Chapter 6 presents the theoretical methodologies and procedures employed in the study.

CHAPTER 6

RESEARCH METHODOLOGY, MODEL BUILDING AND SPECIFICATION

6.1 INTRODUCTION

The preceding chapter made a valuable attempt to review a number of empirical studies that the author considers to be of value to the thesis under consideration. The various discussions presented in Chapter 5 followed a chronological order. In addition, the thesis observed that the early contributors to this literature relied heavily upon the application of OLS techniques, while the more recent literature invoked and applied cointegration and error correction techniques in various ways in carrying out their research works. This thesis made use of the latter technique due to its robustness. Regarding the connection between trade and economic growth, three different opinions emerged from the existing literature that this study reviewed. First, a number of past studies supported the existence of a positive relationship between trade and economic growth, while the second set of empirical literature maintained a contrary view. The third set of literature contested the existence of any connection between trade and economic growth. It is however, widely acknowledged in the existing literature that under certain circumstances, an increase in trade, especially foreign trade, will boost economic growth. Chapter 5 discusses the theoretical methodologies and procedures employed in the study. This chapter serves three purposes. First, it attempts to present the theoretical methodologies relied upon in the study. Secondly, issues concerning model building and specification are also addressed. Thirdly, the justification for the choice of the research techniques used in this study is also presented. It is particularly instructive at this juncture to also point out that the choice of the specific research techniques used in this study was heavily influenced by economic theory and the existing empirical literature that the thesis reviewed.

In specific terms, this chapter presents the methodology followed, as well as the techniques applied to examine the relationship between foreign trade and economic growth in Namibia. In the light of the above, the discussion on empirical literature evidently showed that the VAR approach is predominantly used in empirical studies that analyse the relationship between foreign trade and

economic growth. Hence, this chapter presents an overview of this approach in order to appreciate the advantages and mechanics of this methodology. The researcher has also included a discussion concerning an additional technique referred to in the literature as the ARDL approach. Accordingly, this chapter is divided into two main sections. Section 6.2 discusses the econometric framework and model specification. In particular, the section outlines the VAR and the ARDL methodologies in greater detail. This discussion includes the advantages, disadvantages and justifications for using the two techniques in analysing the foreign trade and economic growth nexus in Namibia. The discussion of matters pertaining to macroeconomic data, sources and measurements are presented in Section 6.3.

6.2 ECONOMETRIC FRAMEWORK AND MODEL SPECIFICATION

Econometric time series studies are increasingly relying upon the use of more sophisticated and robust techniques in their research inquiries as against the direct application of the OLS technique (Mina, 2011:202-218). This is mainly because of spurious results that are often embedded in OLS regression results. Besides the use of these high-powered econometric time series techniques would lead to the simultaneous identification of issues such as non-stationarity of data, autocorrelation, multicollinearity, and heteroscedasticity (Arodoye and Iyoha, 2014:127-129). The study made use of two such techniques, namely the VAR approach and the ARDL approach, which is sometimes referred to in the literature as bound testing approaches.

The emphasis of this study is, therefore, to address both the relative importance and the dynamic effects of the various shocks on the macroeconomic variables with the assistance of the above-mentioned two techniques. In assessing the foreign trade-economic growth nexus in Namibia, various specific empirical models have been constructed based on economic theory and empirical literature.

6.2.1 Vector auto-regression approach (VAR)

In this study, the VAR approach is used. In particular, this study follows those of (Arodoye and Iyoha, 2014:127-129). The use of VAR technique gained popularity

due to its ability to investigate the inter-relationships among non-stationary time-series variables (Sims, 1986:2-3). It has been successfully used in situations involving developed countries, developing countries, emerging markets and quasi-emerging markets. This justifies the use of a similar approach in this study.

The VAR represents a system of dynamic linear equations. In this kind of system of dynamic linear equations, all the variables in the system are classified as endogenous. Subsequently, the reduced form of the system assigns one equation for each of the variables, and then further specifies each of the variables as a function of its own lagged values in the system (Gujarati, 2004:848-855). Overall, a VAR model describes the progression of a set of *k* variables (endogenous variables) over the same sample period (t = 1, …,T) as a linear function of their past progression. The variables are expected to be combined together in a k x 1 vector y_t, which it has as the i^{th} element $y_{i,t}$ where the subscript t (time) refers to the observations in respect of the variable y_i over a given period of time.

Let $Y_t = (y_{1t}, y_{2t}, \ldots y_{nt})'$ denote an *(n* x *1)* vector of time series variables

A reduced form ρ – lag vector autoregressive (VAR(ρ)) model has the form:

$$Y_t = c + \Phi_1 Y_{t-1} + \Phi_2 Y_{t-2} + \ldots + \Phi_\rho Y_{t-\rho} + \varepsilon_t \quad \text{..... (6.1)}$$

Where there is a vector of endogenous variables, c is k x 1 vector of constants (intercept), Φ_i are (*k* x *k*) coefficient matrices (for every i=1,…,p) and ε_t is an (*k* x *1*) vector of error terms satisfying the following conditions:

$E(e_t) = 0$ –error term has mean zero

$E(e_t e_t') = \Omega$ – the contemporaneous covariance matrix of error terms is Ω (n x n positive definite matrix) and

$E(e_t e_{t-k}') = 0$ for any non-zero k there is no correlation across time. By implication there is no serial correlation in individual error terms.

Therefore, the vector Y_t is defined using an unrestricted vector auto-regression (VAR):

$$z_t = A_1 z_{t-1} + ... + A_k z_{t-k} + \mu_t \quad (6.2)$$

where, z_t is $(n \times 1)$ vector of variables, A_i is an $(n \times n)$ matrix of parameters, u_t denotes residuals or $(n \times 1)$ vector of innovations. The vector, z_t, consists of (n) potentially endogenous variables. Each variable in the model is regressed on both its lagged values and the lagged values of other variables in the system. From the literature, the following variables have been identified namely real gross domestic product (RGDP), exports (XPORT), foreign direct investment (FDI) and exchange rate (EX).

VAR models were first introduced as an alternative to traditional large-scale dynamic simultaneous equation models. The prominence of this approach is its ability to model all endogenous variables jointly as opposed to one equation at a time. Indeed, there is voluminous literature on the specification and estimation of the various forms of VAR models. One of such forms is the reduced-form VAR time series model, which can be estimated by ordinary least squares. Sims (1980:1-48), however, stressed that the estimations of the reduced form of VAR cannot be used to draw and make inferences about long-run relationships. Hence, a reasonable economic interpretation from the estimated reduced form of VAR becomes credible only when exploiting the long-term structural disturbances that respond to typical random shocks after transforming the residuals to an orthogonal form. Further, in order to capture the long-term information, the VAR model can be reformulated into a vector error correction model (VECM) form in the following way:

$$\Delta z_t = \Gamma_1 \Delta z_{t-1} + ... + \Gamma_{k-1} \Delta z_{t-k+1} + \Pi z_{t-k} + \mu_t \quad ..... \quad (6.3)$$

Johansen (1991:1551-1580) states that the estimates of Γ_i and Π describes the short-run and long-run adjustment to changes in z_t, respectively. The vector Π denotes a matrix of long-run coefficients, defined as a multiple of two *(n* x *r)* vectors, (α) and (β), and they signify the speed of adjustment to equilibrium and a matrix of long-run coefficients, respectively.

VAR practitioners and advocates argue that these models can reveal the important dynamic characteristics of the economy without imposing structural restrictions from a particular economic theory. In essence the unrestricted VAR

separates the residuals into orthogonal shocks by calculating a Cholesky decomposition of the covariance matrix for the residuals. This statistical decomposition depends on the succession in which the variables are ordered. The use of the Cholesky decomposition imposes a restriction on the ordering of the variables in the VAR. This has led to criticism that the results sensitive to VAR orderings are difficult to interpret, especially if a recursive economic structure is implausible (Keating, 1992:37-57). Therefore, in addressing the problem of ordering, practitioners introduced the generalised impulse response functions (GIRF) as an alternate tool to the traditional Cholesky impulse response and variance decomposition (Koop et al., 1996:119-147) and (Pesaran and Shin, 1998:17-29). The generalised impulse response function (GIRF) can be applied to both the linear and the nonlinear multivariate models **(**Koop, 2000:52-61).

The main advantage of the GIRF is that it does not require the orthogonalisation of shocks and is therefore, not affected by the ordering of the variables used in the VAR model. This method is unique and takes full account of the historical patterns of correlations between different shocks. Furthermore, in a non-diagonal error variance matrix, the orthogonalised and the generalised impulse responses are equivalent only for the first equation in the VAR (Pesaran and Shin 1998:17-29). However, the main drawback of the GIRF is that it does not allow one to obtain the variance decomposition for any single equation of the system. This limits the researcher to distinguish between the direct impact of the policy shock on any single variable in the system and the impact resulting from innovations in other variables of the system.

Another contentious issue of VAR models is that of non-stationarity, as there is no clear cut on the choice of estimating the variables in levels and difference. However, it is argued that, if the system of a set of non-stationary variables is cointegrated, it is recommended to perform the VAR analysis using the variables in levels, while if cointegration does not exist, it is recommended to use the differenced variables (Mousa, 2010:54) and (Sheefeni, 2013:119-123). Enders (2004:294-352) advocates for the traditional approach of transforming the data to stationary regressors prior to estimation, regardless of whether the point of focus is long-run or short-run relationships. Against this background, this study follows the procedure of the VAR analysis of foreign trade-economic growth nexus in

Namibia using both level variables or the first differences, depending on the stability of the VAR system.

Further, in order to examine a reinforcing mechanism between foreign trade and economic growth in Namibia within a VAR framework, the analysis is carried out in the following sequence:

The first step requires a test for non-stationary (unit root) or the univariate characteristics of time series. In this regard, a formal test is required in order to select appropriate estimation methodology. Several ways of testing for unit roots are available in the literature. Examples of such techniques are the Dickey-Fuller (DF) test, augmented Dickey-Fuller (ADF) test, cointegration regression Durbin-Watson (CRDW) test, Phillips-Perron (PP) test, Kahn and Ogaki test, Leyborne-McCabetest test, as well as the Kwiatkowski, Phillips, Schmidt and Shin (KPSS) tests. The DF, ADF, PP and KPSS tests are the popular types of unit root tests applied in empirical works. Further, the DF and ADF tests are the two most commonly used in empirical studies. This is mainly due to their simplicity and general nature (Johansen, 1988:231–254). Therefore, this study applies the ADF test. The ADF test is preferred to the DF test because of its technical superiority over the DF test. More specifically, it corrects for the weaknesses of the DF test by assuming that y follows an $AR(p)$ rather than an $AR(1)$ process. The ADF test involves estimating the following equation:

$$\Delta y_t = \rho^* y_{t-1} + \rho_1 \Delta y_{t-1} + \rho_2 \Delta y_{t-2} + \ldots + \rho_{p-1} \Delta y_{t-p+1} + \mu_t \quad \text{..... (6.4)}$$

where $\rho^* = (\rho_1 + \rho_2 + \cdots + \rho_p) - 1$

If $\rho^* = 0$, then y contains a unit root. The null hypothesis of a unit root is not rejected, if the DF t-statistic is greater than the DF critical value. It should be noted that the appropriate lag length should be used in implementing this test, since too few lags may result in rejecting the null hypothesis, when in fact, it is true. Furthermore, too many lags might reduce the potency of the test. Most of the specialised econometric software programmes will advise on the specific number of lags that should be used in order to conduct the ADF test on your chosen models.

The second step is to conduct Granger causality tests among the variables. This is necessitated by the fact that economic models often assume different hypotheses in discussing variables' relationships and unsure about variables' cause-and-effect relationships. Granger (1969:424-438) developed a technique based on lead and lag relations in forecasting. This technique is useful in determining whether one variable is potent for predicting the other. In general, Granger-causality analysis helps in determining the nature of relationships among the variables under investigation. In this regard, the following options are available for purposes of causality tests and analysis: One option is to test for a simple bivariate Granger causality, where there are two variables and their respective lags. The second option is to test for a simple unidirectional causality involving two variables and their respective lags. The third option concerns multivariate Granger causality, where more than two variables are simultaneously considered. This option is most appropriate where more than one variable can influence the results. Further, Granger causality can also be tested in a VAR framework in which case a multivariate model is extended to test for simultaneity of all included variables in the model.

The Granger causality test can be used to establish causal relationship among the variables within the VAR framework. It assumes two series X_t and Y_t that define those messages set.

$$X_t = \alpha_0 + \sum_{i=1}^{k} \alpha_{1i} X_{t-1} + \sum_{i=1}^{k} \alpha_{2i} Y_{t-1} + \varepsilon_{1t} \quad \text{..... (6.5)}$$

$$Y_t = \beta_0 + \sum_{i=1}^{k} \beta_{1i} X_{t-1} + \sum_{i=1}^{k} \beta_{2i} Y_{t-1} + \varepsilon_{2t} \quad \text{..... (6.6)}$$

In order to determine the variables' relationships the following tests are conducted on the coefficients:

(i) $\alpha_{2i} \neq 0 \; and \; \alpha_{1i} = 0$: meaning Y lead X or X lag Y.

(ii) $\beta_{1i} \neq 0 \; and \; \beta_{2i} = 0$: meaning X lead Y or Y lag X.

(iii) $\alpha_{2i} = 0 \; and \; \beta_{1i} = 0$: meaning both variables are independent.

(iv) $\alpha_{2i} \neq 0 \; and \; \beta_{1i} \neq 0$: meaning both variables are interactive of each other and have feedback relationship.

In general, pair-wise Granger causality tests are used. The test is, however, affected by the number of lags, and thus, it is always advisable to determine the number of lags first. Several criteria are used to indicate the number of lags. This includes Hannan-Quinn (HQ), Schwarz information criterion (SIC), Akaike information criterion (AIC), final prediction error (FPE) and likelihood ratio (LR). Upon establishing the lag length, one can then proceed with pair wise Granger causality test. Thereafter, one should establish if VAR satisfies the stability condition. The stability condition also assists in determining whether to estimate the VAR model in levels or first difference.

The third step is to conduct tests for co-integration. Cointegration is generally defined as a concept, which mimics the existence of the long-run equilibrium relationship among variables (Gujarati 2004:848-855). The test assists in determining whether there is convergence to some sort of equilibrium in the long-run. There are several ways suggested by empirical econometric literature on how to deal with the issue of cointegration. If it is a single equation, use the Engle-Granger method, if it is a multivariate system, use the Johansen approach. In this study, the researcher used the Johansen co-integration test as a matter of technical necessity. This study uses the VAR framework, which is a system of equations. The Johansen cointegration test is used to determine the number of cointegrating relations based on the relationship between the rank of a matrix and its characteristic roots.

The rank of a matrix = #characteristic roots $\neq 0$ (i.e. $\lambda s \neq 1$) = # of cointegrating vectors.

All $\lambda s = 1$ (roots=0)

All $\lambda s \neq 1$

Some $\lambda s \neq 1$

Three cases are found in the literature:

Rank (Π) =0: There are no cointegrating variables, all rows are linearly dependent, and the system is nonstationary. $\sum_i^n A_i = I$. First-difference all the variables to remove nonstationarity, then standard inference applies (based on t, F and χ^2). One can thus write the VECM as a simple VAR in first differences:

$$\Delta y_t = \sum_{i=1}^{n-1} \Phi_i \Delta y_{t-i} + u_t \quad \text{..... (6.7)}$$

Rank (Π) =k (# variables), full rank, hence is nonsingular: all rows (columns) are linearly independent (all variables are stationary, i.e., y_t ~I(0)), all roots are in the unit circle with modulus<1, and hence the system is stationary and the levels of variables have stationary means. Estimating with unrestricted OLS the level VAR and the VECM will give identical results.

Rank (Π) = r < k. The system is nonstationary but there are r cointegrating relations among the variables (r rows are linearly independent, thus r linearly independent combinations of the $\{y_{it}\}$ sequence are stationary). The y vector may be I(1) or higher and the CI relation is determined by

$\Pi = \alpha\beta'$,

α =a (k x r) matrix of weights, the loading matrix, which measures the average speed of convergence towards LR equilibrium

β = a (k x r) matrix of parameters determining the cointegrating vectors.

The Johansen cointegration approach uses rank of π to distinguish the number of co-integrated vector and examine rank of vector in testing how many of non-zero of characteristic roots exists in the vector. Further, there are two statistical processes for cointegration.

(i) Trace test:

$H_0 : rank(\pi) \leq r$(at most r integrated vector)
$H_1 : rank(\pi) > r$(at least r+1 integrated vector)

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} \ln(1-\hat{\lambda}_i)$$

T is sample size, $\hat{\lambda}_i$ is estimated of characteristic root. If test statistic rejects H_0 that means variables exists at least r+1 long-term cointegrated relationship.

(ii) Maximum eigenvalue test:

$H_0 : rank(\pi) \leq r$(at most r integrated vector)
$H_1 : rank(\pi) > r$(at least r+1 integrated vector)

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

If test statistic accepts H_0, it means that variables have r cointegrated vector. This method starts testing from variables that do not have any cointegrative relationship, which implies that r=0. Then test adds the number of cointegrative items to a point of no rejecting H_0, which means variables have r cointegrated vector.

In cases where trace and maximum eigenvalue statistics yield conflicting results the trace test should be preferred (Sheefeni, 2013:119-123). If cointegration is found among the variables, the adjustment of the short-run to the long-run equilibrium is obtained through the vector error correction model (VECM). The VEC model starts from the standard reduced form of VAR (p) model (Watson, 1994:2844-2915). In the event that a co-integration among the variables is not found, then a VAR model specification is estimated.

The fourth step is to derive the impulse response functions (IRF) and variance decompositions (VD) from the VAR estimates. The IRF can be used to trace the time path of the dependent variables in the VAR in response to shocks from all the explanatory variables. If the system of equations is stable any shock should decline to zero, whereas an unstable system would produce an explosive time path. There will be a difference in the timing of the effects. However, sometimes

the IRF will be inconsistent in the long horizon with unrestricted VAR with a unit root, whi For instance, the issue of whether to estimate a VAR in levels or first difference is not clear in the existing literature. The problem extends further to cointegration tests, which require that all of the series should be integrated of the same order. Hence, the two most common techniques used to test for cointegration, the (Engle & Granger, 1987:251-276) two-step residual-based approach, and the (Johansen, 1988:231–254 and 1991:1551-1580) system-based reduced rank regression approach also require such. In instances where series are of different order of integration, there is a degree of uncertainty into the analysis of levels relationships (Koop et al., 1996:119-147) and (Pesaran et al., 2001:289-326). For these reasons, an additional technique is applied to cater for these weaknesses (Pesaran & Shin, 1998:17-29).

The bound test approach is premeditated on three fundamental considerations. Pesaran et al., (2001:289-326) stated that OLS technique can easily be applied in estimating relationships in the context of the ARDL framework as soon as the order of the ARDL has been established. Further, the bounds test is not sensitive to the order of integration of the variables. That is, it does not really matter even if the variables under consideration are different in terms of their order of integration. Therefore, the ARDL technique has an advantage of not requiring a specific identification of the order of the underlying data. Besides, this technique is not sensitive to the sample size, be it a small or large sample size. In addition, this technique can differentiate between the dependent and explanatory variables in a given model. Lastly, the method allows for the simultaneous estimation of the long-run and short-run components of the model. This in turn helps to eliminate the problems associated with omitted variables and autocorrelations.

The vector auto-regression (VAR) of order *p,* denoted VAR (*p*), for the following growth function:

$$Z_t = \mu + \sum_{i=1}^{p} \beta_i z_{t-i} + \varepsilon_t \quad \text{..... (6.8)}$$

where z^t is the vector of both x^t and y^t , where y^t is the dependent variable defined as real gross domestic product (RGDP), x_t is the vector matrix, which

represents a set of explanatory variables i.e., exports (XPORT), foreign direct investment (FDI), exchange rate (EX) and *t* is a time or trend variable. y_t must be I(1) variable, but the regressor x_t can be either I(0) or I(1). Furthermore, a vector error correction model (VECM) can also be formulated as follows:

$$\Delta z_t = \mu + \alpha t + \lambda z_{t-1} + \sum_{i=1}^{p-i} \gamma_t \Delta y_{t-i} + \sum_{i=1}^{p-1} \gamma_t \Delta x_{t-i} + \varepsilon_t \quad \text{..... (6.9)}$$

where Δ is the first-difference operator. The long-run multiplier matrix λ as:

$$\lambda = \begin{bmatrix} \lambda_{YY} \lambda_{YX} \\ \lambda_{XY} \lambda_{XX} \end{bmatrix}$$

The diagonal elements of the matrix are unrestricted, so the selected series can be either I(0) or I(1). If $\lambda_{YY} = 0$, then *Y* is I(1). In contrast, if $\lambda_{YY} < 0$, then *Y* is I(0).

The VECM procedures described above requires co-integration test among the variables, testing for at most one co-integrating vector between dependent variable y_t and a set of regressors x_t . This model is derived from the postulations of unrestricted intercepts and no trends (Pesaran, 2001:17-29). After imposing the restrictions $\lambda_{YY} = 0, \mu \neq 0$ and $\alpha = 0$, the GIIE hypothesis function can be stated as the following unrestricted error correction model (UECM):

$$\Delta(RGDP)_t = \beta_0 + \beta_1 (RGDP)_{t-1} + \beta_2 (XPORT)_{t-1} + \beta_3 (FDI)_{t-1} + \beta_4 (EX) + \sum_{i=1}^{p} \beta_5 \Delta(RGDP)_{t-i} + \sum_{i=0}^{q} \beta_6 \Delta(XPORT)_{t-i}$$

$$+ \sum_{i=0}^{q} \beta_7 \Delta(FDI)_{t-i} + \sum_{i=0}^{q} \beta_8 \Delta(EX)_{t-i} + \mu_t \quad \text{.....(6.10)}$$

Where Δ is the first-difference operator and u_t is a white-noise disturbance term. Hence, Equation 6.10 also can be viewed as an ARDL of order (p, q_1, $q_3 \ldots q_n$) and it indicates that real gross domestic product tends to be influenced and explained by its past values. The orders (p, q_1, $q_3 \ldots q_n$) are structural lags established by using minimum Akaike's information criteria (AIC). Those maximum lags are determined by using one or more of the "information criteria" - Hannan-Quinn (HQ), Schwarz information criterion (SC), Akaike information criterion (AIC), final prediction error (FPE) and likelihood ratio (LR). These criteria are based on a high

log-likelihood value, with a "penalty" for including more lags to achieve this. The form of the penalty varies from one criterion to another. Each criterion starts with -2log(L), and then penalises, so the smaller the value of an information criterion the better the results. The Schwarz (Bayes) criterion (SBC) is generally used in this regard because it is a consistent model-selector. However, caution should be exercised in order to prevent the possibility of over selecting the maximum lags.

Since this model is autoregressive in nature, there is a need to test if it is dynamically stable or meets stability conditions. This means to check that all of the inverse roots of characteristic equation associated with the model are strictly within the unit circle. Thereafter, one can perform a bounds test by performing an “F-test” of the null and alternative hypotheses as follows:

$H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ (no long-run relationship)

Against the alternative hypothesis

$H_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$ (a long-run relationship exists)

The computed *F*-statistic values are evaluated with the critical values for the *asymptotic* distribution of the F-statistic. Based on various situations (*e.g.*, different numbers of variables, (k + 1)), there are lower and upper bounds on the critical values. The lower bound is based on the assumption that all of the variables are I(0), while the upper bound is based on the assumption that all of the variables are I(1). If the computed F-statistic falls below the lower bound it suggest that the variables are I(0), meaning no cointegration. If the F-statistic exceeds the upper bound, it suggests the existence of cointegration. Finally, if the F-statistic falls between the bounds, the test is inconclusive (Atif *et al*., 2010:30-37).

From the estimation of the unrestricted error correction models (UECM), the long-run elasticities are the coefficients of one lagged explanatory variable (multiplied by a negative sign) divided by the coefficient of one lagged dependent variable (Bardsen, 1989:345-350). For example, in equation (3), the long-run inequality, elasticities are (β_2 / β_1), (β_3 / β_1) and (β_4 / β_1) respectively. The short-run effects are captured by the coefficients of the first-differenced variables in Equation 6.3

according to Misati *et al*., (2011), Liu *et al*., (2008) and Beng *et al*., (2006). Furthermore, one could derive the Granger causality test results, the impulse response functions and variance decomposition through the applications of these techniques.

6.3 MACROECONOMIC DATA, SOURCES AND MEASUREMENTS

This study employs quarterly time-series data covering the period 1990 Q1 to 2012 Q4. In this regard, real gross domestic product is used as a proxy for economic growth while the variables export, foreign direct investment and exchange rate are used as proxies for foreign trade. The data used in this study are obtained mainly from secondary sources due to the nature of the research topic investigated. In this regard, the following constitutes the sources of secondary data used in the study: National Planning Commission publications, Ministry of labour, World Bank (WB) Statistics, and International Labour Organisation (ILO) Statistical bulletins, Electronic Data-Base, National Accounts of the Republic of Namibia, National Planning Commission publications, Namibia Statistics Agency Electronic Data-Base, Bank of Namibia's Quarterly and Annual Reports, as well as the International Monetary Fund's International Financial Statistics.

Real gross domestic product enters the VAR as a macro-economic variable. Gross domestic product data are used as a proxy for Namibia in this regard. Export is measured as value of total exports expressed in millions of Namibia dollar and further expressed as percentage of total GDP. Foreign direct investment is defined as the total FDI inflows into the domestic economy, measured in terms of equity capital and reinvested earnings. Real effective exchange rate is a measure of the value of the Namibia dollar against a weighted basket of foreign currencies adjusted for inflation using the consumer price index (CPI). It captures movements in between a home country and trading partners adjusted for by the respective weights of the trading partners. Therefore, index for real effective exchange rate (2004=100) is used as a proxy for exchange rate in this regard. All these variables have been commonly used in empirical economic studies. Hence, it will be used for this analysis in Namibia.

All variables were transformed into their respective natural log forms before the study proceeded with econometric estimation. Moreover, since the analysis involved quarterly data, the researcher ensures that all the variables used were seasonally adjusted before being subjected to VAR analysis. Further, the secondary data used in the study were already seasonally adjusted prior to collating them.

6.4 SUMMARY AND CONCLUSION

Chapter 6 discussed the techniques used in the study. In this regard, VAR and ARDL techniques were selected and subsequently elaborated upon. The justification for the choice of VAR and ARDL from a technical standpoint was also discussed in Chapter 6. In addition, the derivation of the various econometric models that the study estimated and subsequently analysed in Chapter 7, was presented. The macroeconomic time series secondary data sets used in the study, as well as their sources were also presented in Chapter 6. The thesis, however, cautioned that no single econometric technique is 100 per cent error free. This chapter establishes the stage for the estimation and discussion of results in Chapter 7 of the thesis.

CHAPTER 7
EMPIRICAL ESTIMATION AND ANALYSIS OF RESULTS

7.1 INTRODUCTION

Chapter 6 discussed the techniques used in the study. In this regard, the VAR and ARDL models were selected and subsequently elaborated upon. The justification for the choice of VAR and ARDL from a technical standpoint was also discussed in Chapter 6. In addition, the derivation of the various econometric models that the study estimated and subsequently analysed in Chapter 7 was presented. The macroeconomic time series secondary data sets used in the study, as well as their sources were also presented in Chapter 6. The thesis, however, cautioned that no single econometric technique is 100 per cent error free. This establishes the stage for the estimation and discussion of results in this chapter.

Chapter 7 discusses the empirical estimations and analysis of results. The rest of the chapter is divided into four sections. Section 7.2 includes a descriptive analysis, while Section 7.3 presents a discussion regarding the results obtained from the estimation of the VAR model. In presenting the results for the VAR model, this study followed the following sequence; VAR cointegration tests, Granger causality tests (GC), generalised impulse response function (GIRF) and forecast error variance decomposition (FEVD). Section 7.4 presents the discussions concerning the results obtained from the estimation of the autoregressive distributed lag model, sometimes referred to in the literature as the bound test approach. Section 7.5 summarises and concludes the chapter.

7.2 DESCRIPTIVE ANALYSIS

In conducting descriptive analysis, the strength of the relationship was determined quantitatively by the correlation coefficient of the variables used in the estimations. This value should lie between -1 to +1. A value of correlation coefficient close to +1 indicates a strong positive linear relationship suggesting that both variables increase in the same direction. A negative value of correlation coefficient close to -1 suggests a strong negative linear relationship. If the computed correlation coefficient value is equal to zero, there is no reason to suspect any relationship between the two variables under consideration. The

benefits of correlation analysis lie in the fact that it provides a basis for regression or estimation to occur. In the absence of any form of correlation between two variables, there will be no *prima facie* basis to estimate or run one over the other econometrically. Table 7.1 is a correlation coefficient matrix involving the following selected variables: Export, foreign direct investment, exchange rate and real gross domestic product.

Table 7.1: Correlation analysis

Variable	RGDP	XPORT	FDI	EX
RGDP	1.000			

XPORT	0.969	1.000		
	[37.472]	-----		
	(0.000)	-----		
FDI	-0.072944	-0.078	1.000	
	[-0.694]	[-0.738]	-----	
	(0.490)	(0.462)	-----	
EX	0.213	0.116	0.218456	1.000
	[2.065]	[1.113]	[2.124]	-----
	(0.042)	(0.269)	(0.036)	-----

[ ] for t-static values while ( ) for probability values as computed by the software package

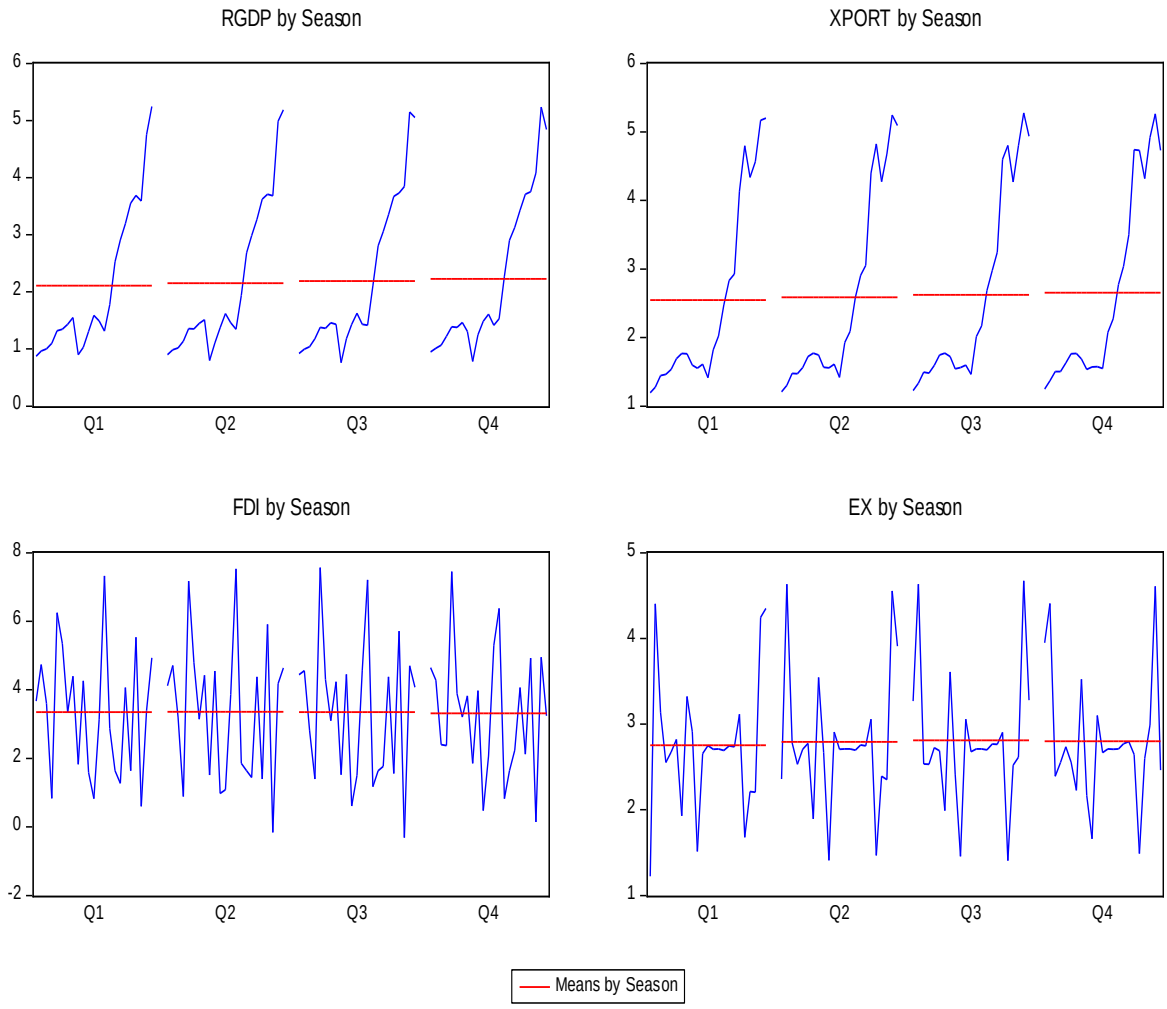
Source: Author's construct.

Table 7.1 depicts the correlation coefficient amongst the following variables: Export (XPORT), foreign direct investment (FDI), exchange rate (EX) and real gross domestic product (RGDP). The Pearson product moment values computed are positive for all the variables with the exception of FDI. This suggests that, there is a positive relationship between RGDP and XPORT, as well as EX while a negative relationship exists between RGDP and FDI. The negative result between RGDP and FDI contradicts economic theory. Prior knowledge suggests that an

increase in FDI should contribute positively to RGDP and not the other way round. Therefore, the negative result should be regarded as an accidental correlation. In particular, a correlation coefficient of 0.97 is observed between RGDP and export. The results further show that the positive relationship is statistically significant at the 5 percent level, while the negative relationship between RGDP and FDI was found to be insignificant. Probably, FDI is not playing a role in explaining the behaviour of economic growth. This result should be taken with caution. These results are reinforced by the t-statistic values, which also suggest a significant linear relationship among the variables under consideration.

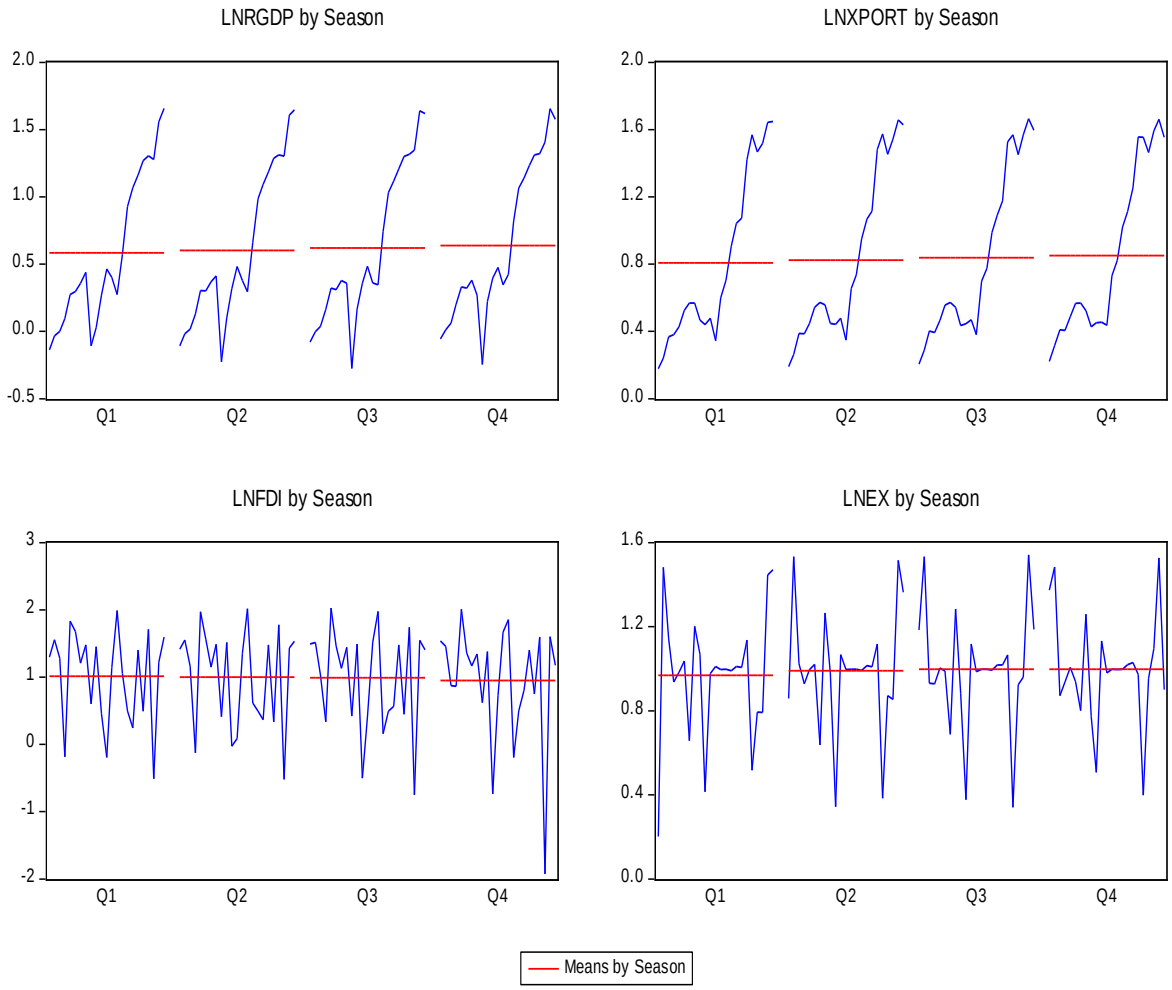
In addition to the correlation analysis, the study went further to examine the means (averages) of the variables using seasonal graphs. This was undertaken to establish the seasonal pattern of the variables under discussion. All the variables were initially lumped together into one graph as displayed in Figure 7.1 below, and afterwards segmented into individual graphs as shown in Figure 7.2 below. Bringing the variables together into one graph enables the researcher to visualise the presence of a deviant among the variables under consideration.

Figure 7.1: Seasonal graph using raw data



Source: Author's construct.

Figure 7.2: Seasonal graph using transformed data

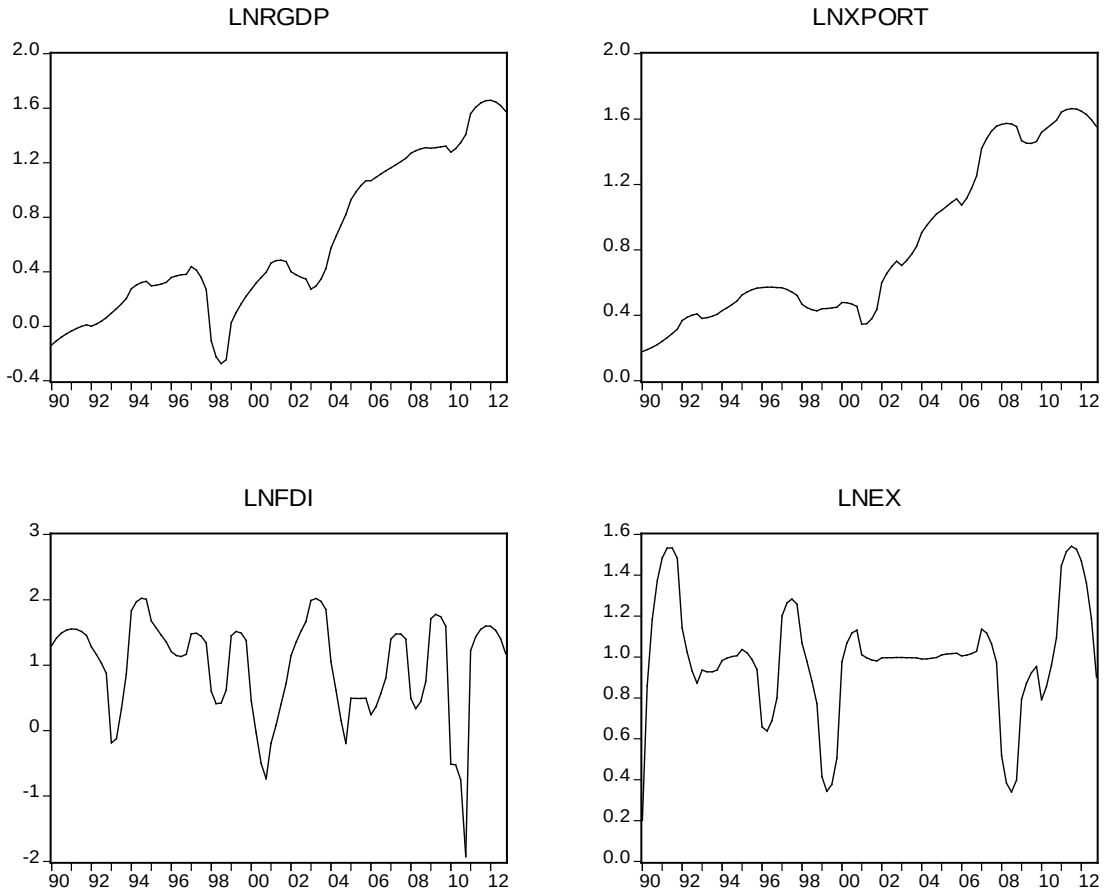


Source: Author's construct.

Figures 7.1 and 7.2 are constructed using both raw data and transformed data sets for purposes of comparison. No fundamental differences were observed between both graphs. In general, the behaviour or pattern of the variables is similar across the four quarters under examination. Further, this is an indication that seasonal factors are not likely to have any significant effect on the issue under consideration. In effect, these visuals are a simple way of detecting seasonal effect.

A graphical diagnostic representations of the variables relied upon in this study are shown in Figure 7.3.

Figure 7.3: Data diagnostic



Source: Author's construct.

As earlier mentioned, Figure 7.3 depicts a graphical diagnostic representation of the behaviour of the economic variables used in this study. In line with the model specifications are log real gross domestic product (RGDP), log export (XPORT), log foreign direct investment (FDI) and log exchange rate (EX). The variables RGDP and XPORT show an upward trend over time while FDI and EX show upward and downward swings at the same time and in most cases oscillatory movements over time. This is a further confirmation that most macroeconomic economic variables, including GDP, FDI, XPORT and EX are influenced by seasonal factors.

7.3 ESTIMATION AND DISCUSSION OF VAR RESULTS

7.3.1 Unit root test

The initial step prior to VAR estimations requires one to test for the statistical properties in respect of the time series data used in the study. This is because when variables exhibit a unit root estimates may either produce nonsensical or spurious results. That is, accidental results. Such results cannot be relied upon in formulating policy issues. In addition, the unit roots test (stationarity test) is a testing strategy used in determining the order of integration of the variables. In this study, the augmented Dickey-Fuller (ADF) test, Phillip-Perron (PP) test and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) tests are used to examine these properties before estimating the econometric model. The use of several unit root tests is informed by econometric literature. For instance, there are disparities in the size and power of these tests i.e. in the presence of structural breaks, the traditional ADF and PP are biased towards non-rejection of a null hypothesis of a unit root.

Table 7.2: Unit root tests: ADF and PP in levels and difference

Variable	Model specification	ADF	PP	ADF	PP	Order of integration
		Levels	Levels	First difference	First difference	
$lnRGDP_t$	Intercept and trend	2.257	-2.024	-3.670**	-5.043**	1
	Intercept	-0.469	-0.456	-3.670**	-5.067**	1
$lnXPORT_t$	Intercept and trend	-2.126	-1.562	-1.834	-4.818**	1
	Intercept	-0.759	-0.386	-1.914	-4.857**	1
$lnFDI_t$	Intercept and trend	-3.029	-5.338**	-5.955**	-7.940**	0
	Intercept	-2.666**	-5.386**	-6.237**	-8.154**	0
$lnEX_t$	Intercept and trend	-3.735**	-4.353**	-4.006**	-6.262**	0
	Intercept	-3.836**	-4.368**	-3.972**	-6.318**	0

Notes: (a)** means the rejection of the null hypothesis at 5 percent

Source: Author's construct.

Table 7.2 presents the results of the unit root tests for the series. The results show that all the variables are stationary in levels with the exception of real GDP and exports. This implies that foreign direct investment and the exchange rate are of order of integration I(0) processes as confirmed by both the ADF and PP tests. Upon establishing that some series are non-stationary in levels, the next step was to difference them once. Taking the first difference resulted in real GDP and exports variables becoming stationary suggesting that they are of I(1) processes. Against this background, the hypothesis of the presence of a unit root was rejected.

As alluded to earlier, in the absence of structural breaks, the traditional ADF and PP tests are biased towards non-rejection of a null hypothesis, when in fact the null hypothesis should have been rejected outright. Further, these tests in many cases cannot differentiate highly persistent stationary processes from non-stationary processes accurately. Hence, the power of ADF and PP unit root tests lessens as deterministic terms are added to the test regressions. In order to address effectively these drawbacks, the KPSS test is also used as a confirmatory test, since the literature recognises that it has higher power than the ADF and PP tests. Besides, the KPSS test is considered more efficient by econometricians in relation to ADF and PP unit root tests.

Table 7.3: Unit root tests: KPSS in levels and difference

Variable	Model specification			
		Levels	First difference	Order of integration
$lnRGDP_t$	Intercept and trend	0.220	0.049**	1
	Intercept	1.110	0.076**	1
$lnXPORT_t$	Intercept and trend	0.234	0.108**	1
	Intercept	1.116	0.123**	1
$lnFDI_t$	Intercept and trend	0.062**	0.017**	0
	Intercept	0.141**	0.039**	0
$lnEX_t$	Intercept and trend	0.083**	0.048**	0
	Intercept	0.083**	0.077**	0

Notes: (a) ** implies rejection of the null hypothesis at 5 percent.

Source: Author's construct.

Table 7.3 shows the results of the KPSS test. The findings confirm the earlier results as obtained from the ADF and the PP tests. Upon establishing the order of integration for the variables, the next step would be to estimate a reduced form VAR model. However, prior to the estimation, one should determine the optimal lag length that shows the convergence of the lag length for the VAR system. The information criteria are the LR test statistic, final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SIC) and Hannan-Quinn information criterion (HQIC). The results show the lag convergence is 6 as displayed in Table 7.4.

Table 7.4: VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-73.79366	NA	9.62e-05	2.102531	2.227075	2.152213
1	248.2470	600.5622	2.46e-08	-6.168837	-5.546117	-5.920426
2	305.7805	101.0723	8.05e-09	-7.291364	-6.170467*	-6.844224
3	316.7870	18.14589	9.30e-09	-7.156405	-5.537332	-6.510537
4	321.0129	6.510162	1.30e-08	-6.838186	-4.720937	-5.993589
5	381.3491	86.42754	4.05e-09	-8.036462	-5.421036	-6.993136
6	**409.5144**	**37.30006***	**3.06e-09***	**-8.365255***	**-5.251653**	**-7.123201***
7	414.0789	5.551380	4.45e-09	-8.056186	-4.444409	-6.615404
8	421.9338	8.704070	6.08e-09	-7.836048	-3.726094	-6.196537

* indicates lag order selected by the criterion

Source: Author's compilation.

At the chosen lag length, the VAR system should satisfy the stability condition. This happens when all the inverse roots of the characteristic AR polynomial have a modulus of less than one and lie inside the unit circle. The results indicate that the estimated VAR is stable or satisfies the stability condition as shown in Table 7.5.

Table 7.5: Roots of characteristic polynomial

Root	Modulus
0.985410	0.985410
0.790409 - 0.281187i	0.838936
0.790409 + 0.281187i	0.838936
0.641891 - 0.342990i	0.727782
0.641891 + 0.342990i	0.727782
0.596453	0.596453
0.481193 - 0.277322i	0.555387
0.481193 + 0.277322i	0.555387

No root lies outside the unit circle.

VAR satisfies the stability condition.

Source: Author's construct.

7.3.2 Cointegration test

The driving objective of estimating a system of equations of a dynamic structure is to capture the reinforcement mechanism between the variables of interest either in the short-run or in the long-run. It is essential to establish whether the variables have some long-term relationship. That is, the existence of a long-run equilibrium to which an economic system converges over time. The approach used to test for co-integration in this regard is the Johansen cointegration test. The null hypothesis is that r=0 against the general alternative hypothesis r = 1, or r = 2, 3, 4. In this regard a λ-trace statistic is employed, since the null hypothesis is r=0 and there are four variables. That is, n=4. The trace-statistics have a very general alternative hypothesis. A more specific hypothesis is tested and in this regard a λ-maximal test is applied and the null hypothesis is that r=0 against the specific alternative hypotheses r=1. Note that r=0 implies the presence of a cointegrating equation.

Table 7.6: Johansen cointegration test

Maximum Eigen test				Trace test			
H_0: rank = r	**H_a: rank = r**	**Statistic**	**95% Critical value**	**H_0: rank = r**	**H_a: rank = r**	**Statistic**	**95% Critical value**
r = 0	r =1	31.232	27.584	r = 0	r >=1	79.816	47.856
r <=1	r = 2	19.576	21.132	r <= 1	r >= 2	25.584	29.797
r <=2	r = 3	10.271	14.265	r <= 2	r >= 3	10.008	15.495
r <=3	r = 4	0.737	3.841	r <= 3	r >= 4	0.737	3.841

Note: Both Maximum Eigen and Trace tests indicate one co-integrating equation at the 5% level.

Source: Author's construct.

Table 7.6 show the results for the Johansen cointegration test based on a VAR system of four variables. The null hypothesis is that there is no co-integration among the variables. Both the trace and maximum eigen value tests show that there is cointegration among the variables. This is because the calculated t-statistics are consistently greater than the critical value at 5 per cent significance level. In this regard, the null hypothesis of no cointegration is rejected and there are cointegrating vectors between these variables. This provides a *prima facie* justification for the estimation of a vector error correction model. The long-run relationship equation is obtained and the coefficients are normalised as to express one endogenous variable as a function of the rest. The result of the normalised cointegrating equation is as follow:

$$\Delta \ln RGDP = 1.011 + 0.163\Delta \ln XPORT + 0.167\Delta \ln FDI + 0.840\Delta \ln EX \qquad (7.1)$$

From the results above the null hypothesis of no long run relationship between dependents and independent variables is rejected. In fact, there is a positive relationship between economic growth, exports, foreign direct investment and the exchange rate. In particular, a 10 percent increase in export results in a 1.63 percent jump in economic growth, while a 10 percent increase in foreign direct investment leads to a 1.67 rise in economic growth. Similarly, a 10 percent

change in the exchange rate will result in a rise in economic growth to the tune of 8.4 percent.

The study widely acknowledges the weakness that is often associated with most econometric procedures when it comes to the issue of controlling the overall probability of rejecting an econometric model, when in fact the model should have been accepted to be robust from the technical point of view. This study adopts various diagnostic tests for coefficients, residual and stability diagnostic. In this regard, the study tested for serial correlation, normality and significance of the coefficients in the dynamic model. The null and alternative hypotheses in this regard are:

HYPOTHESIS 1

Ho: The model is not serially correlated

H1: The model is serially correlated

HYPOTHESIS 2

Ho: The model is normally distributed

H1: The model is not normally distributed

HYPOTHESIS 3

Ho: The model is homoscedastic

H1: The model is heteroscedastic

DECISION

The decision rests upon comparing the computed probability values with the level of significance of 5% or 0.05 in probability terms. If the computed probability value is greater than 0.05, accept Ho and reject H1. Consistently, all the computed probability values are greater than 0.05, and therefore we accept the three null hypotheses and then reject all the three alternative hypotheses as a matter of econometric/technical necessity.

In specific terms, the results show no serial correlation, no conditional heteroscedasticity and the model was also found to be normally distributed. This is a very important procedure to ensure that the model has passed the statistical test and that it is robust, at least from a technical point of view. These results are displayed in Table 7.7.

Table 7.7: Diagnostic checks

Test	Null hypothesis	t-statistic	probability
Langrange multiplier (LM)	No serial correlation	33.823	0.411
Jarque-Bera (JB)	There is normality	11.290	0.504
White (chi-square)	No conditional heteroscedasticity	40.591	0.179

Source: Author's construct.

The standard practice in reporting VAR analysis should include Granger causality tests, impulse response function (IRF) and forecast error variance decompositions (FEVD). This study adopts a similar sequence in reporting the results. These results were obtained through the application of EViews software programme.

7.3.3 Granger causality test

Since the estimations concern foreign trade-economic growth nexus, and are carried out within a dynamic structure, it is of utmost importance to establish whether these variables can predict one another using the Granger causality test. In particular, the Granger causality statistics are examined to determine whether lagged values of one variable help to predict another variable. Table 7.8 summarises the results of the Granger-causality tests for the four-variable VAR. Note that the p-values associated with the F-statistics helps to determine whether the relevant sets of coefficients equals to zero. The results show that exports, indeed, assist in predicting output. This suggests Granger causality running from exports to economic growth.

Table 7.8: Granger-causality test

	Dependent variable in regression			
Regressor	**RGDP**	**XPORT**	**FDI**	**EX**
RGDP	0.00	0.379	0.296	0.839
XPORT	0.004**	0.00	0.550	0.834
FDI	0.250	0.755	0.00	0.974
EX	0.353	0.985	0.847	0.00

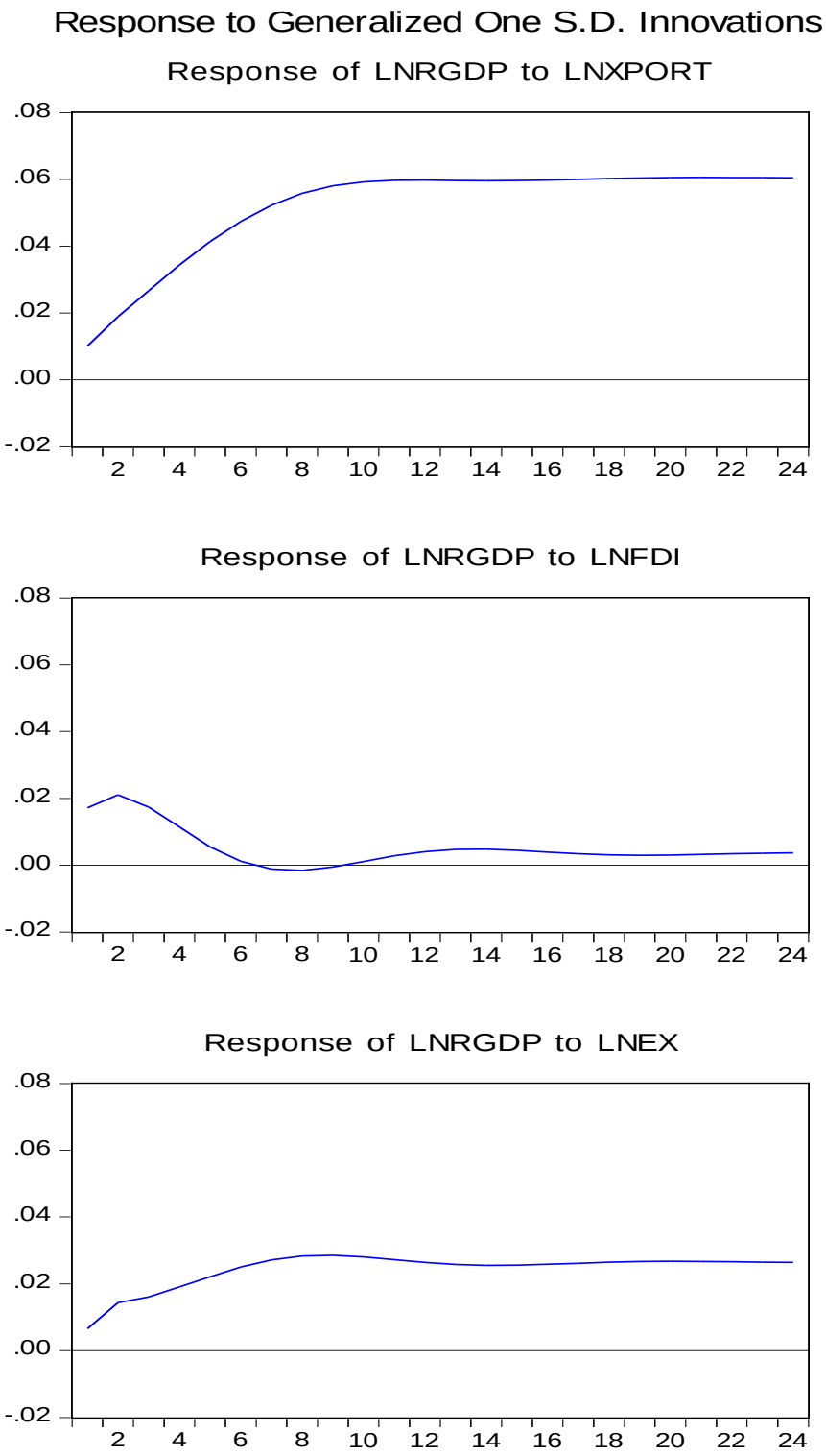
Notes: (a) ** means the rejection of the null hypothesis at 5 percent.

Source: Author's construct.

7.3.4 Impulse response function

The purpose of the impulse responses was to determine the quantitative responsiveness of both current and future values of each of the variables as a result of a one-unit increase in the current value of one of the VAR errors, assuming that this error returns to zero in subsequent periods, and also that all other errors are equal to zero. In other words, the generalised impulse response function (GIRF) relates to how economic growth reacts to exports, foreign direct investment and exchange rate over a given time period. The results of GIRF estimations are reported in Figure 7.4.

Figure 7.4: Impulse response functions for economic growth



Source: Author's construct.

The interpretation of the generalised impulse response functions provide evidence of what happens to the one variable if you cause a short-run shock to

the other. The X-axis shows the percentage change of how much the variable respond while Y-axis shows the time horizon. The generalised impulse response of economic growth to structural innovations in exports shows that economic growth keeps increasing until 9 quarters. Afterwards it stabilises, but it does not return to the initial steady state, instead it finds a new equilibrium level. This suggests that the effect of export on economic growth is permanent in nature. The results conform to economic theory, which postulates a positive relationship between these two variables. That is, an increase in exports will lead to a rise in economic growth.

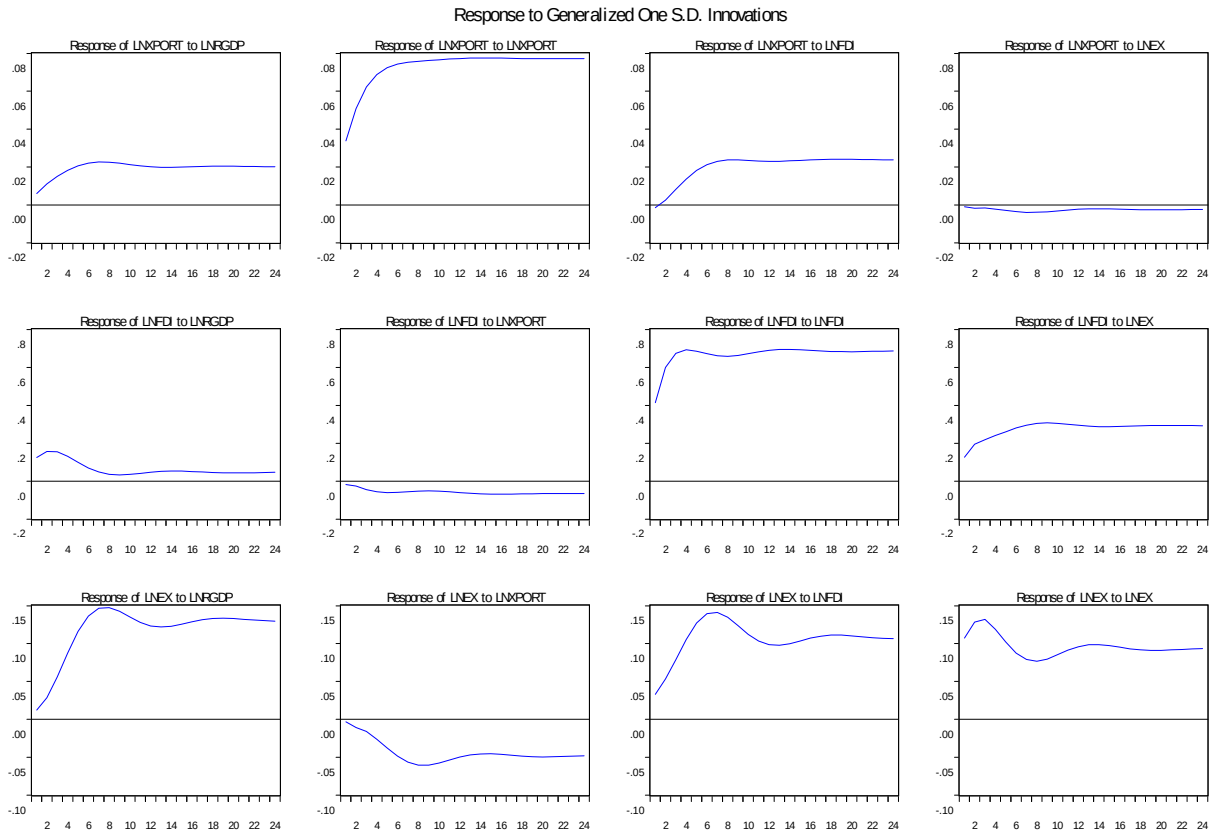
With regard to foreign direct investment, the GIRF of economic growth to structural innovations in foreign direct investment shows that economic growth declines for about 6 quarters, but remains on the positive grid, though the decline is not significant. It then goes back to the steady state until 10 quarters and finds a new equilibrium, thereafter, but not far from the steady state. This also implies a permanent effect of FDI shocks on economic growth. In line with economic theory, the results show a positive relationship between FDI and economic growth in the Namibian context. Hence, a rise in FDI translates into economic growth.

The GIRF of economic growth to structural innovations in exchange rate resulted in economic growth increasing for about 7 quarters, and then find a new level of equilibrium thereafter. The new level of equilibrium suggests a permanent effect of exchange rate on economic growth. The results show a positive relationship between exchange rate and economic growth in the Namibian context.

At this juncture, it is instructive to invoke the technique of comparing the impulse responses of other variables to shocks in respect of a target variable. In this case economic growth is the target variable. In other words, how exports, foreign direct investment and exchange rate endogenously respond to shocks in economic growth. Caution must be exercised when interpreting these results, since the results do not necessarily imply that the shocked variables respond directly to economic growth as individuals. Indeed, the shocked variables' responses arising from economic growth are simultaneous in nature, and must be viewed in that light. The endogenous changes in exports, foreign direct investment and

exchange rate as a result of structural innovations in economic growth are reported in Figure 7.5.

Figure 7.5: Impulse responses of exports, FDI and exchange rate



Source: Author's construct.

The generalised impulse response of exports to structural innovation in economic growth shows that exports kept rising until 8 quarters, stabilises and find a new level of equilibrium. This suggests a permanent shock effect of economic growth, but a positive relationship as exhibited in Figure 7.5. This also confirms that export endogenously respond to economic growth shocks. Similarly, foreign direct investment also responded positively though declined until 6 quarters, but on the positive grid, and afterwards finds a new equilibrium level. This also confirms that foreign direct investment responds endogenously to shocks in economic growth. Similarly, exchange rate endogenously responds to shocks in economic growth. In addition, exchange rate responds positively to shocks in economic growth by rising until 8 quarters. Thereafter, a new equilibrium level was found after 10

quarters. The new level of equilibrium suggests a permanent effect. Without losing generality, one can conclude safely and confidently that exports, foreign direct investment and exchange rates respond endogenously to structural innovations in economic growth.

7.3.5 Forecast error variance decomposition

The variance decomposition (forecast error decomposition) is the percentage of the variance of the error made in forecasting a variable due to a specific shock at specific time horizon. The variance decomposition provides information about the relative importance of each random innovation. That is, to assess the pass-through of external shocks to each of the economic variables used in the study. The results are as presented in Table 7.9.

Table 7.9: Forecast error variance decomposition

Variance decomposition of RGDP				
Quarter	**RGDP**	**XPORT**	**FDI**	**EX**
1	100	0	0	0
4	96.291	0.909	1.901	0.899
8	88.388	3.823	5.070	2.719
12	85.885	5.534	5.461	3.120
16	85.443	6.144	5.392	3.021
20	84.961	6.552	5.428	3.049
24	84.674	6.821	5.443	3.063

Source: Author's construct.

Table 7.9 presents forecast error variance decompositions for each variable in the model over a 24-quarter forecast horizon. It should be noted that the forecast horizon is not done over the total quarters over the period in total. However, it should be extended to the period that would give an indication of the fluctuations in the variable caused by itself or by the other variables. This could also imply that a researcher is at liberty to determine the extent of the forecast horizon. The results show that consistently, economic growth itself accounted for most of the

changes that occurred with respect to economic growth for the entire period under consideration. Indeed, the results show that in the first quarter the fluctuations in economic growth are 100 percent purely driven or explained by economic growth itself. Amongst the three explanatory variables used in the model, exports and foreign direct investment contributed more towards innovations in economic growth during the forecast period. More specifically, the Table 7.9 shows that the changes in economic growth were dominated over the forecast horizon with exports and foreign direct investment contributing almost an equal share of over 5 per cent after 12 quarters. Afterwards, exports relatively exceeded those of foreign direct investment. It is also important to mention that, the exchange rate variable made the weakest contribution towards explaining economic growth consistently for the forecast period of 24 quarters. Finally, the findings obtained from the study are also similar to those of Arodoye and Iyoha (2014), Kehinde *et al*., (2012), Mag (2010) and Yang (2008).

7.4 ESTIMATION AND DISCUSSION OF ARDL RESULTS

The VAR approach discussed in the previous section has some inherent weaknesses, which makes the use of a more robust technique inevitable, in order, to correct these weaknesses. For instance, the issue of whether to estimate a VAR in levels of first difference is not clear-cut. The problem extends further to the co-integration test, which requires that all of the series should be integrated of the same order.

The standard practise prior to any estimation that involves cointegration analysis requires determination of order of integration. This is done already in Section 7.3. Hence, there is no need to repeat this exercise. The ARDL technique does not require a pretesting of variables to determine the order of integration. However, it is an essential exercise due to the fact this model can only be applied to variables whose order of integration is either I(0) and/or I(1). It cannot be applied to variables whose order of integration is I(2). The ADF, PP and KPSS unit root test has been applied in this regard. The results obtained are reported in the previous section in Tables 7.2 and 7.3 respectively. Based on all these test statistics, the results reveals that of the four variables two have unit root I(0) and others I(1). The mixture of both I(0) and I(1) variables would be questionable under the

Johansen procedure. This provides a good justification for using the bounds test approach or ARDL model.

The next step would be to estimate and determine long-run relationship using an ARDL approach. First, a lag order is selected and the Schwarz-Bayes criterion (SBC) is generally used in this regard, since it is a consistent model-selector. However, caution should be exercised in order to prevent the possibility of over-selecting the maximum lags. The determination of the lag order is dictated by the fact that the computation of F-statistics for co-integration is very sensitive to lag length. The lag length that minimises SBC is 2. The results are presented in Table 7.10.

Table 7.10: ARDL Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	110.6322	NA	0.004503	-2.565805	-2.327603	-2.470303
1	128.5903	31.87562	0.002948	-2.989758	-2.721780	-2.882318
2	**131.3048**	**4.750300***	**0.002825***	**-3.032619***	**-2.734866***	**-2.913241***
3	131.6422	0.582064	0.002874	-3.016055	-2.688526	-2.884739
4	134.3618	4.623386	0.002754	-3.059046	-2.701742	-2.915792
5	139.7216	8.977630	0.002471	-3.168040	-2.780961	-3.012849
6	140.2412	0.857350	0.002503	-3.156030	-2.739176	-2.988901
7	140.2416	0.000570	0.002569	-3.131039	-2.684409	-2.951972
8	141.9870	2.792620	0.002524	-3.149674	-2.673269	-2.958669

* indicates lag order selected by the criterion

Source: Author's construct

The results in the table show that the optimal lag length criteria for the model should be two. That is, the maximum lag length for this model should not be more than two as it may distort the results of the estimated model.

Further, the literature recommends that models that are auto-regressive in nature should be tested to determine if they are dynamically stable or meet the stability

condition as a matter of technical necessity. Besides, this test is to ensure that all of the inverse roots of characteristic equation associated with a particular model are strictly within the unit circle. Subsequently, one can perform a bound test through the application of an F-test. The results regarding the stability condition are presented in Table 7.11.

Table 7.11: Roots of characteristic polynomial

Root	Modulus
0.771241	0.771241
-0.301842	0.301842

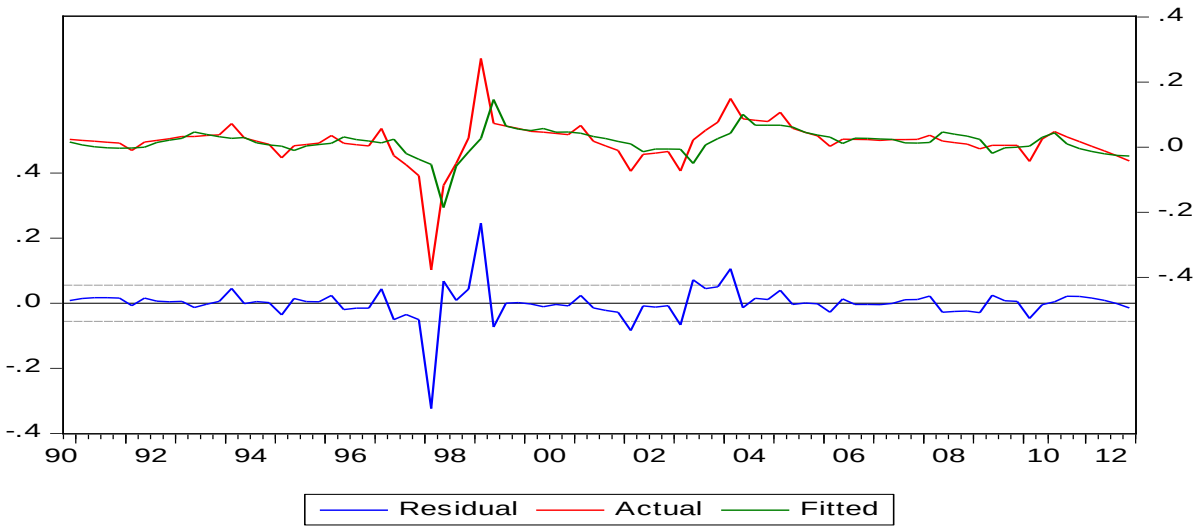
No root lies outside the unit circle.

VAR satisfies the stability condition

Source: Author's construct

In addition to the stability test of the dynamic model, it is also advisable to examine the fit of the unrestricted error correction model. This is done by visualising the "actual/fitted/residuals. The results are displayed in Figure 7.6.

Figure 7.6: Fitness of the unrestricted error correction model



Source: Author's construct

Upon establishing that the model estimated is stable, a bound test is applied by performing an F-test in respect of the null and alternative hypotheses as follows:

$H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ (no long-run relationship)

Against the alternative hypothesis

$H_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$ (a long-run relationship exists)

The calculated *F*-statistic of 4.98 is greater than the upper bound critical value of 4.85 at a 5 percent level of significance, using an unrestricted intercept and no trend specification. This suggests that the null hypothesis of no cointegration is rejected at 5 percent and that, indeed, there is a co-integrating relationship among the variables.

The estimation of unrestricted error correction models (UECM) was done using the ARDL model. The model was evaluated in terms of the goodness-of-fit. Furthermore, various diagnostic tests were applied. The tests include the Breusch-Godfrey serial correlation LM test, the ARCH test, the Jacque-Bera normality test and the Ramsey RESET specification test. All the tests revealed that the model has met the desired econometric properties, in the sense that, it has a correct functional form and the model's residuals are serially uncorrelated, normally distributed and homoscedastic. Hence, the results reported are valid and reliable from a technical point of view.

Based on the estimation of unrestricted error correction models (UECM), the long-run elasticities represent the coefficient of one lagged explanatory variable, which is in turn multiplied by a negative sign, and subsequently divided, by the coefficient of one lagged dependent variable. The estimated coefficients of the long-run relationship among the variables RGDP, XPORT, FDI and EX can be represented as follow:

$$D(\ln RGDP_t) = 0.023 + 1.063 \ln XPORT_t + 0.125 \ln FDI_t + 0.278 \ln EX_t \qquad (7.2)$$

Equation (7.2) indicates that exports, foreign direct investment and exchange rate positively affect economic growth. This suggest that trade does positively affect economic growth in the context of Namibia. Further, the results demonstrate that, there is a long-run relationship between foreign trade and economic growth in

Namibia. The results of the error correction model are presented in Table 7.12 below.

Table 7.12: Error correction model for ARDL

Variable	Coefficient	Std. error	t-statistic	Prob.
C	0.027208	0.033193	0.819688	0.4151
D(LNRGDP(-1))	0.624666	0.432593	1.444003	0.1530
D(LNRGDP(-2))	0.129300	0.312000	0.414423	0.6798
D(LNXPORT(-1))	0.197932	0.093187	2.124030	0.0301
D(LNXPORT(-2))	0.062114	0.173153	0.358721	0.7082
D(LNFDI(-1))	0.266520	0.057522	4.657812	0.0109
D(LNFDI(-2))	0.121750	0.014414	8.446649	0.0436
D(LNEX(-1))	0.144115	0.024128	5.972936	0.0221
D(LNEX(-2))	0.080623	0.047508	0.644590	0.0412
RESID01(-1)	-0.162452	0.072297	-2.247008	0.0170
R-squared	0.462711	Akaike info criterion		16.96446
Adjusted R-squared	0.389110	Schwarz criterion		11.64614
Sum squared resid	0.015718	Durbin-Watson stat		2.011017
F-statistic	6.286735	Prob(F-statistic)		0.000001

Diagnostic Checking: JB = 0.372 [0.734]; LM = 1.184 [0.517]; White Heteroskedasticity = 0.504 [0.871]; Ramsey RESET = 1.609 [0.557]

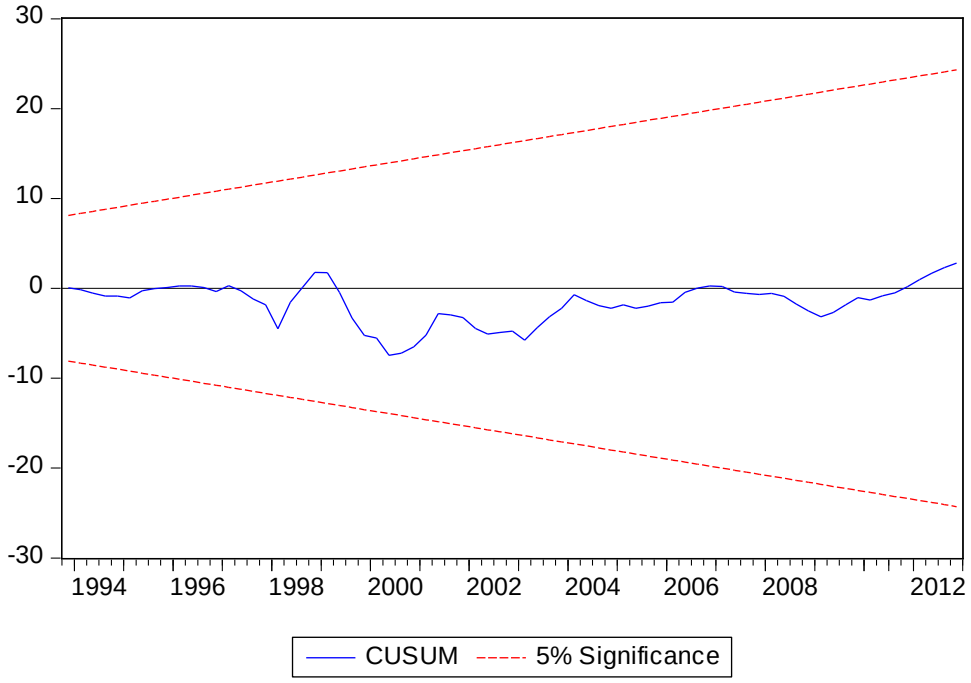
Source: Author's construct

Table 7.12 show the results of the short-run dynamic model, in particular the coefficients estimated of the lagged differenced variables. In fact, the error correction model shows the changes in the variables in the short-run while adjusting to their long-run equilibrium. In this model, all the regressors, namely exports, foreign direct investment and the exchange rate have a positive relationship with economic growth. They are also statistically significant, meaning that they play a major role in explaining changes in economic growth. Furthermore, the model exhibits a negative and significant coefficient in respect of

the error correction term, suggesting cointegration relationships among the variables. The absolute value of the coefficient of the error correction term indicates that about 16 percent of the disequilibrium in economic growth is offset by short-run adjustment in each quarter. Furthermore, the various diagnostics test were performed in order to test for serial autocorrelation, normality, heteroscedasticity and omitted variables, including functional forms. The model passed all the tests. The Lagrange Multiplier (LM) test of autocorrelation indicates that the residuals are not correlated serially. The Jarque-Bera (JB) test indicates that the null hypothesis of normally distributed residuals could not be rejected. The White heteroscedasticity test suggests that the disturbance term in the equation is homoscedastic. The Ramsey RESET test result shows that the calculated value is less than the critical value at the 5 percent level of significance, suggesting that there is no specification error.

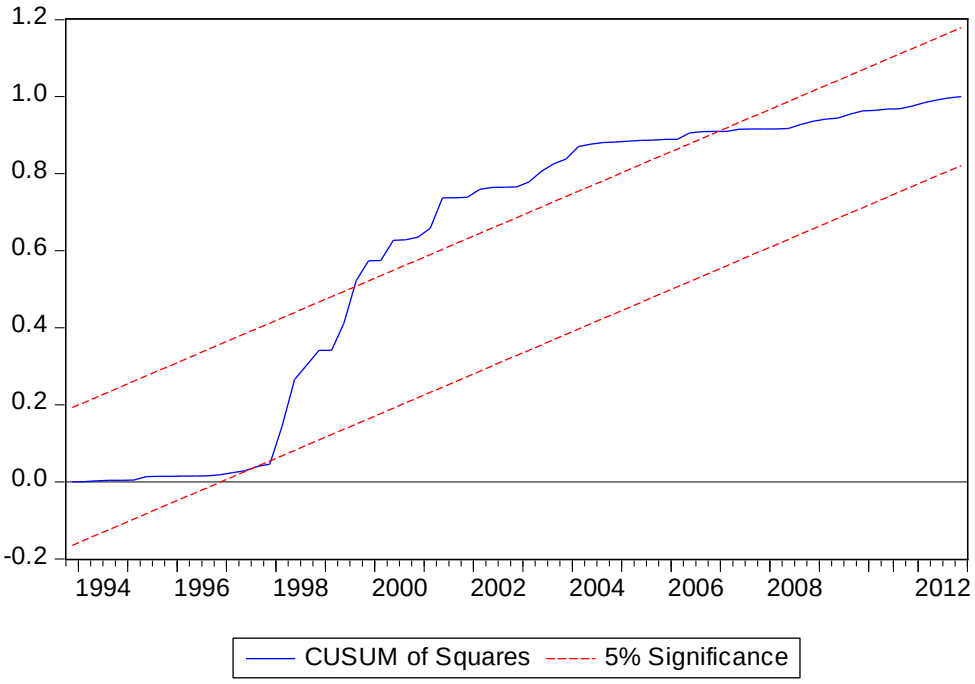
The study went further to test for the existence of stability of this model. This is important to test for structural changes, as there might be structural changes in the relationship between the regressand and regressors. The cumulative sum of recursive residuals (CUSUM) and cumulative sum of squared recursive residuals (CUSUMSQ) tests or procedures are useful ways of detecting systematic changes in the regression coefficients. Furthermore, these tests assist in establishing whether the coefficients of the error correction model (ECM) are stable over the sample period. There is a possibility of problems of instability that could arise from inadequate modelling of the short-run dynamics and thus, portraying departures from the long-run relationship. The CUSUM test is based on the cumulative sum of recursive residuals, as well as the first set of n observations. It is updated recursively, and is plotted against the break points. If the plot of CUSUM statistic stays within 5 percent significance level, then estimated coefficients are said to be stable. Similarly, the CUSUMSQ follow the same procedure. It is based, however, on the squared recursive residuals as the name of this procedure suggests. The results obtained using both procedures are displayed below in Figures 7.7 and 7.8 in that order.

Figure 7.7: Cumulative sum of recursive residuals



Source: Author's construct

Figure 7.8: Cumulative sum of squared recursive residuals



Source: Author's construct

The plots of the CUSUM statistic show that the model is stable and that there might not have been major structural changes that could warrant instability. However, the plots of CUSUMSQ statistics marginally cross the critical value lines, which do not threaten the stability of the model as it went back within the range of critical values. Hence, one can confidently infer that the economic growth model under examination is stable. Finally, the findings obtained through the ARDL technique are similar to those of Mahadevan (2007), Halicioglu (2007) and Arodoye and Iyoha (2014).

7.5 RESEARCH FINDINGS

In order to report on the research findings of this study, it would be useful to first summarise the various procedures that the thesis used which in turn led to these findings. First, the study constructed a correlation coefficient matrix involving the economic variables used in the investigation. The benefits of correlation analysis lie in the fact that it provides a basis for regression or estimation to occur. In the absence of any form of correlation between two variables, there will be no prima facie justification to estimate or run one over the other econometrically. As a way of complementing the correlation coefficient matrix, the study also made use of seasonal graphs to assess the means (averages) of the economic variables under consideration by separately engaging raw and transformed data sets. This is in order to establish the seasonal pattern of the economic variables under consideration. Besides, the study carried out a data diagnostic test in order to report on the behaviour of the economic variables used in this study.

Secondly, the economic variables used in the study undertook VAR procedure that involves the following processes: Unit root test in levels and difference, cointegration test, VECM, diagnostic checks for serial correlation, heteroscedasticity and normality, causality test, IRF and FEVD analysis. Thirdly, the study employed ARDL technique due to its superiority over VAR from a technical standpoint. In consideration of the ARDL approach, the economic variables used in the study underwent the following tests and analyses: Unit root test, cointegration test, UECM, CUSUM and CUSUMSQ.

The thesis reports on the main empirical findings arising from these tests and analyses in the following way: First, the study found positive relationships

amongst the four variables used in the study. This positive relationship suggests that the economy of Namibia can potentially be expanded by means of foreign trade. The result is also in line with economic theory. Secondly, the study found that economic growth responds stronger to changes in exports and foreign direct investment compared to changes in exchange rates. Thirdly, cointegrating relationships were found amongst the variables used in the study. This suggests a long-run relationship amongst these variables. The study also found that exports, indeed, granger causes economic growth.

Fourthly, the study found that economic growth endogenously responds to shocks in exports, foreign direct investment and exchange rates in a positive manner. Indeed, this positive response further re-enforces the notion that the economy of Namibia potentially can be expanded by means of foreign trade. The result also confirms to theoretical knowledge. Fifthly, economic growth itself accounted for most of the changes that occurred during the period under consideration. Sixthly, amongst the three explanatory variables used in the model, exports and foreign direct investment contributed more towards innovations in economic growth during the forecast period. Seventhly, it is particularly important to note that the exchange rate variable made the weakest contribution towards explaining economic growth for the forecast period of 24 quarters.

Lastly, the results obtained from this study reinforces the outcome of the research works of Arodoye and Iyoha (2014), Kehinde *et al*., (2012), Mag (2010), Yang (2008), as well as the research work of Mahadevan (2007) and that of Halicioglu (2007), which found trade and foreign direct investment to be major propellers of economic growth in modern economies. Indeed, the primary, theoretical and empirical objectives of the study were all achieved through the estimation of the various econometric models used in the study, as well as the other discussions concerning Namibia's macroeconomic parameters, trade theories, trade policies and agreements in respect of Namibia and the relevant theoretical and empirical literatures that the thesis reviewed.

7.6 SUMMARY AND CONCLUSION

This chapter discussed the empirical estimations and findings of the study. In this context, VAR and ARDL were employed to estimate the econometric model used

in the study. In specific terms, the following econometric procedures were utilised: VAR, VECM, cointegration tests, Granger causality tests (GC), generalised impulse response function (GIRF) and generalised forecast error variance decomposition (GFEVD), as well as the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squared recursive residuals (CUSUMSQ) procedures. The results obtained from employing these procedures enabled the researcher to make logical conclusions and inferences. In addition, the analysis in chapter 7 helped in responding effectively to the various research questions and objectives that are presented in Chapter 1 of thesis. The last chapter summarises the thesis, provides conclusion and makes appropriate policy recommendations for Namibia concerning the promotion of foreign trade and economic growth.

CHAPTER 8
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

8.1 INTRODUCTION

Chapter 7 discussed and subsequently reported the empirical estimations and findings of the study by employing VAR and ARDL techniques. This chapter is the final chapter of the thesis. It captures the salient elements making-up the thesis. The thesis investigated the relationship between foreign trade and economic growth in Namibia. In particular, the thesis examined how export, foreign direct investment and exchange rate affect economic growth. In so doing, the study employed two modern econometric time series techniques, namely VAR and ARDL. The rest of chapter 8 is structured as follows: Section 8.2 summarises the eight chapters of the thesis; Section 8.3 focuses on the policy implications arising from the study; while in section 8.4 trade policy guidelines/framework pertaining to Namibia is presented. The contribution of the study to the existing literature is presented in Section 8.5, while Section 8.6 discusses the realisation of objectives of study. Section 8.7 discusses the challenges faced by the study; Section 8.8 indicates areas for further research concerning the issue that this study investigated, while Section 8.9 presents the final remarks concerning the study.

8.2 SUMMARY OF THE THESIS

This thesis is divided into eight (8) chapters. In Chapter 1, the introductory issues leading to the study are presented. In this regard, the chapter presented and subsequently elaborated upon the general introductory issues leading to the thesis. Issues such as the background of the study, problem statement, research questions, importance of the study, ethical issues and objectives of the thesis, as well as the justification of the study were presented and elaborated upon. In addition, the chapter discussed the striking economic characteristics of Namibia. Indeed, this chapter symbolises the foundation of the thesis.

Chapter 2 considered selected macroeconomic variables in Namibia, bearing in mind the driving objective of this study, specifically GDP, inflation, foreign direct investment, exchange rates, imports, as well as exports were reviewed. The discussion was carried out with the assistance of tables, figures and graphs. The

primary objective was to share the general view and show the trends in respect of these variables over the period covered by the study.

Chapter 3 discussed Namibia's trade policy instruments and agreements. First, the discussion distinguished between trade policies and trade agreements. This was followed with a discussion concerning the arguments for interventionist trade policies, as well as Namibia's bilateral and multilateral trade agreements with the use of relevant tables. Finally, the chapter identified and subsequently elaborated upon Namibia's trade policy instruments.

Chapter 4 identified, and subsequently elaborated upon important trade theories in a selective fashion, beginning with the mercantilists' views on trade through the classicalist period up-to the modern time. Specific trade models considered are those of Adam Smith, David Ricardo, Vernon, Linder, Posner and Porter among others. An attempt was also made to evaluate the robustness of the various trade models that were discussed, as well as the lessons arising from these trade models. This provides a logical basis for the thesis to review related empirical studies.

Chapter 5 reviewed the empirical literature of the study. The various discussions presented in this chapter followed a chronological order. In addition, it was observed that, the early contributors to this literature relied heavily on the use of OLS technique, while recent studies concerning the issue under investigation employed cointegration techniques and procedures in various ways in carrying out their research works. This thesis made use of the latter technique due to its robustness. Regarding the connection between trade and economic growth, three different opinions emerged from the literature that was reviewed. First, a number of past studies did in fact support the existence of a positive relationship between trade and economic growth, while the second set of empirical literature maintained a contrary view. The third set of literature contested the existence of any connection between these variables. It was widely acknowledged in the literature that under certain circumstances, an increase in trade, especially foreign trade will boost economic growth.

Chapter 6 discusses the methodological framework employed in investigating the empirical relationship between foreign trade and economic growth in Namibia. In

this regard, two methodological frameworks have been reviewed, namely VAR and the ARDL methods. In particular, the discussion on the frameworks touches on the various steps to be followed in respect of estimations and analyses. Finally, the chapter presents the data sets, data sources and data measurements. This is to inform the reader on the variables used to capture the data employed in the estimation and analysis.

Chapter 7 presents the empirical estimations and analysis. In this regard, VAR and ARDL were employed to estimate the econometric model used in the study. Further, in presenting the empirical findings the study adopts the following sequence: VAR, VECM, cointegration tests, granger causality tests (GC), generalised impulse response function (GIRF) and generalised forecast error variance decomposition (GFEVD), as well as the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squared recursive residuals (CUSUMSQ) procedures. The results obtained from employing these procedures enabled the researcher to make logical conclusions and inferences. In addition, the analysis in Chapter 7 assisted in responding effectively to the various research questions and objectives that are presented in Chapter 1 of the thesis.

Chapter 8 provides a summary and policy implications arising from the study. More specifically, it presents an executive summary of the eight chapters of the thesis in a condensed and logical manner. Besides, it points out the policy implications of the study. Further, the chapter presents the limitations of the study, and afterwards creates opportunities for further research concerning the issue under consideration. The important contributions of the study to the literature relating to foreign trade and economic growth connection are also highlighted in this chapter.

8.3 OVERALL POLICY IMPLICATIONS

A number of policy implications emerged from the analysis. These include and are not restricted to the following:

8.3.1 Trade and export promotion policies

Modern econometric time-series techniques (VAR and ARDL) are used to determine the impact of trade on economic growth in Namibia. The result

indicates a strong need for Namibia to participate continuously and aggressively in international trade in order to maximise its benefits from this process, especially the promotion of economic growth. The econometric results also show that exports contribute more to economic growth vis-à-vis the other explanatory variables that were used in the study.

The results suggest that policy should focus on the improvement of export promotion activities. In this regard, improvement of technical skills needed to drive Namibia's industrialisation process, especially manufacturing is a necessity. Currently, Namibia relies heavily on the importation of foreign skills in driving almost all its important industries. There is the need for a policy that would encourage the development of local capacity in its export-oriented industries. Government policy should also be directed at reducing the costs of locally produced goods. Currently, manufacturing activities in Namibia are very low mainly due to the high cost environment, long gestational period in terms of profit expectations, huge and early profit in merchandising compared to actual manufacturing, and high cost and risk associated with manufacturing. Given this scenario, the policy direction will be for the government to design and implement a support programme that should help to reduce the fears of potential manufacturers. In this connection, the government of Namibia should assist in absorbing part of the cost of training and infrastructural development in order to encourage manufacturing for exports. In addition, government policies that would lead to a greater penetration of existing regional markets, such as SADC, ECOWAS, EAC and COMESA just to mention a few should be designed and implemented as a matter of urgency. Such government policies should include and not be restricted to the following: information-base, logistical support, training, marketing and international promotion. This support is needed for the attainment of a competitive edge that is necessary for promoting and sustaining its comparative advantage.

8.3.2 Import policies

The need for an appropriate tariff policy as a way of promoting increased competition cannot be emphasised enough. In this regard, the government of Namibia would need to continue with its tariff rationalisation process along the

lines of SACUs recommendation for apparent reasons. In addition, there is the need to simplify tariffs further by way of reducing tariff categories and exploring greater uniformities. In the end, this will help in promoting greater administrative efficiency and widening the gains that arise from trade by encouraging manufactured exports.

8.3.3 Export processing zones (EPZ) policy

The whole of Namibia is an EPZ. Since the EPZ Act was passed in Namibia in 1995, the process has been met continuously with a number of challenges. Overall, policy reversal of this scheme is not recommended by this thesis, since EPZ is one of the most effective ways of promoting industrialisation activities, especially manufacturing in modern economies. In consideration of this fact, it is important for the government of Namibia to address the current bottlenecks undermining its EPZ as a matter of urgency. In Namibia, such bottlenecks cut across capacity building, misinterpretations concerning the various clauses relating to the Act establishing the Namibia EPZ, especially on the part of customs officials, infrastructural issues, especially, transport and communications, labour abuses and unwarranted delays in the processing of work permits of expatriate workers. The thesis is of the opinion that, until a policy is designed and implemented by the government of Namibia in order to respond effectively to these challenges, EPZ will remain an exercise in futility. In addition, the thesis recommends that any policy towards addressing the already enumerated issues should be all inclusive. Specifically, it should include all the various EPZ stakeholders. Examples of such stakeholders are the EPZ factory owners, the workers, the labour unions, as well as the government. After all, the Asian economic miracle countries in particular have been very successful in boosting trade and economic growth through this approach. The thesis is of the view that Namibia can also successfully follow this path.

8.3.4 Trade and foreign direct investment policies

The econometric results obtained from the estimation process indicate that foreign direct investment also has an important role to play in the search for higher economic prosperity. Given this scenario, there is the need for government policies to be directed towards encouraging foreign investments in Namibia. In

this regard various incentives, especially those relating to taxes should be given a more practical expression in the policy package in order to attract more foreign investments needed for production and consequently improving upon economic growth.

8.3.5 Namibia investment promotion centre

Lastly, the thesis also recommends that the operations of the Namibia Investment Promotion Centre be sustained through appropriate government assistance in order for the centre to remain effective in the provision of trade information, marketing, and international promotion of investment opportunities in Namibia, as well as participating in trade fairs and exhibition activities across the globe. This would in turn ensure that export-oriented manufacturers in Namibia participate effectively in international trade not to mention the positive multiplier effect that will likely arise from such activities on economic growth.

8.4 TRADE POLICY GUIDELINES FOR NAMIBIA

The various policy recommendations flowing from section 8.3 will assist the Namibian Government in the short-run, as well as in the long-run in redesigning and fine-tuning its current policy concerning the promotion of foreign trade and economic growth. This proposal will in turn make the country's exports more competitive in comparison with foreign markets, while simultaneously promoting the country's economic growth aspiration in various ways is these guidelines are factored into the country's policy framework and subsequently implemented by all stakeholders. In this context, the government of Namibia should adopt the following specific trade policy guidelines/framework:

- Diversification strategy: Although diversification of the economy has been the driving objective of the country trade policy, nonetheless Namibia is still far from realising this noble objective. Namibia should as a matter of priority, commit more logistical and financial resources towards the fulfilment of this important objective.
- Exports and value-addition activities: Over the years, most of the exports of Namibia consisted of primary products namely solid minerals, fish, meat and fruits. These products normally attract low rewards in terms of their value in

foreign markets. Besides, they are also not competitive at this stage. Further, in most cases their prices and demand are externally determined. Given this fact, the thesis recommends that value-addition centres be set-up in order to add some degree of value to these exports by way of processing before these products are exported. In this regard, the country needs to consider establishing polishing factories for purposes of polishing its solid minerals, as well as strengthening its manufacturing capacity to process items like fruits into drinkable forms just to mention a few processes. There is also the need for the Government of Namibia to consider partnerships with the private sector in export-oriented industries that could in turn make use of most of these raw materials as a source of inputs in the process of manufacturing instead of exporting them in their raw forms.

- Trade and investment promotion: Investment whether domestic or foreign direct investment (FDI) could be used to increase a country's economic activities and further induce more trade with the possibility of positively affecting a host country's economic growth. Therefore, Namibia should aggressively encourage both domestic investment and FDI in its export-oriented industries by providing the necessary incentives and support. In this regard, incentives relating to tax, capital imports for manufacturing just to mention a few, cannot be over-emphasised.
- Regional trade agreements and economic blocs: Regional economic blocks are increasingly playing a useful role when it comes to the promotion of trade, especially foreign trade. Analogously, trade agreements can help smaller economies like Namibia to attract domestic and foreign investment by creating larger markets and reaping dynamic gains from trade. In this regard, Namibia should explore in greater terms the opportunities that its membership of SACU and SADC offers, while correspondingly breaking new grounds for its exports through new trade agreements and partnerships.
- Transport infrastructure development: Infrastructure in the form of a reliable transportation system/network (air, road, sea, railways) serves as an impetus, when it comes to trade, especially foreign trade. Namibia's transport infrastructure are ageing and presently under heavy pressure mainly due to increase in traffic flow. Therefore, there is the urgent need for the Government of Namibia to overhaul its transportation system, while correspondingly

considering expanding it. In addition, the need to put in place a highly responsive maintenance system for its transportation network should be prioritized.

- Trade facilitation through efficient customs' procedures: Efficient customs procedures will help a country to offer a business-friendly environment for companies. In addition, export procedures and clearance systems, which are efficient, will facilitate export-oriented projects. In Namibia, export procedures and clearance systems are inefficient. Therefore, in order for Namibia to realise the full benefits from participating in foreign trade, it must be ready to eliminate these bottlenecks through a general overhauling of its customs clearance systems.
- Import tariffs reduction: High barriers to imports can induce tariff jumping, as well as negate the competitive advantages offered by a host country and consequently affect investors' choice of location. Tariffs on goods entering into Namibia are generally considered to be on the high side. Given this situation, Namibia should consider a general downward revision of its tariffs system. In this regard, preference should be given particularly to capital imports and intermediate inputs meant for manufacturing.
- Export promotion strategies and investment: Export promotion strategies can positively contribute to export competitiveness. This is even considered to be more important in the launching of new exports. In this context, Namibia should actively participate in forums such as trade fairs, trade shows and trade exhibitions within and outside its territory. Besides, creating awareness for Namibia's exports, such participation would potentially open new markets for the country's exports.
- Access to banking services: Access to banking services also matters to encourage a country's export-oriented industries. In this regard, there is a strong need for Namibia to improve upon its banking system/infrastructures in order to make it efficient, competitive and responsive, when it comes to providing various banking services to its export-oriented industries.

8.5 CONTRIBUTIONS OF THE STUDY TO THE EXISTING LITERATURE

This study contributes to the existing literature in five important ways: First, this study primarily examined the relationship between exports and economic growth. By adding the effect of foreign direct investment and exchange rate to the analysis, this study became significantly comprehensive. In addition, the relationship amongst these variables was assessed within a dynamic framework. This is important since the behaviour of the variables used in this study was investigated over the long-run. This further widens the scope for policy-making for Namibia, as well as any other developing country on a similar route. A number of related studies that this thesis reviewed only made use of OLS techniques, which is essentially a static analysis from an econometric point of view. The works of Emery (1967), Ram (1976), Sosa (1994) and Manni *et al*., (2012) are examples of such studies.

Secondly, the study employed two modern econometric time series techniques, namely VAR and ARDL in investigating the research topic under consideration. Most of the related studies that were reviewed either utilised ordinary least squares (OLS) or VAR or ARDL approach alone. The empirical studies of Jung and Marshal (1985), Kugler (1991), Medina and Chaido (2013) are typical cases in point. Given these facts, the results obtained by this thesis from a methodological and technical point of views are more robust.

Thirdly, this thesis made some significant contributions to the theoretical and empirical literatures that it reviewed. This was achieved through the various comments and suggestions that the thesis puts forward during the literature review process that occurred in Chapters 4 and 5 of the thesis. Fourthly, this study employed a single country framework, in this case Namibia. This provided opportunity for the thesis to present a comprehensive analysis on various issues pertaining to Namibia. Notably, the thesis devoted Chapters 2 and 3 to specifically discuss various issues pertaining to Namibia. Fifthly, the various policies put forward by this thesis will in many ways reinforce the current trade policies of Namibia and also assist in addressing the various bottlenecks that have been undermining the efficacy of its trade policies over the years. Although this thesis is based on Namibia, it nevertheless, envisages that the policies emerging from the

study could also be applicable to other developing countries on a related path, when it comes to formulating policies for the promotion of exports in particular and economic growth in general.

8.6 REALISATION OF OBJECTIVES OF STUDY

All the objectives of the study as set out in Chapter 1 of the thesis have been achieved. The objectives of the study were divided into three groups, namely primary, theoretical and empirical objectives.

- Primary objectives: The two primary objectives of the study were listed as, firstly, to determine the impact of foreign trade on Namibia's economic growth for the period 1990 to 2012 and to make appropriate recommendations. Secondly, to assess if foreign trade is a major driver of economic growth in Namibia. The first primary objective of the study was achieved through the econometric model that was constructed in Chapter 6 of the thesis and subsequently estimated and analysed in Chapter 7 of the thesis. The results of the analysis confirm that foreign trade had a significant impact on Namibia's economic growth over the period under consideration. Appropriate policy recommendations flowing from this finding are presented in Chapter 8 of the thesis. Concerning the second primary objective, the same procedure used in realising the first primary objective was also employed. The result of the analysis indicates that foreign trade is a major driver of economic growth in Namibia compared to FDI and exchange rates.
- Theoretical objectives: The three theoretical objectives of the study as set out in Chapter 1 are the following. Firstly, to present and discuss a number of international trade theories that are relevant to the research topic under consideration, as well as assessing their robustness. Secondly, to review pertinent macro-economic variables concerning Namibia. Thirdly, to discuss important issues concerning Namibia's trade policies and agreements in the context of SACU. The first theoretical objective was realised in Chapter 4 of the thesis. This chapter discusses pertinent international trade theories cutting across classical and modern trade theories. In addition, the strengths and weaknesses of each of the theories were presented. The second theoretical objective of the study was also realised. This was achieved in Chapter 2 of the

thesis through the discussions concerning the following macro-economic variables namely: GDP, INF, FEX, IMP, EX and FDI. In addition, the discussion in Chapter 1, Section 1.2 also assisted the thesis in achieving the second theoretical objective of the study. The third theoretical objective was also achieved in Chapter 3 of the thesis. In specific terms, this chapter discusses Namibia's trade policies and agreements in the context of SACU.

- Empirical objectives: The four empirical objectives of the study as set out in Chapter 1 are listed as follows. Firstly, to test the relevance of the export-led growth model in respect of Namibia. Secondly, to carry out a causality test between foreign trade and economic growth in respect of Namibia by employing VAR and ARDL techniques. Thirdly, to econometrically estimate a long-run relationship between trade and economic growth in Namibia. Fourthly, to econometrically evaluate if trade is a major propeller or driver of economic growth in Namibia. The first empirical objective of the study was achieved through the econometric model that was built in Chapter 6 of thesis and subsequently estimated and analysed in Chapter 7 of the thesis. The results of the analysis show clearly that the export-led growth model compared to a growth-led model was relevant in explaining Namibia's economic growth. Indeed, the study found exports to account for a greater part of Namibia's economic growth compared to FDI and FEX. The second empirical objective of the study was also achieved through a causality test that was conducted on the variables in the econometric model used in the study and subsequently reported in Chapter 7 of the thesis. The result arising from the test shows that causality runs from trade to economic growth. By implication, Namibia will need to improve its exports' competiveness in order to experience or increase economic growth. The third empirical objective of the study was also achieved through a co-integration test that was conducted on the variables in the econometric model used in the study and subsequently reported in Chapter 7 of the thesis. Indeed, the co-integration test confirmed co-integration relationships among the variables included in the econometric model used in the study. Therefore, there is no reason to doubt the existence of a long-run relationship among the variables used in the econometric model. In this context, RGDP, EX, FDI and FEX were all found to have long-run relationships among themselves. The fourth empirical objective of the study

was realised through the econometric model that was constructed in Chapter 6 and subsequently estimated and analysed in Chapter 7 of the thesis. The results of the analysis shows clearly that foreign trade is a major propeller or driver of Namibia's economic growth in relation to FDI and FEX over the period that the study investigated.

8.7 CHALLENGES FACED BY THE STUDY

It is noteworthy to note that no study is free of challenges. This thesis accepts the following as its shortcomings. First, this study used the framework of a single country, in this case Namibia. There is a possibility that the outcome of the study could change if cross sectional econometric time series procedures are employed. Secondly, the data employed in this study are highly aggregative. There is, therefore, the need to exercise caution when using the results obtained from this study in formulating policies and making predictions. Thirdly, time management and balancing was another source of challenge in the process of carrying out this study. Lastly, it would be tantamount to a case of oversimplification to assume that the econometric model employed in the study will necessarily be applicable to all developing economies.

8.8 OPPORTUNITIES FOR FURTHER RESEARCH

In consideration of the general constraints associated with this study, the following proposals hereby are put forward: First, the number of countries used should be extended to cover at least three countries along the lines of cross sectional econometric time-series study. Secondly, future research should consider increasing the number of regressors used in the econometric model from three to possibly five explanatory variables. Thirdly, the data used should be dis-aggregated. For instance, the export sector should be disaggregated into a number of subsectors, in order to establish the individual effect of these subsectors on economic growth. Fourthly, there is also the need for forthcoming research to extend the time series data used in this study to cover a broader period of time. Lastly, competing theories to the particular ones that have been used in this study should also be tested in upcoming research works.

8.9 FINAL REMARKS

This thesis investigated the impact of trade on growth using Namibia as a test centre. The thesis relied upon modern econometric time series approaches in an attempt to estimate the connection between trade and growth. The findings arising from the study suggests that foreign trade is a potent tool for stimulating economic growth in Namibia, especially in the face of rapid globalisation. Despite the use of Namibia as a case study, it is still the conviction of the author that the findings and recommendations arising from this study will influence, in many ways, policymakers in the SADC region, as well as other developing countries on a related path, when it comes to the formulation of trade-oriented policies. Indeed, if for nothing else the research findings arising from this study reinforce the opinion of other researchers whose works have suggested a positive relationship between trade and economic growth in modern economies. Nonetheless, the thesis encourages more studies in respect of the issue under consideration, especially the aspect that touches on causality. Lastly, the author of this thesis shall be satisfied if the findings of this study serve to provoke forthcoming research to carry out further studies regarding the relationship between foreign trade and economic growth in Namibia.

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APPENDIX 1

ANNUAL MACROECONOMIC DATA 1990 TO 2012

Year	GDP	GDPr	RGDP	EXP	IMP	FDIo	FDIi	FDIn	FEXn	FEXr	INFr
1990	2.2	2.49	0.91	1.22	303.03	4.167	-0.06	4.22	6.54	2.7	12.3
1991	2.4	8.17	0.99	1.32	323.04	4.63	0.07	4.57	10.93	4.52	12
1992	2.5	7.19	1.03	1.48	377.3	3.04	0.04	3	6.56	2.71	17.9
1993	2.8	-2.01	1.16	1.48	415.45	1.02	-0.35	1.37	6.15	2.54	8.5
1994	2.8	7.32	1.36	1.58	475.66	7.15	0.04	7.11	6.56	2.71	10.7
1995	3.3	4.11	1.36	1.73	534.78	4.83	0.26	4.58	6.56	2.71	10.1
1996	3.5	3.2	1.45	1.77	631.97	3.01	-0.19	3.2	4.86	2.01	8
1997	3.5	4.22	1.45	1.73	720.61	4.17	-0.06	4.22	8.47	3.5	8.9
1998	3.6	3.29	0.81	1.56	784.33	1.34	-0.34	1.68	6.15	2.54	6.2
1999	3.4	3.37	1.14	1.56	815.45	3.69	-0.62	4.31	3.65	1.51	8.6
2000	3.4	3.49	1.4	1.6	866.38	0.67	-0.23	0.91	7.08	2.93	9.2
2001	3.9	1.18	1.61	1.46	1098.38	1.02	-0.35	1.37	6.54	2.7	9.3
2002	3.5	4.79	1.45	1.96	1281.98	4.17	-0.06	4.22	6.56	2.71	11.3
2003	3.4	4.24	1.4	2.14	1232.76	7.15	0.04	7.11	6.56	2.71	7.3
2004	4.9	12.27	2.02	2.63	1294.27	1.34	-0.34	1.68	6.54	2.7	4.2
2005	6.6	2.53	2.73	2.94	1413	1.94	0.3	1.64	6.68	2.76	2.3
2006	7.3	7.07	3.02	3.18	1648.29	1.34	-0.34	1.68	6.68	2.76	5.1
2007	8	5.37	3.31	4.47	2074.33	4.17	-0.06	4.22	7.08	2.93	6.7
2008	8.8	4.3	3.64	4.79	3027.52	1.34	-0.34	1.68	3.65	1.51	10.3
2009	9	-0.7	3.72	4.3	3487.09	5.48	-0.03	5.52	5.89	2.43	8.8
2010	9.18	4.8	3.8	4.74	4415.21	0.05	-0.02	0.07	6.15	2.54	7
2011	12.17	3.8	5.03	5.24	4577.08	3.69	0.62	4.31	10.93	4.52	6.7
2012	12.3	6.6	5.08	4.99	4838.49	4.17	-0.06	4.22	8.47	3.5	7.8

Source: Author's compilation from Namibia statistical agency, Bank of Namibia bulletins, Namibia national planning commission bulletins (1990-2013).

APPENDIX 2

QUARTERLY MACROECONOMIC DATA 1990 TO 2012

Quarters	EXP	FDIIR	FDINR	FDIOR	FEXN	GDP	GDPR	IMP	INFR	RGDP	FEXR
1990Q1	1.195625	-0.14375	3.66875	3.544281	2.9775	2.103125	-1.096875	303.0184	13.76875	0.87125	1.22
1990Q2	1.209375	-0.08125	4.11625	4.044969	5.7175	2.171875	1.571875	301.5991	12.53125	0.89875	2.35
1990Q3	1.226875	-0.02875	4.44375	4.417344	7.91	2.234375	3.824375	302.3203	11.68125	0.92375	3.26
1990Q4	1.248125	0.01375	4.65125	4.661406	9.555	2.290625	5.660625	305.1822	11.21875	0.94625	3.94
1991Q1	1.273125	0.04625	4.73875	4.777156	10.6525	2.340625	7.080625	310.1847	11.14375	0.96625	4.40
1991Q2	1.301875	0.06875	4.70625	4.764594	11.2025	2.384375	8.084375	317.3278	11.45625	0.98375	4.63
1991Q3	1.334375	0.08125	4.55375	4.623719	11.205	2.421875	8.671875	326.6116	12.15625	0.99875	4.63
1991Q4	1.370625	0.08375	4.28125	4.354531	10.66	2.453125	8.843125	338.0359	13.24375	1.01125	4.40
1992Q1	1.445	0.1075	3.598125	3.703438	7.58	2.43125	8.841875	359.4697	18.07812	1.000938	3.13
1992Q2	1.475	0.0775	3.201875	3.279063	6.735	2.46875	8.083125	372.0278	18.59687	1.016563	2.78
1992Q3	1.495	0.025	2.801875	2.827813	6.1375	2.51875	6.810625	383.5791	18.15937	1.037813	2.53
1992Q4	1.505	-0.05	2.398125	2.349688	5.7875	2.58125	5.024375	394.1234	16.76562	1.064688	2.39
1993Q1	1.464375	0.325625	0.829688	0.504063	6.175625	2.734375	-1.4553125	397.6969	10.2125	1.100312	2.55
1993Q2	1.470625	0.374375	0.882813	0.508438	6.124375	2.790625	-2.5971875	408.6131	8.5875	1.137187	2.52
1993Q3	1.483125	0.374375	1.396563	1.022188	6.124375	2.828125	-2.5809375	420.9081	7.6875	1.178437	2.52
1993Q4	1.501875	0.325625	2.370938	2.045313	6.175625	2.846875	-1.4065625	434.5819	7.5125	1.224062	2.55
1994Q1	1.534688	0.079687	6.249688	6.171563	6.470313	2.721875	5.780625	453.2516	10.3125	1.31625	2.67
1994Q2	1.562813	0.007188	7.167813	7.175938	6.547188	2.753125	7.329375	468.2359	10.6875	1.35375	2.70
1994Q3	1.594063	0.083438	7.569063	7.652188	6.598437	2.815625	8.094375	483.1522	10.8875	1.37875	2.72

Quarters	EXP	FDIIR	FDINR	FDIOR	FEXN	GDP	GDPR	IMP	INFR	RGDP	FEXR
1994Q4	1.628438	0.149063	7.453438	7.600313	6.624062	2.909375	8.075625	498.0003	10.9125	1.39125	2.73
1995Q1	1.690938	0.282187	5.349063	5.621875	6.825625	3.159375	4.954375	506.6616	10.55937	1.345938	2.81
1995Q2	1.721563	0.295312	4.788438	5.073125	6.719375	3.265625	4.295625	523.8209	10.31562	1.351563	2.77
1995Q3	1.745313	0.266562	4.299688	4.555625	6.506875	3.353125	3.780625	543.3597	9.978125	1.362813	2.68
1995Q4	1.762187	0.195937	3.882813	4.069375	6.188125	3.421875	3.409375	565.2778	9.546875	1.379688	2.55
1996Q1	1.7675	0.111875	3.3425	3.226875	4.667813	3.45625	3.2396875	596.8597	8.31875	1.430313	1.93
1996Q2	1.7725	0.188125	3.1475	2.958125	4.574688	3.49375	3.1328125	620.6228	7.98125	1.447188	1.89
1996Q3	1.7725	0.228125	3.1025	2.875625	4.813438	3.51875	3.1465625	643.8516	7.83125	1.458438	1.99
1996Q4	1.7675	0.231875	3.2075	2.979375	5.384063	3.53125	3.2809375	666.5459	7.86875	1.464062	2.22
1997Q1	1.765312	0.044688	4.39375	4.358437	8.042813	3.484375	4.1421875	691.2638	9.125	1.55	3.32
1997Q2	1.747188	0.037813	4.42625	4.399062	8.574688	3.490625	4.2753125	711.8663	9.125	1.51	3.54
1997Q3	1.720937	0.056563	4.23625	4.190312	8.735938	3.503125	4.2865625	730.9113	8.9	1.43	3.60
1997Q4	1.686562	0.100938	3.82375	3.732187	8.526563	3.521875	4.1759375	748.3988	8.45	1.31	3.522
1998Q1	1.597188	-0.235	1.824688	1.591875	7.048125	3.609375	3.4809375	765.5288	6.415625	0.898438	2.91
1998Q2	1.565313	-0.305	1.512813	1.208125	6.456875	3.615625	3.3115625	779.4212	6.059375	0.799063	2.66
1998Q3	1.544063	-0.375	1.524063	1.148125	5.854375	3.603125	3.2053125	791.2762	6.021875	0.760313	2.41
1998Q4	1.533438	-0.445	1.858438	1.411875	5.240625	3.571875	3.1621875	801.0937	6.303125	0.782188	2.16
1999Q1	1.55375	0.619688	4.265937	3.647813	3.660938	3.44375	3.33375	800.6847	7.98125	1.027187	1.51
1999Q2	1.55625	0.647812	4.546562	3.899688	3.406563	3.40625	3.35625	809.7028	8.46875	1.105312	1.40
1999Q3	1.56125	0.634063	4.450312	3.815937	3.522813	3.38125	3.38125	819.9591	8.84375	1.179062	1.45
1999Q4	1.56875	0.578437	3.977187	3.396563	4.009688	3.36875	3.40875	831.4534	9.10625	1.248437	1.65
2000Q1	1.613125	0.296563	1.581875	1.275938	6.414063	3.321875	3.8246875	818.9891	9.053125	1.310313	2.65

Quarters	EXP	FDIIR	FDINR	FDIOR	FEXN	GDP	GDPR	IMP	INFR	RGDP	FEXR
2000Q2	1.611875	0.230938	0.973125	0.731563	7.023438	3.353125	3.7028125	843.0384	9.171875	1.372188	2.90
2000Q3	1.599375	0.197188	0.605625	0.397813	7.384688	3.415625	3.4290625	878.4047	9.259375	1.430938	3.05
2000Q4	1.575625	0.195313	0.479375	0.274688	7.497813	3.509375	3.0034375	925.0878	9.315625	1.486563	3.10
2001Q1	1.4125	0.369062	0.824063	0.45125	6.655	3.853125	1.12125	1018.943	8.965625	1.589063	2.74
2001Q2	1.4175	0.373437	1.088438	0.71375	6.555	3.921875	0.91375	1073.918	9.109375	1.618438	2.70
2001Q3	1.4625	0.352187	1.502188	1.15125	6.49	3.934375	1.07625	1125.867	9.371875	1.624688	2.67
2001Q4	1.5475	0.305312	2.065313	1.76375	6.46	3.890625	1.60875	1174.792	9.753125	1.607813	2.66
2002Q1	1.8225	0.139063	3.145	3.015312	6.555625	3.603125	4.08625	1249.508	11.4875	1.492813	2.70
2002Q2	1.9275	0.078437	3.86	3.792187	6.559375	3.521875	4.72875	1280.857	11.6125	1.459688	2.70
2002Q3	2.0125	0.029687	4.5775	4.558437	6.561875	3.459375	5.11125	1297.654	11.3625	1.433438	2.71
2002Q4	2.0775	0.007188	5.2975	5.314062	6.563125	3.415625	5.23375	1299.901	10.7375	1.414063	2.71
2003Q1	2.024063	0.0775	7.32625	7.405937	6.563125	3.1875	3.105625	1233.916	8.659375	1.314063	2.71
2003Q2	2.088438	0.0725	7.52875	7.601562	6.561875	3.2625	3.504375	1228.532	7.715625	1.343438	2.71
2003Q3	2.172187	0.0375	7.21125	7.247812	6.559375	3.4375	4.439375	1230.068	6.828125	1.414688	2.70
2003Q4	2.275312	-0.0275	6.37375	6.344687	6.555625	3.7125	5.910625	1238.525	5.996875	1.527813	2.70
2004Q1	2.474375	0.356875	2.874063	2.517188	6.5225	4.30625	12.0353125	1262.263	5.175	1.773437	2.69
2004Q2	2.585625	0.388125	1.853438	1.465313	6.5275	4.69375	12.9321875	1281.217	4.475	1.934062	2.69
2004Q3	2.685625	0.355625	1.169688	0.814063	6.5425	5.09375	12.7184375	1303.747	3.85	2.100312	2.70
2004Q4	2.774375	0.259375	0.822813	0.563438	6.5675	5.50625	11.3940625	1329.853	3.3	2.272187	2.71
2005Q1	2.834688	0.26	1.6425	1.9025	6.649375	6.11875	3.95125	1350.264	2.278125	2.529375	2.74
2005Q2	2.907813	0.34	1.6375	1.9775	6.675625	6.48125	2.40875	1387.231	2.096875	2.680625	2.75
2005Q3	2.976563	0.34	1.6375	1.9775	6.693125	6.78125	1.75875	1431.484	2.209375	2.805625	2.76

Quarters	EXP	FDIIR	FDINR	FDIOR	FEXN	GDP	GDPR	IMP	INFR	RGDP	FEXR
2005Q4	3.040938	0.26	1.6425	1.9025	6.701875	7.01875	2.00125	1483.021	2.615625	2.904375	2.76
2006Q1	2.925938	-0.24375	1.274375	1.029063	6.6175	7.0375	6.3425	1530.252	4.2375	2.91125	2.73
2006Q2	3.051563	-0.34625	1.440625	1.093438	6.6425	7.2125	7.0875	1600.996	4.8625	2.98375	2.74
2006Q3	3.242813	-0.39125	1.763125	1.372188	6.6925	7.3875	7.4425	1683.662	5.4125	3.05625	2.76
2006Q4	3.499688	-0.37875	2.241875	1.865313	6.7675	7.5625	7.4075	1778.25	5.8875	3.12875	2.79
2007Q1	4.137813	-0.0775	4.06125	3.993125	7.528438	7.721875	5.9090625	1832.198	5.7875	3.195	3.11
2007Q2	4.399688	-0.0425	4.37875	4.346875	7.389063	7.903125	5.5234375	1971.655	6.3125	3.27	3.05
2007Q3	4.600937	-0.0425	4.37875	4.346875	7.010313	8.090625	5.1771875	2144.058	6.9625	3.3475	2.90
2007Q4	4.741562	-0.0775	4.06125	3.993125	6.392188	8.284375	4.8703125	2349.409	7.7375	3.4275	2.64
2008Q1	4.796563	0.327187	1.635625	1.312188	4.050313	8.59375	5.3153125	2747.202	9.746875	3.555313	1.67
2008Q2	4.825938	0.360312	1.399375	1.040313	3.547188	8.75625	4.8021875	2954.648	10.32813	3.622188	1.46
2008Q3	4.804688	0.356563	1.561875	1.204063	3.398438	8.88125	4.0434375	3131.243	10.59063	3.673438	1.40
2008Q4	4.732813	-315938	2.123125	1.803438	3.604063	8.96875	3.0390625	3276.987	10.53438	3.709063	1.48
2009Q1	4.338437	0.099375	5.531562	5.422812	5.359375	8.928125	-0.465625	3241.54	9.409375	3.69	2.21
2009Q2	4.274062	0.040625	5.910937	5.859687	5.795625	8.976875	-1.059375	3385.717	9.015625	3.71	2.39
2009Q3	4.267813	0.000625	5.709687	5.698437	6.108125	9.024375	-0.996875	3559.178	8.603125	3.73	2.51
2009Q4	4.319687	0.020625	4.927812	4.939063	6.296875	9.070625	-0.278125	3761.924	8.171875	3.75	2.59
2010Q1	4.565625	0.122187	0.599688	0.669063	5.34625	8.673438	3.753125	4186.892	7.440625	3.590313	2.20
2010Q2	4.679375	0.080312	0.157187	0.121562	5.69375	8.894063	4.721875	4371.031	7.084375	3.682188	2.35
2010Q3	4.796875	0.000938	0.308437	0.345312	6.32375	9.290313	5.284375	4507.28	6.821875	3.845938	2.61
2010Q4	4.918125	0.121563	0.145938	0.002187	7.23625	9.862188	5.440625	4595.638	6.653125	4.081562	2.99
2011Q1	5.169688	0.58625	3.396562	2.81875	10.26875	11.49563	3.58125	4500.826	6.59375	4.753125	4.24

Quarters	EXP	FDIIR	FDINR	FDIOR	FEXN	GDP	GDPR	IMP	INFR	RGDP	FEXR
2011Q2	5.247813	0.66375	4.185937	3.53125	11.01125	12.06438	3.56875	4547.514	6.60625	4.986875	4.55
2011Q3	5.279063	0.65875	4.704688	4.04625	11.30125	12.45438	3.79375	4600.424	6.70625	5.146875	4.67
2011Q4	5.263438	0.57125	4.952812	4.36375	11.13875	12.66563	4.25625	4659.556	6.89375	5.233125	4.60
2012Q1	5.200938	0.40125	4.930313	4.48375	10.52375	12.69813	4.95625	4724.908	7.16875	5.245625	4.35
2012Q2	5.091563	0.14875	4.637188	4.40625	9.45625	12.55188	5.89375	4796.482	7.53125	5.184375	3.90
2012Q3	4.935313	-0.18625	4.073438	4.13125	7.93625	12.22688	7.06875	4874.277	7.98125	5.049375	3.27
2012Q4	4.732188	-0.60375	3.239063	3.65875	5.96375	11.72313	8.48125	4958.293	8.51875	4.840625	2.46

Source: Author’s compilation from Namibia statistical agency, Bank of Namibia bulletins, Namibia national planning commission bulletins (1990-2013)