Assessing the Impact of Exports and Imports on Economic Growth: A Case study of Malawi from 1970 to 2010

By

Themba Nyasulu
Student Number: 3315019

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Supervisor: Dr. Mulugeta Dinbabo

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Declaration

I, Themba Nyasulu, hereby declare that *Assessing the Impact of Exports and Imports on Economic Growth: A Case study of Malawi from 1970 to 2010* is my own work, that it has not previously been submitted for any degree or examination to any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

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Themba Nyasulu

Dated this _____ day of November 2013

Certificate of Approval

I hereby certify that this research paper is the student's own work and acknowledgements have been made where the work of other people has been used. I further certify that it has not been submitted to any other university for any degree and it is therefore submitted with my approval.

Signature: _____

Dr Mulugeta F Dinbabo

Dated this _____ day of November 2013

Dedication

To my parents, Dama, Gome, and Kettie.

Apart from God, I place no one above you!

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First and foremost, I thank God for the wonderful mercies and blessings He has showered upon my life. Lord, You have been with me throughout my darkest and brightest hours.

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Abstract

In line with neoclassical economic growth propositions that outward-orientation fosters economic growth, since independence from Britain in 1964 the Government of Malawi has placed international trade at the centre of its economic development agenda. In spite of this theoretical affirmation of the trade-growth relationship, some empirical studies that have been done both in the country and abroad show contrary results. This prompted this study to be undertaken with the aim of assessing the impact of exports and imports on economic growth in Malawi from 1970 to 2010.

This study has used a neoclassic economic growth model containing gross domestic product, exports, imports, capital and labour force as variables of analysis. After collecting annual time series data on the variables for the period 1970 to 2010 from the World Bank online statistical data base, Ordinary Least Squares regression and several econometric tests were run on the model to ensure robust and accurate results. Statistical accuracy of the findings was further cemented by use of the 5 percent level of significance. Exports were found to have a positive and statistically significant effect on the country's economic growth, while imports had a negative and insignificant influence. Similarly, capital and labour force showed a positive effect on economic growth even though the capital's effect was statistically insignificant. Nevertheless, the study also strongly confirmed the presence of a long-run equilibrium among the variables.

The above results strongly suggest that Malawi should continue with its export-led economic growth strategies such as the Economic Recovery Plan (ERP) and the Malawi Growth and Development Strategy (MDGS). However, if the two economic development plans are to bear fruit this study strongly urges Malawi to consider diversifying its economy away from primary export production and instead embark on value-addition. Furthermore, the country should not only reduce the importation of consumer goods in favour of capital goods, but also improve the quality of the labour force and capital formation, if Malawi is to realise its economic development and poverty alleviation aspirations.

Key words

Economic growth, exports, export-led growth, imports, import-led growth, international trade, Malawi, neoclassical economic growth theory, and ordinary least squares regression.

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List of Abbreviations and Acronyms

ACP	Africa-Caribbean and the Pacific
AGOA	African Growth and Opportunity Act
BLUE	Best Linear Unbiased Estimators
BoP	Balance of Payments
COMESA	Common Market for Eastern and Southern Africa
EBA	Everything but Arms
ECM	Error Correction Model
ELG	Export-led Growth
ERP	Economic Recovery Plan
ESA	East and Southern Africa
EU	European Union
GCF	Gross Capital Formation
GDP	Gross Domestic Product
GoM	Government of Malawi
HDI	Human Development Index
ILG	Import-Led Growth
IMF	International Monetary Fund
LDCs	Least-Developed Countries
LM	Lagrange Multiplier
MLE	Maximum Likelihood Estimation
MGDS	Malawi Growth and Development Strategy

NES	National Export Strategy
NICs	Newly Industrialising Countries
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary least squares
RESET	Ramsey Regression Error Specification Test
SADC	Southern African Development Community
SAPs	Structural Adjustment Programmes
TEVETA	Technical and Vocational Education and Training Authority
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organisation
USA	United States of America
VAR	Vector auto-regression
WHO	World Health Organisation
WTO	World Trade Organisation

Chapter One: Introduction

1.1 Contextual Background

Economic growth, which generally refers to an increase in the level of national output or income over time, is a very important issue for every country across the globe. According to the World Bank (2012:1-3) the sustainable expansion of the economy is a crucial factor not only in improving people's standard of living but also in reducing the level of poverty in a country. The world economy is still suffering from the effects of the global recession and economic growth rates are still very low in most countries, especially the developed countries. The International Monetary Fund (2013:4) observes that real global economic output sharply declined from 4.1 percent in 2011 to 2.4 percent in April to 2013. This shrinkage in national output has worsened living standards especially among the poorest people in the world as poverty levels have also deteriorated. The latest figures from the World Development Indicators (2013:3) show that worldwide there are 1.2 billion people living on less than US$1.25 per day. Of these, more than two-thirds (approximately 500 million) live in Sub-Saharan Africa and South Asia, with people subsisting on an average daily income of 87 cents per capita. These per capita average daily income figures represent a significant decline from the 94 cents recorded in 1981. Such worsening poverty levels have driven many countries to vigorously search for economic policies aimed at boosting their gross domestic product (GDP) levels and thus achieving economic growth.

Among the several alternative policies suggested and/or pursued with a view to achieving GDP expansion is international trade (imports and exports). Thirlwall (2000:6) observes that the benefits of buying and selling commodities among nations (international trade) have been well known in the developed countries since the days of Adam Smith (1776) and David Ricardo (1817). For Adam Smith, international trade-induced economic growth comes about because of 'absolute advantage' whereby a country increases its national income or output levels through the production of commodities at less input costs than other rival countries. On the other hand, David Ricardo attempted to expand and improve the 'absolute advantage' principle by arguing that growth in national output occurs because of 'comparative advantage' whereby a country produces commodities at less real cost (opportunity cost) than other nations. According to these classical economists international trade-induced economic growth comes about because of specialisation which generates surplus goods and services and the need to exchange these commodities for money or other commodities. From then on, the selling of domestically

produced commodities (exports) and the buying of foreign goods (imports) have been strongly endorsed by standard economic theory as a catalyst for economic growth (Carbaugh, 2003:64). Generally, both classical and neoclassical economists are broadly agreed on the fact that free international trade (i.e. foreign trade without barriers) leads to GDP growth mainly through increased specialization, efficient utilization of factor inputs, generation of foreign exchange, acquisition of better foreign technology, creation of a market for surplus output, generation of inter-industry production competition, creation of employment, and increased national income. In addition, there is a reasonable consensus among trade economists on the fact that restricted foreign trade may lead to the loss of these benefits (Lee, 1995:142-144).

For developing countries it was the spectacular economic development of the 'Asian Tigers' (South Korea, Taiwan, Singapore and Hong Kong) in the 1970s that provided arguably the strongest empirical evidence in support of the positive impact international trade has on GDP growth. Through export-oriented (outward orientation) policies, these four 'Asian Tigers' meteorically rose from being LDCs to becoming middle-income or Newly Industrialising Countries (NICs) in the 1970s. It is this success that has largely inspired other developing countries, especially those in the Sub-Saharan African region, to vigorously engage in foreign trade as a credible tool for fostering economic growth in their countries (Lall, 2000:5-9). According to Hachicha (2003:17) the main reason that led many LDCs to attempt to replicate the Export-Led Growth (ELG) and Import-led Growth (ILG) of the Asian Tigers was the fact that foreign trade not only encourages efficient allocation of factors due to foreign competition, but also that the resources generated can be used to finance their industrialization which would lead to economic growth and poverty reduction. However, ever since the implementation of outward-oriented trade policies, developing countries have had very varying results, with some experiencing rapid GDP growth while others have seen their national output dwindling over the years and thus having only mixed effects on their poverty reduction strategies (Edwards, 1998:383-398, and Rodriguez and Rodrik (2001:63). This has cast a serious doubt on whether or not international trade (both ELG and ILG) encourages growth in LDCs.

A similar situation has occurred in Malawi where despite the government zealously implementing outward-oriented trade policies since independence in 1964, the country's economic growth rates have been very erratic. Malawi's economy has been largely agro-based since the imposition of British Colonial rule in the late 19th century, with commodities such tobacco, tea, sugar and cotton dominating her international trading transactions ever since (Luka, 2010:5). Ngwira (2012:7) observes that due to the absence of heavy industrialization, the country

has largely been a net importer of manufactured products, machinery and other technologies. This implies that a significant percentage of Malawi's GDP has depended on the contribution of foreign trade. Over the years the government's trade policy (outward-orientation) has not been matched by a similar increase in GDP figures. According to the World Bank (2012:6), from a high growth rate of more than 6 percent in the 1960s and 1970s, GDP levels began to decline rapidly from mid-1980 to mid-2000, so much so that by 2004 the growth rate was at 1.4 percent. By the end of 2005, GDP growth rate had risen to 5.2 percent and from that time on to 2010, the national output level has been consistently above 6 percent. However, during all this time, the volumes of exports and imports have consistently been on the rise even though the gap between exports and imports has also been widening. The World Bank (2012:6) further notes that the total value of exports was US$70.44 million in 1970 and by 2010 it had expanded to US$1.586 billion. Similarly, the country's imports were worth US$113.76 million in 1970 and by 2010 had shot up to US$2.426 billion.

1.2 An Overview of the Contribution of International Trade to Malawi's Economy and some Recent Developments

As a low income, small land-locked country, the vital contribution that international trade makes to Malawi's economy is non-debatable. As of 2012 exports and imports contributed approximately 25 percent and 35 percent respectively to the country's total GDP. The World Bank (2012:2-3) estimates that primary export products such as agricultural commodities (tobacco, tea, cotton and sugar) and minerals (uranium and ores) not only generate 30 percent of Malawi's total national output but also employ 70 percent of the country's 5.5 million small-holder farmer labour force. Tobacco alone accounts for 65 percent of her export receipts, making it by far the country's biggest export commodity (GoM, 2013:74).

However, the above situation makes the economy highly susceptible to volatilities in weather conditions and international commodity prices. It therefore does not come as a surprise to learn that, of late, Malawi has performed poorly in international trade relative to other developing countries in the region. The main reason for this poor performance has been the country's over-reliance on a limited number of primary export commodities, resulting in fewer export destinations for her products (Banda, 2008:14). To make matters worse, world tobacco demand has been steadily sliding downwards since the turn of the 21st century mainly because of the current global anti-smoking campaign being spear-headed by the World Health Organisation (WHO) and other related influential international bodies. The consequent fall in world tobacco

prices has negatively affected Malawi's export volumes and revenue since the country's export basket was heavily dominated by tobacco (Lea and Hanmer, 2009:7).

Tobacco and the rest of Malawi's primary export commodities which are primarily rainfall-dependent have also suffered from the vagaries of weather fluctuations due to the effects of global warming. This has reduced not only the demand for tobacco, but also the export value, since in most instances the commodity's quality has been greatly compromised by the climatic changes thus shrinking the country's foreign exchange revenues even further (Chikhasu, 2007:4-12).

With the country running a managed exchange rate regime from 2004 to 2012, imports increased steadily since Malawians found it cheaper to buy foreign goods due to the overvalued domestic currency, the Malawi Kwacha. This greatly reduced exports and encouraged imports of manufactured products from abroad thus resulting into a huge trade deficit which reached as high as US$280 million in 2012. But it has also been said that this trade deficit was greatly aided by the rapid rise in GDP that the country experienced during this period which encouraged import demand. Malawi's GDP growth averaged between 6 and 9 percent in the period 2005 to 2011, thus leading to increased import expenditure as per capita incomes rose significantly (Ngwira, 2012:28-30).

The widening trade deficit together with a foreign aid freeze due to the country's poor human rights record resulted in severe balance of payment (BoP) problems starting from 2011. This significant increase in the country's foreign exchange expenditure relative to its earning capacity worsened in 2012 as exports declined by 27 percent relative to imports. The acute BoP deficit has resulted in severe shortages of foreign exchange reserves, scarcity of fuel, essential drugs, consumables and raw materials in Malawi. Inflation soared from 12 percent to 35 percent during this period. Consequently, economic growth slowed down as exhibited in real GDP shrinkage from 6.9 percent in 2010 to 4.3 per cent in 2011 and 1.8 percent in 2012 (GoM, 2012:45). According to the United Nations Development Programme (2013) this steady decline in national output (GDP) is a major contributor to Malawi's current ranking as the 16th poorest country in the world and hence her low Human Development Index value of 0.418 (UNDP, 2013:7).

In response to the above situation the Government of Malawi (GoM) launched the Economic Recovery Plan (ERP) and the National Export Strategy (NES) in 2012 in order to revive the country's dwindling economic fortunes through encouraging foreign trade with a view to raising GDP growth rate in the medium term (3-5 years). This is in addition to a series of macroeconomic policy reforms implemented in 2012 such as a 40 percent devaluation of the domestic currency, in

order to revive exports, and a 35 percent increase in interest rates in order to counter the resultant run-away inflation rate of more than 25 percent which was the highest in the SADC region in January 2013 (IMF, 2013:6).

1.3 Statement of the Problem and Justification for the Study

As already pointed out, ever since Adam Smith (1776) demonstrated the benefits of free international trade, economists are broadly agreed on the fact that foreign trade has a positive impact on the level of economic growth (Carbaugh, 2005:42). The main theoretical basis underpinning this consensus is that since international trade encourages capital accumulation, domestic industrial improvement, and technological and institutional upgrading, it therefore increases the level of national output. Balassa (1981:133) notes that the merits of the foreign trade-growth nexus are mainly viewed in terms of enhanced capacity utilization, efficiency in productivity, economies of scale and the inter-industry competition that foreign demand generates. More specifically, it is now generally accepted that a country that actively engages in foreign markets by promoting exports opens its industries to foreign competition and hence increases its productivity. In addition, countries that actively import advanced capital and intermediate goods they do not produce by themselves, domestically increase their GDP levels over time (Lee, 1995:143). Development economists agree that countries that engage in free international trade (open economies) are more likely to experience increased economic growth rates than closed/autarkical economies that steer away from foreign trade (Kravis, 1970:857).

Although there seems to be a broad theoretical consensus on the positive impact international trade (exports and imports) has on the level of economic growth, empirical results from some countries show a great deal of divergence and contradiction, and therefore the exact nature of the relationship between the above variables is still in dispute (United Nations Industry and Development Organisation-UNIDO, 2009:2). Fosu (1990) carried out a survey of 64 developing nations, predominantly Sub-Saharan African, with the aim of establishing the relationship between exports and economic growth. The study showed that exports-led growth, especially driven by primary commodities, not only negatively affects economic growth but also worsens these countries' terms of trade. On a similar note, Mwega (1993) estimated the impact of consumer imports such as food, beverages and tobacco, on the level of GDP in Kenya for the period 1964 to 1991. He found that consumer imports have a negative and statistically insignificant impact of the level economic growth. Empirical findings of these and other studies have created serious doubt about the validity of both the ELG and ILG hypotheses in many

countries around the world and therefore the question of whether or not international trade accelerates economic growth especially in developing countries is still far from being resolved.

Since independence in 1964 Malawi's economic growth and development policies have largely been based on international trade promotion. Export promotion has been the dominant policy strategy for achieving economic prosperity even though the country experimented with some limited import substitution in the 1960s and early 1970s (Ngwira, 2012:8). However, the rapid annual rise in the levels of exports and imports in the country has not been matched by a similar steady expansion in economic growth rates. While the volume of international trade has to a large extent been on an upward trajectory, GDP levels have been very erratic, often characterized by serious fluctuations (World Development Indicators, 2008:11). It is, therefore, difficult to pinpoint the trade-growth nexus in Malawi during this period.

Development policies such the Malawi Growth and Development Strategy (MGDS I and II) implemented between 2005 and 2012 have also been largely based on outward-orientation. One fundamental pillar of the MGDS is 'to transform the nation from a being a net consumer and importer to a net producer and exporter' (GoM, 2006:34). Similarly, the implementation of the Economic Recovery Plan (ERP) in mid-2012 in order to rejuvenate Malawi's ailing economy is primarily an export-driven medium term economic growth agenda. Even though the MGDS I programme was completed in 2010, so far no known evaluation has been conducted to assess the impact of this export-led development programme on the country's GDP growth rate. But for these development blueprints to have significant bearing on Malawi's economy and her people's standard of living there is an urgent need to conduct a thorough analysis of the impact that foreign trade has had on Malawi's economic growth during the time the above programmes were in progress. Therefore this study offers such an opportunity, especially with regards to MGDS I.

A review of the empirical literature on the relationship between international trade and economic growth reveals that there are very few studies on Malawi. The few studies that are available on this topic do not focus on Malawi on its own but on groups of countries in regional economic blocs such as the Southern African Development Community (SADC) and Common Market for Southern and Eastern Africa (COMESA). Among these studies is the one conducted by Chanthunya (1991) who analysed the export-growth nexus in several SADC countries including Malawi. He found that there is a positive but very weak relationship between exports and GDP. On a similar note, Ahsan et al (2000) analysed the impact of foreign trade policy reform on Malawi's productivity sector from 1971 to 1999. These authors found no correlation between international trade and GDP growth, thus indirectly implying that in Malawi exports and imports

had no effect on economic growth through the manufacturing sector. Njikam (2004) also tested the trade-growth nexus for several Sub-Saharan African countries including Malawi and found not only a strong relationship between the variables but also that direction of Granger causation runs from exports to economic growth in Malawi during the study period.

The contradicting results obtained in the above studies clearly show that there is a knowledge gap in the relationship between international trade (exports and imports) and economic growth in Malawi. This study aims to contribute to bridging this empirical knowledge gap by analyzing the impact of exports and imports on the economic growth of Malawi in isolation, and not as part of a bloc of Sub-Saharan African countries. Unlike previous empirical studies on the subject that have mainly concentrated on exploring the existence of correlation between the two variables, this study focuses on establishing the existence of a long-run equilibrium relationship between exports and economic growth. It is only the existence of a long-run relationship between the two variables that guarantees sustainable economic development.

1.4 Objectives of the Study

The overall aim of this study is to determine and quantify the impact of exports and imports on economic growth in Malawi from1970 to 2010.

1.4.1 Specific Objectives of the Study

In order to achieve the study's main aims the following specific objectives will be analysed:

1.4.1.1 To provide the research with a solid and comprehensive theoretical framework that is able to justify the impact of exports and imports on economic growth in Malawi from 1970 to 2010;

1.4.1.2 To measure the percentage of change in economic growth as a result of change in exports;

1.4.1.3 To calculate the percentage of change in economic growth resulting from change in imports;

1.4.1.4 To quantify the percentage of change in economic growth resulting from change in the labour force;

1.4.1.5 To examine the percentage of change in economic growth a result of change in capital;

1.4.1.6 To determine the long-run relationship between exports, imports and economic growth;

1.4.1.7 To analyse the interrelationship between exports, imports, labour force, capital and other factors in determining economic growth; and

1.4.1.8 To provide relevant conclusions and recommendations for stakeholders in the export and import sectors in Malawi.

1.4.2 Null Hypotheses of the Study

In fulfilling the main and specific objectives of the study the null hypotheses below were also tested as is required in quantitative research:

- Exports have no effect on economic growth;
- Imports have no effect on economic growth;
- The labour force has no effect on economic growth;
- Capital has no effect on economic growth; and
- There is no long-run relationship between exports, imports and economic growth.

1.4.3 General Research Questions

In the context of the research problem identified above, the main purpose of this research framework is to establish an interpretive theoretical and conceptual framework for an MA thesis and provide answers to the general research questions listed below.

1.4.3.1 What are the factors that determine the level of exports and imports in Malawi?

1.4.3.2 Have exports and imports contributed to increases in the level of economic growth in Malawi?

1.4.3.3 By how much have exports, imports and other factors contributed to economic growth in Malawi?

1.4.3.4 Should the Government of Malawi pursue an export-let or an import-led economic growth and development strategy?

1.4.3.5 What economic policies can be implemented by the government to improve the quality and quantity of Malawi's exports and/or imports necessary to achieve economic growth?

1.5 Significance of the Study

In light of Government of Malawi's implementation of largely trade-driven economic development policies since 1964 and more especially after the adoption of the Structural Adjustment Programmes (SAPs) in 1981, it is vital that a study be carried out to empirically determine and quantify the impact that international trade has had on economic growth which is a very important component of the economic development process. Particularly now that the Government of Malawi (GoM) is urgently seeking alternative ways of reviving the ailing

economy after the macroeconomic crisis of 2010-2012, it is essential that the final decision made should be evidence-based. The study will therefore be of significant help to Malawi's policy makers in deciding whether or not the country should persist with the trade-led economic growth agenda or alternatively pursue a completely different economic development. This study will also act as a vital reference for researchers in the development economics field pursuing further research on the topic both in Malawi and beyond.

1.6 Delimitation and Scope of the Study

This study is a country-level analysis of the impact of exports and imports on economic growth in Malawi from 1970 to 2010. However, in pursuit of this objective the contribution of other important factors to the growth process, such as capital and labour force, was also assessed. Nevertheless, the scope of the study is restricted to quantitative analysis of the aggregate contribution of exports and imports, respectively on the level of GDP. In addition, the study is geographically confined to Malawi mainly because of the country's long history of trade-led economic growth and development policy. Coupled with this, the researcher's familiarity with Malawi's economy, economic development and trade policies, socio-economic structure and government machinery played a key role in choosing the study area. Malawi is a small agro-based economy in Southern Africa, heavily reliant on exports of primary commodities such as tobacco, tea and cotton and also a net importer of manufactured products including machinery, medicines and petroleum products.

1.7 Limitations of the Study

The main limitation that was encountered in the study was the generation of an appropriate proxy for labour force. In line with authoritative studies done on the subject by Feder (1982) and Ram (1985, 1987 and 1990), the population of Malawians aged between 15 and 65 years was used as a crude proxy measure of the country's workforce. However, population may not represent the best proxy for labour force given the fact that the majority of labourers working in Malawi's agriculture-dominated export sector are seasonal and as such their figures fluctuate widely during the course of the year, making it difficult to record the exact annual figures. Therefore, using annual population figures to approximate labour force may not be ideal. Nevertheless, given the well-documented difficulties in obtaining official labour force figures in many LDCs including Malawi, while the above proxy may not be ideal, it provides a feasible measurement term for the labour force.

1.8 Structure of the Mini Thesis

This study is arranged in the structure outlined below.

Chapter One introduces the study by presenting its contextual background and providing an overview of the current international trade and economic growth situation in Malawi. From this it builds up a research problem that translates into its research objectives, research questions and hypotheses.

Chapter Two analyses the relationship between international trade (imports and exports) and growth as discussed by some of the major economic growth theories and models. This is followed by a critical analysis of both the Export and Import Promotion Schools before finishing with a review of previous empirical studies conducted to establish the validity of the ELG and ILG hypotheses in various countries across the globe including Malawi.

Chapter Three aims to generate a general theoretical and analytical framework within which the analysis of the trade-growth relationship in Malawi will be conducted. Specifically, the Neoclassical Economic Growth Model is developed as the study's research framework. Justification for its use is also given before the study's working hypotheses are developed based on it.

Chapter Four provides a detailed account of the research methodology that the study followed. In particular, the discussion describes the study area, data collection and analysis issues, and finally an estimation of the study's regression model is outlined.

Chapter Five presents the research study's findings and statistical interpretation. The results of both the diagnostic tests carried on the data to ensure robustness, and the estimated regression model itself are explained in order to provide statistical meaning to the empirical findings and hence answer the study's research questions.

Chapter Six presents the main conclusions and policy recommendations drawn from the study. The discussion concludes by providing suggestions on some areas of the topic that the study did not adequately cover due to its scope but can be further analysed by future research.

The next chapter presents a critical review of the theoretical and empirical literature on the relationship between international trade and economic growth.

Chapter Two:
A Review of Theoretical and Empirical Literature

2.1 Introduction

This chapter begins with a brief background to the development of economic growth theory. It continues with an analysis of the relationship between international trade (imports and exports) and growth as discussed by some of the major economic growth theories such as the Harrod-Domar Model, Two-Gap Model, Neoclassical Growth Theory/Solow's Growth Theory, and the New Growth Theory. The main ideas and criticisms of both the Export and Import Promotion School are then discussed before concluding with empirical studies.

2.2 A Brief Background to the Theory of Economic Growth

Economic growth, which basically refers to an increase in national output or income over time, traces its conceptual foundation to Adam Smith's 1776 seminal publication *The Wealth of Nations*. Even though the book mainly concentrated on the division of labour, productivity and free markets, Smith managed to provide three major sources of growth in a dynamic economic model namely: growth in labour force and capital, improvements in productive efficiency, and promotion of foreign trade. Thus for Smith, capital accumulation is the decisive catalyst for economic growth (Harris, 1978:24-25).

David Ricardo (1817) improved on the above concept of economic growth (wealth accumulation) by adding technology to Smith's production function which contained land, capital and labour force as the only sources of productivity growth. More importantly he argues that economic growth also emanates from foreign trade when countries produce and export goods and services, in which they have the best comparative advantage. However, the two differ in their view on the pace of productivity growth in that Smith's framework posits accelerated growth while Ricardo postulates declining growth over time. Smith together with Ricardo and Thomas Malthus (1798) are considered to be the pioneers of the classical economic growth theory (Ibid, pp.25-27).

Karl Marx (1872) looked at economic growth as emanating from the reinvestment of the society's surplus value into the economy which in the end reproduces even more surplus value. The main inputs in this reproduction are labour, physical capital and technological produce (Sardadvar, 2011:10).

During the Great Depression in the 1930s when the world economy was facing a severe recession, John Maynard Keynes (1936) argued that economic growth could be achieved through increasing money supply and expanding government spending. Thus boosting aggregate demand in the economy leads to economic growth and full employment (Ibid, pp.11-12).

However, it is Roy Harrod (1949) who is credited with influencing 20th century economists to seriously start thinking about economic growth. He is widely considered to be the 'founder' of modern economic growth. His model is discussed below.

2.3 Some Major Economic Growth Theories and Their Relationship with International Trade

2.3.1. The Harrod-Domar Growth Model

Roy Harrod (1939) and Evsey Domar (1946) independently combined elements of both classical and Keynesian economic growth (income determination) theories such as investment, capital and incomplete markets, to develop what later came to be known as the Harrod-Domar growth model (Baldwin, 1972:21). This model argues that a nation's economic growth is dependent not only on its saving rates but also the extent to which it can minimize its current consumption levels. In this case economic growth is viewed as a direct consequence of a country's ability to increase both its savings and the ratio of capital to output or GDP (Ray, 2003:34). An illustration of this is shown in the equation below where Y represents national output (GDP), ΔY represents change in GDP, *s* is savings ratio and *k* is capital-output ratio.

$$\Delta Y / Y = s / k$$

The fundamental idea behind this model is quite obvious: the more the country saves and invests a share of its GDP the more it grows and vice versa. The experience of many developing countries, such as Malawi, has rendered huge credence to the applicability of this growth model. According to Ghattak (1978:23), low saving rates and high current consumption levels in these LDCs have reduced GDP growth rates of these countries and hence driven them to seek financial loans and aid from abroad to cover for their acute resource deficiency. However, with rampant economic mismanagement prevailing in these countries, external debt has reached unsustainable levels thus hindering growth and resulting debt traps and vicious cycles of poverty.

In response scholars such as Afxentiou (1993:22) and Khatkate (1967:233) have argued that foreign trade can play a significant role in addressing this problem by increasing its foreign exchange revenue from exports. These scholars posit that since a country's ability to service debt is directly proportional to its export levels and interest rates on external loans, export promotion can help to narrow the gap between the interest rates on foreign loans and foreign exchange revenue, thus improving its debt servicing position. This would accelerate long-run GDP growth in LDCs where debt servicing is one of the major obstacles to economic growth. In this Harrod-Domar model imports can also contribute to growth if a country imports capital goods and technology which can increase the country's capital stock which results in growth in GDP over time. These capital goods may be in the form of productive plant and machinery (Ghattak, 1978:23).

It is clear from the above growth model that foreign trade could positively impact economic growth through export revenue that complements savings in financing development. Furthermore, the model also leaves room for imports-induced economic growth resulting from importation of capital goods from abroad that improves productivity and GDP.

2.3.2. Two-Gap Economic Growth Model

The Two-Gap Economic Growth Model is a variant of the Harrod-Domar model. It argues that economic growth emanates from the filling of two gaps that exists in the economy, namely the savings gap and the foreign exchange gap. In other words, for an economy to grow it needs to generate not only sufficient savings for investment but also foreign exchange revenue from international trade (Ghattak, 1978:74). According to its founders, Chenery and Strout (1966:684), the amount of exports and foreign capital that flows in and out of the economy constitute an economy's total capacity to purchase goods and services from abroad i.e. to close the foreign exchange gap. The gist of this theory is given in the equation below.

$$g = s/k + f/k$$

In the above formulation g represents GDP growth, s is the savings ratio, f is the foreign exchange requirement and k is the level of capital stock which is assumed to be given. The theory basically argues that growth in g results primarily from increases in the levels of s and f.

For many LDCs such as Malawi it is very difficult to achieve economic growth because either the savings and/or the foreign exchange gap is very wide. Therefore international trade (exports

and imports) is advocated as the solution to filling the foreign exchange gap. In fact export-orientation generates the much needed resources to finance a country's development process, repay external debt and build up a country's foreign currency reserves, all of which are conditions vital for economic growth. On the other hand, imports can also help to offset the savings gap by bringing in productive capital machinery and foreign capital which can not only boost the country's total capital stock, but also increase productivity which is essential for growth. Kruegar (1985:21), however, argues that for these imports to be beneficial they have to be productive capital goods and not consumption goods which may even increase the gap.

Similarly, Ray (1998:54) observes that open economies engaging in international trade are more likely to reduce their savings gap from foreign inflows of capital than those not involved in any form of external trading activity. These countries may also reduce their foreign exchange gap through returns to capital on their foreign investments.

2.3.3. Traditional (Old) Neoclassical Growth Theory

The traditional neoclassical model argues that economic growth results from increases in the quality and quantity of a country's labour force, technology and the total capital stock. As Todaro (2009:74) puts it: "an expansion in any of the above factors due to increasing returns to scale of inputs to outputs triggers an upsurge in the GDP levels over time". Apart from the above factors the theory also envisages that some other factors such as foreign trade (exports and imports) have a significant role to play in growth. The model asserts that trade-induced GDP growth results from inter-country movements of foreign capital and investments from countries where there are lower interest rates and higher input costs to those with higher rates of return and lower input costs. In this case these capital movements can impact growth both from the export and import sides. For example, exportation of capital generates returns on investment for the exporting country while importing of foreign capital may increase the capital stock and boost productivity in the importing country, *ceteris paribus*. Thus open economies involved in international trade are more likely to experience more growth than closed or autarkical economies which have no external trading activities (Ghattak, 1978:17).

2.3.3.1. Solow Neoclassical Growth Theory

This theory is one of many extensions of the traditional neoclassical growth theory. According to Dasgupta (1998:51), Solow's model basically follows the neoclassical economic tradition by analyzing economic growth (Y) as occurring through a production function containing factors such as labour (L), capital (K), and the level of technology (A) is assumed to be given. More importantly, Dasgupta notes that the model assumes diminishing marginal returns of the inputs to

output as shown by the elasticities of labour (β) and capital (1-β) with respect to output. This function is depicted in the formulation below.

$$Y = K^{\beta} (AL)^{1-\beta}$$

With constant elasticity economic growth (represented by increase in productivity) is seen as resulting from changes in the factors of production. However, this productivity is also influenced by other exogenous (external) factors such as government policies, changes in technology, market concentration and human capital (Ray, 2003:64). This is shown the equation below.

$$\Delta Y/Y = \beta (\Delta K/K) + (1-\beta) (\Delta A/A + \Delta L/L)$$

According to this theory, foreign trade has a part to play in attaining economic growth. A couple of arguments have been raised in support of both the export-led growth (ELG) and import-led growth (ILG) hypotheses. Two of the staunchest supporters of the ELG, Kruegar (1978:33) and Dollar (1990:126) state that exports boost the level of a country's GDP by increasing returns to scale divisibilities and fostering competitive domestic production. In addition, foreign exchange revenue realized from exports not only shores up the country's foreign currency reserves which creates stability in the value of the domestic currency, but can also be used to service external debt and import technologies that would further raise GDP growth. From this Mwimba (2003:46) concluded that open economies are more likely to benefit from the ELG than closed economies because through increased returns to scale, open economies converge at higher income levels than closed economies. Coupled with this Ram (1990:69) considers both exports and imports as factors of production that, if efficiently utilized, can generate increased rates of return for an economy hence increasing productivity and economies of scale.

Foreign trade as characterized by the importation of foreign technology and skills transfers also improves the effectiveness and efficiency of domestic labour and capital which enables a country to maximize its comparative advantage thereby allowing it to maximize its gains from trade which in the end increases the level of GDP (Gunter, Taylor and Yeldan 2005:177-179).

2.3.4. Endogenous Growth / New Growth Theory

According to Dasgupta (1998:125) the new growth theory or endogenous growth theory grew out of frustration with earlier neoclassical growth approaches' failure to pinpoint the causes of the massive inequalities in the levels of national income between developing and developed

nations as evidenced by the emergence of the Latin American debt crisis in the early 1980s. Dasgupta states that this growth model differs sharply from the neoclassical growth theory which emphasizes the principle of diminishing marginal returns to scale of the inputs to the level of output. Instead it argues that the factors of production show constant marginal returns to productivity and capital formation.

This growth model views an increase in GDP as coming from internal production processes i.e. it endogenises growth. In addition to this, Lal (1992:44) argues that unlike neoclassical economic growth theories which assume technology to be a given, endogenous models argue that the level of technology in the economy emanates from international capital transfers between developed countries and LDCs (Todaro and Smith, 2009:147). Therefore it is through these international capital movements that the role of international trade (imports and exports) becomes more pronounced. In fact LDCs exchange their export products, mainly primary commodities, for capital injections such as foreign direct investments, and technology from rich nations. For imports, the trade-growth transmission mechanism mainly involves technology. Grossman and Helpman (1991:147) clearly show in their analysis that imports contribute to economic growth by acting as a conduit for technological spillovers and knowledge transfers from developed to developing countries which increase the level of output in the former.

2.4 The Export Promotion School

According to Myint (1958:26-28) the birth of the drive for export promotion as a solution to economic growth can be attributed to 16th century Europe where mercantilists and entrepreneurs figured out that growth in trade with the outside world in minerals, agricultural commodities, and manufactured goods contributes to the expansion of national output. Given that most of these commodities were produced in primary sectors with an abundance of factors of production such as land and labour, food production boomed, thus necessitating that the surplus be sold somewhere outside the country. Over time proceeds from the surplus and the domestic production were seen to increase the national output and income. This was basically the beginning of international trade. Two major explanations given for international trade, more especially export promotion, were absolute advantage and comparative advantage. Adam Smith (1776) argued that a country gains absolute advantage over others when it produces commodities at less input costs than rival countries. On the other hand, David Ricardo (1817) improved on Adam Smith's definition by arguing that comparative advantage occurs if a country can produce commodities at less real or opportunity cost than others (Sodersten and Reed, 1994:78-82).

Many countries, particularly LDCs, were therefore inspired to engage in export orientation because it encourages specialization which increases national output and decreases the domestic general price level (Lal, 1992:43). According to Myint (1958:113) the impact of exports in fostering economic growth can be explained through the 'vent-for-surplus theory'. By this Myint implies that export orientation facilitates the utilization of idle resources in the economy to produce goods and services, the surplus of which can be sold abroad in order to satisfy foreign demand. This not only expands national output but also generates foreign exchange revenue that can be used to finance economic development.

Another point given in favour of the export promotion school is that outward-orientation encourages domestic firms to absorb modern technology which could increase the rate of GDP growth (Fischer, 1992:37). By engaging in international trade a country exposes its domestic export industry to some advanced foreign technical expertise which in the long run improves its productivity. In addition to this Balassa (1978:12) argues that for most LDCs it is revenue realized from outward orientation that empowers these countries to acquire the foreign technology. Balassa also argues that export revenues also enable LDCs to invest in foreign markets as was shown in the late 1970s when petroleum exporting Middle-Eastern countries invested the majority of their oil profits in Western capital markets. The returns on this investment increased these countries' GDP levels significantly during this period.

From the above analysis it is evident that export promotion plays a crucial role in achieving economic growth. However, as Balassa (1978:45) clearly points out, the state needs to play a very active role in this process. Neoclassical economic arguments calling for the removal of government from this process limit the efficacy of the ELG hypothesis in many Third World countries.

2.4.1. Criticisms of the Export Promotion School

In spite of the useful insights it has provided to development economics and international trade, the ELG hypothesis has come under fierce criticism from trade and globalisation pessimists and Marxist economists who are mostly in favour of import substitution. Carbaugh (2003, 66-67) points out that the basis for their fight against export promotion is condensed in three arguments. To begin with, these trade pessimists argue that over the years the global demand for primary commodities produced in the LDCs has not grown fast enough to outstrip supply and hence the producer countries will continue to suffer losses in the long run. Secondly, these anti-trade

economists point out the fact that the price index for the ratio of exports to imports (terms of trade) has always been in favour of rich nations who as a result buy commodities from LDCs at a very cheap price and then charge exorbitant prices for their manufactured exports to the Third World. These trade pessimists therefore argue that this constitutes unequal exchange and exploitation. Lastly, anti-trade advocates also point to the resurfacing of tariffs, quotas and other trade barriers imposed against exports from LDCs by developed countries, and also the emergence of high quality manufactured products from some LDCs as another reason for campaigning for import-substitution as a replacement for export promotion in LDCs.

Others such as Sheehey (1980:23) note that trade pessimists are against export promotion and globalization simply because they view it as one of the major determinants for reduced growth rates experienced by some export-dependent LDCs. Sheehy argues that trade pessimists blame the changes in technology for the economic collapse of certain countries for example copper-dependent Zambia which faced economic turmoil in the 1980s as the world prices for copper fell sharply due to the discovery of synthetic fibers which were seen as a cheaper alternative to copper. The shift in technology from labour to capital intensive modes of production by some multinational corporations (MNCs) operating in LDCs has also resulted in massive unemployment in these labour-intensive economies in which the majority of the workers are in the primary export production sectors and are mostly either non-skilled or semi-skilled. These are some of the main reasons cited for the depression of output in these countries.

Sharmal and Dharkal (1994:21) also observe that anti-trade economists strongly believe that the severe deterioration in the terms of trade between developed and developing countries can also be blamed on competitive and anti-trading practices among LDCs themselves and the developed countries' monopoly in technology and world commodity markets. The two authors argue that in some instances LDCs, in competing for Western commodity markets, end up undercutting prices to eliminate competition from fellow Third World countries and this in the end reduces their export revenues hence depressing growth. Furthermore, the West's monopolization of productive technology deprives LDCs of the chance to perform value-addition to their products and hence these countries continue selling primary commodities at cheap prices, thus curtailing their own economic growth potential. This situation therefore gives impetus to the need to implement import-substitution industrialization and do away with the ELG hypothesis in LDCs.

2.5 Import-Led Growth (Ilg) School

From a theoretical point of view, unlike the export-growth nexus, the relationship between imports and economic growth is not so straightforward mainly because imports are to a larger extent considered as a leakage to the circular flow of national income i.e. most import expenditure reduces national income resources (Grossman and Helpman, 1991:40-44). However, economists generally agreed that the impact of imports on GDP emanates from the fact that imports enable a country to acquire productive factors it cannot produce by itself and within its geographical boundaries due to the absence of the necessary technology, manpower, skills etc. Analyses of the impact of imports on economic growth have by and large hinged on unlocking answers to the question of whether or not international trading in technological knowledge promotes the attainment of higher national output between and within countries. Imports are considered to be the main diffusion conduit in this international trade of capital and technology because not only does imported foreign technical expertise contain the potential to increase domestic production levels, but also because imports are a potent proxy for economic interactions between a country's citizens and their foreign counterparts (Ram, 1990:46-48).

In tandem with the above analysis, Coe et al. (1997:117) observe several channels through which imports impact on GDP growth. They note firstly that the importation of intermediate capital goods may increase a country's productive capital stock levels which in the end would lead to economic growth. Secondly, imports increase GDP levels by enabling countries with low technical expertise (i.e. inside a technological frontier) such as developing countries, to adapt and adopt advanced technological inventions from those with higher technical know-how (i.e. frontier nations) such as developed countries. Thirdly, imports or international trade offers countries the opportunity to learn from others more efficient methods of resource allocation which have a huge bearing on productivity and increased national income levels. Coupled with this is the fact that imports can improve the quality of indigenous or domestic technologies through creation of competition which forces domestic industries to improve their production techniques. This improvement in the quality of domestic production energizes productivity and hence leads to increases in the level of national output.

The level of goods and services imported is primarily dictated by both economic and non-economic forces. Economic factors include the levels of economic activity, exchange rates, relative factor and product prices, wage rates, and both domestic and foreign economic conditions, while the internal and external political climate would comprise some of the non-

economic factors determining the level of imports. According to Rivera-Batiz (1985:26) an upsurge in the level of both domestic and foreign economic activity stimulates the demand for imports because with real incomes also on the rise there is high consumption demand. High consumption demand increases the level of an economy's aggregate demand and thus its economic growth. This constitutes a direct linkage between imports and economic growth.

A clearer view of the import-economic growth relationship is provided by endogenous growth models which consider growth as occurring from internal factors. According to Grossman and Helpman (1991:47) these economic growth models argue that imports provide a vital corridor for the diffusion of advanced foreign technologies, capital and knowledge into a domestic economy which then improves productivity leading to growth in output. These productivity-enhancing imports mostly consists of intermediate capital goods such as plant and machinery, and even technical skills, which increase a domestic country workers' level of effectiveness and efficiency in production (Thangavelu and Rajaguru, 2004:1083-1094). Serletis (1992:63) argues that the impact of imports on GDP growth is more pronounced if the domestic country's industrial foundation is rooted in export-oriented manufacturing plants. In addition to this, the presence of sufficient foreign exchange reserves in a domestic economy contributes significantly to economic growth by enabling the importation of essential capital goods which have the potential to expand a nation's production capabilities.

It should also be noted that since imports increase the variety of goods available in the economy, they therefore encourage economic efficiency of both producers and consumers since their consumption and production decisions are based on minimizing cost and maximizing satisfaction and profits, respectively. With this efficiency, specialization would follow which leads to increased national output and a fall in aggregate price levels (i.e. reduction in inflation) (Carbaugh, 2003:67-69).

2.5.1. Criticisms of the Import-Led Growth (Ilg) Hypothesis

Arguments against the ILG hypothesis are mainly advanced by anti-free foreign trade economists who advocate the imposition of restrictions on the goods and services imported into a country. Firstly, trade protectionists argue that imports expose fragile and emerging domestic industries ('infant industries') to unfair competition from mature foreign industries which have higher capitalization levels, and more advanced technologies and expertise. They argue that in the long run this may hurt domestic production and hence GDP. However, this infant industry protection

does not hold in most LDCs, like Malawi, where the import tariffs have remained permanent resulting in inefficiencies and higher prices for domestic consumers (Carbaugh, 2005:36).

Trade pessimists also criticize the ILG hypothesis for encouraging the dumping of surplus and inferior products into LDCs by rich developed countries. These cheap products discourage local production and also generate price distortions and instabilities which reduce GDP and hence discourage growth (Sodersten and Reed, 1994:44).

Furthermore, since imports constitute a leakage to the circular flow of income, they reduce aggregate demand, stifle domestic production and thus shrink growth and employment levels. Therefore the ILG hypothesis is seen as one of the major causes of unemployment (Dornbusch, 2001:67). Similarly, Ghattak (1978:54) argues that imports are the major cause of balance of payment problems in developing countries such as Malawi. This is so because foreign exchange expenditure negatively affects a country's current trade account resulting in serious debt crises and reduction in GDP. In this way the ILG hypothesis can be seen as a direct catalyst for negative growth.

Some dependency theorists also blame ILG as one of the major causes of underdevelopment and economic crises in some post-colonial states in Africa and Asia. They argue that the massive importation of capital and consumer goods by independent countries from their former colonial masters in the 1970s has encouraged neocolonialism as multinationals have flourished at the expense of domestic industries resulting in a reduction of economic growth rates over time (Krugman, 1996:102-104).

2.6 Empirical Works on the Elg and Ilg Hypotheses

2.6.1 Some Empirical Studies on the Exports-Growth Nexus

Given the increasing importance and popularity of the ELG hypothesis in the fields of development economics and trade, there is a large body of empirical literature worldwide with very mixed results and conclusions. Empirical analysis of the export-growth nexus has evolved over the years from initial bi-variate analyses to now multivariate analyses, and cross-sectional to now time series evaluations (Castro-Zuniga, 2004:23). These studies have broadened and enriched the knowledge base on this subject. For the purposes of this research, this study will focus only on those influential analyses that have led the way as far as the survey of the export-economic growth relationship is concerned.

One of the earliest studies on the ELG hypothesis was done by Balassa (1978) who sampled 11 developing countries that had instituted either export orientation or import substitution from 1960 to 1973. He found that the ELG hypothesis was valid in all the countries that had adopted export promotion but did not hold for those pursuing import substitution. But more importantly, it was discovered that countries that had maintained export promotion throughout the sampled period such as Brazil, India and Taiwan, grew faster than those who had switched from import substitution to export promotion.

Two of the most quoted studies validating the ELG hypothesis are the ones done by Ram (1985 and 1987) who ran an OLS regression on annual time series data for several developed and developing countries. He employed a production function comprised of GDP, exports, capital and labour force to examine the export-growth nexus. The study found a strong positive relationship between exports and economic growth in all these countries.

In a study targeting 16 rich countries of Western Europe, Asia and North America for the period 1950 to 1980, Afxentiou and Serletis (1991) tested the export-economic growth hypothesis using Vector Auto Regressive (VAR) models. The results showed support for the ELG hypothesis only for the USA and Norway but for the rest exports showed negligible or no impact on the level of GDP. Similarly, the direction of causality for the USA and Norway run from exports and economic growth, but Granger causality tests for the rest of countries were indeterminate.

In a similar study, Jin (1995) using a 5-variable VAR model attempted to test the presence of the ELG hypothesis in four 'Asian Tigers' (South Korea, Singapore, Taiwan and Hong Kong). Several time series regression tests were conducted on the quarterly data collected for the period spanning from 1973 to 1976 and the study revealed that exports have a positive and significant impact on the level of real GDP in all the four sampled countries. However, results for Taiwan showed that the direction for causality runs from economic growth while for the rest of countries it was exports which Granger caused GDP growth within the sampled period.

For Costa Rica, Medina-Smith (2001) found evidence of the ELG hypothesis by running an OLS regression on annual time series data covering the period 1950 to 1997. Apart from employing a Cobb-Douglas production function containing exports, GDP, gross domestic investment, labourforce and gross capital formation, Medina-Smith also employed several regression tests such as Granger Causality tests, Cointegration tests and the Durbin-Watson tests. The results

showed strong evidence in support of the export-growth nexus but also that the direction of causality run from exports to GDP growth.

An ELG hypothesis testing study targeting the four Gulf petroleum exporting countries of Kuwait Oman, Saudi Arabia and United Arab Emirates was conducted by Al-Yousif (1997) using time series data collected annually from 1973 to 1993. Al-Yousif also used production functions and sectoral models to test for the existence of a long-run relationship i.e. cointegration between exports and real GDP growth. Despite finding no evidence of cointegration in all the sampled countries, the author found a positive and statistically significant relationship between the level of exports and economic countries in all these Gulf countries.

In Botswana, Sentsho (2002) attempted to find evidence of the ELG hypothesis by using annual time series data from the country's mining sector for the period 1976 to 1997. He used the OLS method to run a regression on two neoclassical aggregate production function models (APFM) containing exports, GDP, imports, labour, capital and other variables such as government and the private sector. The conclusions that were drawn from the studies were that real exports have a positive impact on economic growth and that increases in primary export revenues also results in expansion of the GDP level and hence growth in the long-run.

Njikam (2003) tested the validity of the ELG hypothesis on 21 Sub-Saharan African countries including Malawi. In all these countries exports were found to have a positive and significant effect on economic growth. However, it was the Granger causality tests that gave mixed results. It was only three countries (Malawi, Cameroun and Mali) that showed evidence of unidirectional causation running from exports (manufactures) to economic growth. The rest of the countries showed evidence of either bi-directional causation or causation running from economic growth to exports.

In a similar vein, Matemvu (1997) not only tried to examine the ELG hypothesis but also the direction of causality between the two variables in Malawi and the SADC region. His study found strong empirical evidence in support of the ELG hypothesis in Malawi and the majority of the sampled countries except Botswana. Interestingly, he discovered that the direction of causation in Malawi and these countries (minus Botswana) runs from exports to GDP growth.

In an attempt to validate the export-growth relationship in Southern Africa, Chanthunya (1991) sampled annual data from Malawi and nine other SADC member states using the Two Stage Least Square regression technique. His study found that exports have a weak impact on the level of economic growth in all these countries. This result was blamed on the fact that most of these sampled countries were still net-exporters of primary commodities and that they had not fully embraced outward orientation. Coupled with this, Granger causality tests from the study also found bidirectional causation between exports and GDP in Malawi.

Even though the above empirical studies seemingly proclaim the presence of overwhelming support in favour of ELG hypothesis, there is also a sizeable body of empirical literature that strongly disputes the export-growth nexus. One such study was conducted by Jung and Marshal (1985) using Engle-Granger tests and regression techniques to ascertain the validity of ELG in 37 countries around the world. Results from this study revealed a notable lack of evidence in favour of the ELG hypothesis.

On a similar note, Helleiner (1986) using a sample of annual time series data of selected Sub-Sahara African countries from 1960 to 1980 found that export shares have a negative and statistically insignificant effect on the level of GDP. This result also showed a consistent negative relationship between export share of the GDP and the level of GDP expansion.

Another study that failed to verify the export-growth nexus is the one conducted by Fosu (1990) who sampled data from 64 LDCs from the period 1960 to 1980. Results from his neoclassical economic framework showed that countries which had exports as one of the inputs in their production process tended to grow slower than those which did not, thus showing that exports have a very weak effect on GDP. In addition to this, the author concludes that ELG leads to worsening terms of trade for most LDCs in favour of their rich counterparts from the West.

2.6.2. Some Empirical Studies on the Import–Growth Nexus

In one of the studies aimed at establishing the Import-Led Growth (ILG) hypothesis for Turkey, Kotan and Saygili (1999) estimated the import demand function using two competing regression techniques, Ordinary Least Squares (OLS) and Maximum Likelihood (ML) models. Results of the study established that, holding all other things constant (*ceteris paribus*), imports have a positive and significant effect on the national income level and hence economic growth in the long run.

In the same vein an historical survey was conducted in India by Dutta and Ahmed (2004) with the view to examining the behavioral patterns of aggregate levels of imports *vis a vis* the GDP growth rates for the period spanning from 1971 to 1995. This analysis made use of advanced econometric techniques with the intention of establishing the import-growth nexus for India. However, what emerged from this study was that it is the levels of real GDP that determine the demand for imports and not vice versa.

A study by Humepage (2004) also found that imports have a positive and statistically significant impact on the level of economic growth in the USA. Despite this being the case, the study failed to establish the exact nature of direction of causality of relationship between exports and GDP growth. In fact, what clearly emerged from the study's findings was that the direction of causality between the two variables predominantly occurs from the side of income/output (economic growth) to imports and not the other way round. In concurrence with Humepage's findings, Hooper et al. (1998) using quarterly data, went further to establish a positively elastic relationship between economic growth and imports i.e. he established that in the USA, a unit percentage increase in real GDP results in a 2 percent increase in the level of total exports.

Furthermore, Baharumshah and Rashid (1999) in a related study for Malaysia that incorporated exports as an additional input, found that there exists a constant positive relationship between exports and imports and the level of national output growth in the long-run. Indeed this study revealed that importation of foreign technological machinery and expertise was the significant determinant of long term growth in the then booming and robust Malaysian economy.

Using co-integrated Vector Auto-Regressive (VAR) Models, Awokuse (2007) attempted to find empirical evidence in support of the positive impact of exports and imports on economic growth in a selected number of Eastern European countries namely the Czech Republic, Bulgaria and Poland. In this study, which employed a neoclassical economic growth model, it was found that unlike previous studies which omitted the exports variable in their analyses, inclusion of this variable gives more realistic and accurate predictions. Imports were found to have a positive and significant influence on economic growth.

In Portugal Ramos (2001) sought to unearth the import-growth nexus for the period from 1865 to 1998 by employing Granger-Causality tests and adding exports as another variable in his model. Although the results of his study showed a positive effect of exports and imports on economic

growth, it rejected the null hypothesis of a unidirectional relationship between the variables i.e. the notion that it is imports and exports that determine economic growth and not the other way round. Thus the conclusion that came out of the findings was that of a bidirectional relationship among the variables i.e. the notion that either imports cause economic growth or economic growth causes imports.

In a study targeting four largely inward-oriented LDCs: Nigeria, Papua New Guinea, Fiji and India, Asafu-Adjaye and Chakraborty (1999) found evidence of a positive and statistically significant relationship among exports, imports and the level of economic growth. In fact, with the use of Error Correction Methods (ECM), they found evidence of a unidirectional relationship between the three variables i.e. causality moving from exports to imports and finally to GDP growth.

In a study that was primarily targeting the export-growth nexus for 126 developing countries, Riezman, Summers and Whiteman (1996) incorporated imports as the principal conduit of this ELG analysis. In their analysis which consisted of forecast error decomposition techniques, a bidirectional relationship was found between levels of exports and import on one hand, and economic growth on the other hand. In essence they found that the direction of causality is strongest when directly running from imports to exports and then economic growth. On the other hand, the causality is weaker when moving from exports to imports and economic growth. However, the most important conclusion in this study was the fact that imports have to be included in any ELG analysis, otherwise their omission will more likely lead to spurious regressions and analysis.

Another similar study targeting evidence of the existence of ILG for India, Indonesia, Philippines, Taiwan and Malaysia was conducted by Thangavelu and Rajaguru (2004). They found a positive and significant relationship between levels of imports and national output for the aforementioned Asian economies. There were also strong indications of the presence of a unidirectional relationship between this variables .i.e. the direction of causality was running from imports to economic growth.

On the same subject, Mahadevan and Suardi (2008) identified the predominant role imports play in the economic growth of Japan. However, they failed to provide any empirical support to the import-led economic growth for South Korea.

Awokose (2008) surveyed the import-led growth hypothesis in selected South American countries including Argentina, Colombia and Peru. Despite the end results of the study showing mixed and contradicting findings on the ILG, ELG and growth driven exports, it was confirmed through Granger causality tests that imports exert a larger leverage on economic growth than exports. This was also true of the opposite scenario where growth exerts lesser influence on imports.

Using a sample of 40 developed nations and Newly Industrialising Countries (NICs) Islam et al (2011) found that the impact of imports in catalysing economic growth is greater than that of exports in increasing the levels of national income and output in the aforementioned countries.

In a similar study consisting of a number of Pacific-Island Nations including Fiji, Papua New Guinea, Tonga and Vanuatu, Mishra et al (2009) found that imports have a positive and significant effect on economic growth. However,, the study also revealed that economic growth also positively influences the level of imports i.e. the direction of causality is bidirectional.

In a study targeting seven poor Sub-Saharan African countries for the period 1966 to 1986, Lopez and Thomas (1990) used the OLS method to determine an import demand function. This model had export-debt ratio as a proxy for the level of export capacity, real GDP, real exchange rate, and import absorption rate as a percentage of GDP, as its five dependent variables. The study results made it clear that in only five of the seven sampled countries, real income or GDP had a positive and significant effect on the level of total import demand.

In the case of Kenya, Mwega (1993) used a sample size of 27 covering the period 1964 to 1991 to estimate the total import elasticity of demand by employing an ECM technique. The results of this study confirmed that GDP had no significant long run effect on the level of both consumer and final goods imports in Kenya during the period in question. These consumer goods imports included food and beverages, while the final goods included petroleum products. He observed that this could be so because of a high correlation between the variables real income and relative import prices. However, the situation was different for capital goods as real income was found to significantly determine capital goods such as plant and machinery.

For Nigeria Egwalkahinde (1999), in a quest to determine the import-growth nexus, estimated an import demand function with the help of an Engle-Granger technique. His study which focused on the period 1953 to 1989 contained industrial output as the GDP proxy and also as the main explanatory variable. Results showed that, *ceteris paribus*, industrial output has a positive and significant impact on the level of the imported factors of production such as industrial raw materials, in the short run at least.

Similarly, Solomon (2000) used not only the Engle-Granger Cointegration technique but also the Johansen Cointegration method to empirically assess the determinants of the import demand for Ethiopia from 1960 to 1995. His study uncovered the fact that real GDP positively and significantly influences both the short-run and long-run country's aggregate levels of import demand. However, what also came out clearly in his findings was the fact that in the long-run real income has a more significant effect on productive capital goods imports, while in the short-run real income has no significant influence on imports of consumables.

2.7 Conclusion

In summary, the above discussion has analysed the relationship between international trade (imports and exports) and economic growth from both a theoretical and an empirical point of view. Even though these growth theories differ in their transmission mechanisms for the trade-growth process, all of them support the ELG and ILG hypotheses. A similar picture emerges with empirical studies in which there is some diversity in the findings and methodologies used. However, apart from a few studies that have found no evidence or a negative relationship between the variables, the majority of these empirical studies have found a positive relationship between both exports and economic growth, and imports and GDP growth.

The presence of a considerable divergence in empirical findings for both the ELG and ILG hypotheses in various countries presents food for thought to development economists in this field. It is clear, however, that the divergence is bigger when comparing studies of groups or blocs of countries and those of individual countries than if the comparison is between individual countries themselves. Therefore it may be prudent for development economists to conduct country-specific surveys, and not studies focusing on a group of countries, in order to come up with more accurate and plausible results for the ELG and ILG hypotheses. This is what this study has attempted to do. The next chapter presents the analytical framework through which the study was conducted.

Chapter Three: Analytical Framework

3.1 Introduction

This chapter provides the general analytical framework for analyzing the impact of international trade on economic growth. The neoclassical economic growth model is discussed. After analyzing its relationship with international trade (exports and imports) an analytical model will be generated. Finally, empirical justification of the framework is presented, and the chapter concludes with the study's working hypotheses.

3.2 Neoclassical Economic Growth Theory

According to Todaro and Smith (2009:128-129), the Neoclassical Growth Theory which is also commonly known by its variant, the Solow Neoclassical Growth Theory, looks at economic growth as occurring through an aggregate production function which looks at growth in national output as emanating mainly from three factors of production: labour force; capital; and level of technology. In this framework the level of technology is assumed to be exogenously determined i.e. independent of all the other variables in the model. An increase in any of these three inputs, labour force, quantity and quality (through population boom and education), levels of a country's total capital stock and technological innovation, will bring about an increase in national output over time (economic growth). Traditionally, the Solow neoclassical economic growth theory is given by an aggregate production function as follows:

$$Y = K^{\beta} (AL)^{\alpha} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where Y represents total output produced in an economy,

A represents factor (s) that affects a country's level of technology,

K represents a country's available total capital stock (both physical and human)

L represents the total productive labour force in the economy,

β represents elasticity of capital with respect to national output,

α represents elasticity of labor with respect to national output.

It should be noted that Solow's model assumes diminishing returns to labour force and capital stock separately, but constant returns to scale for labour and capital jointly. This is shown by the elasticities of labour **β** and capital **α** with respect to output. In fact, these returns to scale/elasticities measure changes in output as a result of changes in the level of inputs. Constant

returns to scale simply imply an x change in output as a result of an x change in input or factor of production. In this case, an x change in either labour force or capital stock results in an x change in national output (Mankiw, 2006:112-115). This constant returns to scale function is depicted in the formulation below.

$$\beta + \alpha = 1$$

With constant elasticity, economic growth (represented by increase in productivity) is seen as resulting from changes in the factors of production which is shown in the model as follows:

$$\Delta Y/Y = \beta\,(\Delta K/K) + \alpha\,(\Delta A/A + \Delta L/L) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

However, this productivity is also influenced by other exogenous (external) factors such as government policies, changes in technology, market concentration, international trade and human capital (Ray, 2003:64).

3.2.1 Graphical Illustration of the Solow Neoclassical Model

Below are Figures 3.1, 3.2 and 3.2 of a basic formulation of the Solow Growth Model as illustrated by Perkins et al (2006:22-28). Some of its important variables included in the diagram below are as follows:

K is a country's total capital stock,

d is the depreciation level of capital,

n is growth in population or labour force,

s is savings rate,

y represents total national output, and

A and B are the 'steady state' level.

But it should be noted that savings rate (s) is also equivalent to the capital share of income in the model.

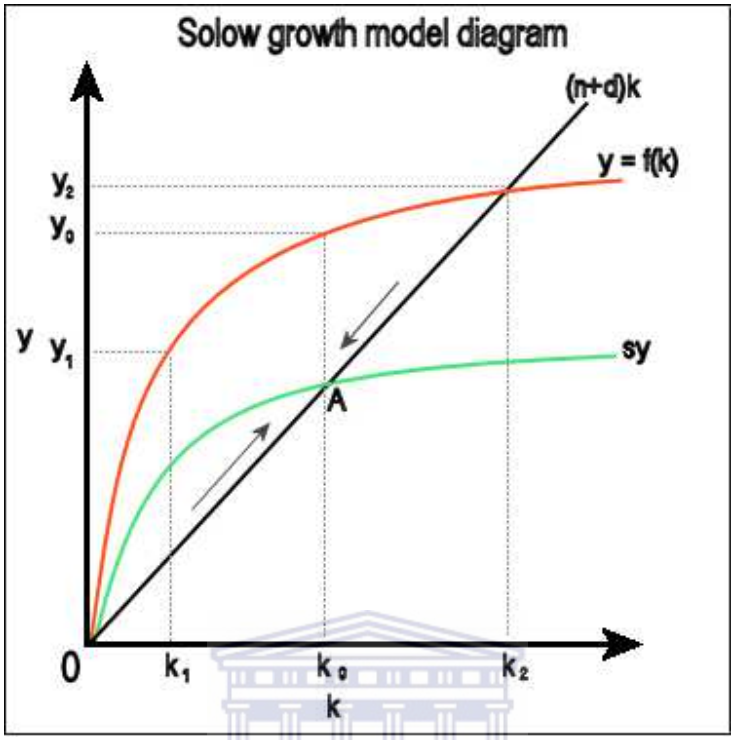


Figure 3.1 Basic Solow's Neoclassical Growth Model

Source: Perkins et al. (2006:22)

In the above diagram, point *A* represents the steady state where the output-labour ratio is constant. Technically, the steady state can be reached after a period of economic growth or economic down-sizing where national output equals the rate of depreciation. From the graph, A also represents the point of equality between new savings *(Sy)* and the new capital required to generate growth in labour force and the level of depreciation *(n + d)*. Even though the economy is in equilibrium at point *A*, population is expanding at a given rate *n* but output (GDP) per unit of capital (y) remains constant.

It is clear from the graph that points to the left of point *A*, are characterized by excess savings per worker rates, as such, the national capital to labour ratio expands. This is called capital deepening and it increases output in the graph from y_0 to y_1. This is due to the fact the quantities of savings have increased even beyond the minimum required to keep the economy in equilibrium. But it is also worth noting from the graph that total national output (*n*) expands in proportion to the rate of population growth.

On the other hand, to the right of point A, an opposite scenario occurs. Here national output per worker is on a steady decline because savings are not sufficient to induce the level of investment necessary to increase capital. Now, the resultant fall in capital per worker as is shown in the graph by point k_2 fails to match increases in population and the rate of depreciation (n+d).

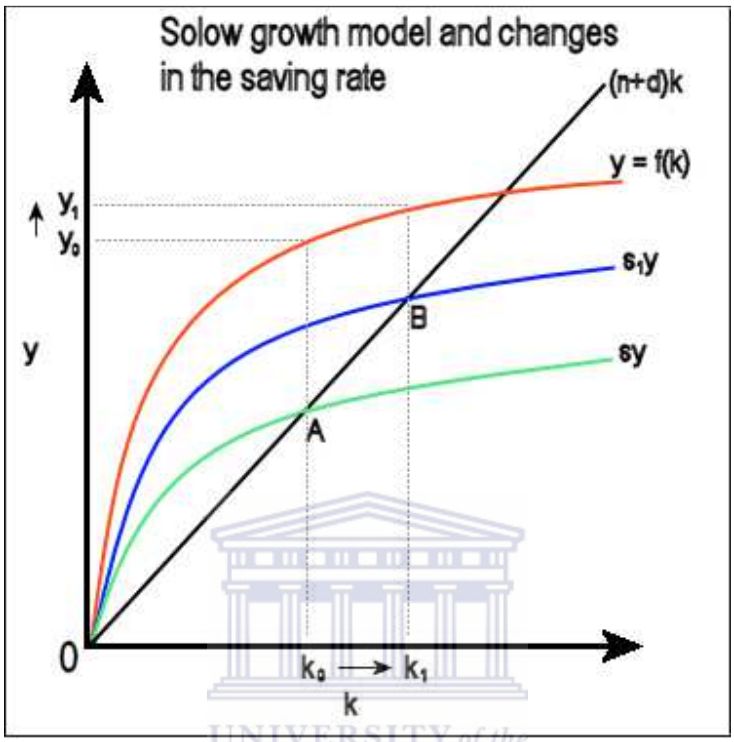


Figure 3.2. Increase in the Savings rate in the Solow Neoclassical Growth Model

Source: Perkins et al. (2006:22)

With an increase in savings, the national savings function shifts upwards from *sy* to s_1y as is shown in Figure 3.2, above. This signifies that per worker saving rates have now outgrown the summation of population and depreciation. As a result, the national levels of capital stock have increased from k_0 to k_1 thus shifting the economy's equilibrium level from point *A* to point *B*. Following from this, the output-labour ratio also goes up steadily from y_0 to y_1, signifying the point that the national output (GDP) initially grows at a very rapidly rate before stabilizing at the equilibrium expansion rate which is indicated by point *n*.

With a shift in the steady state from point A to point B, capital and productivity per worker keeps on rising. However, the GDP growth remains on the same level as it were before the rate of savings increased.

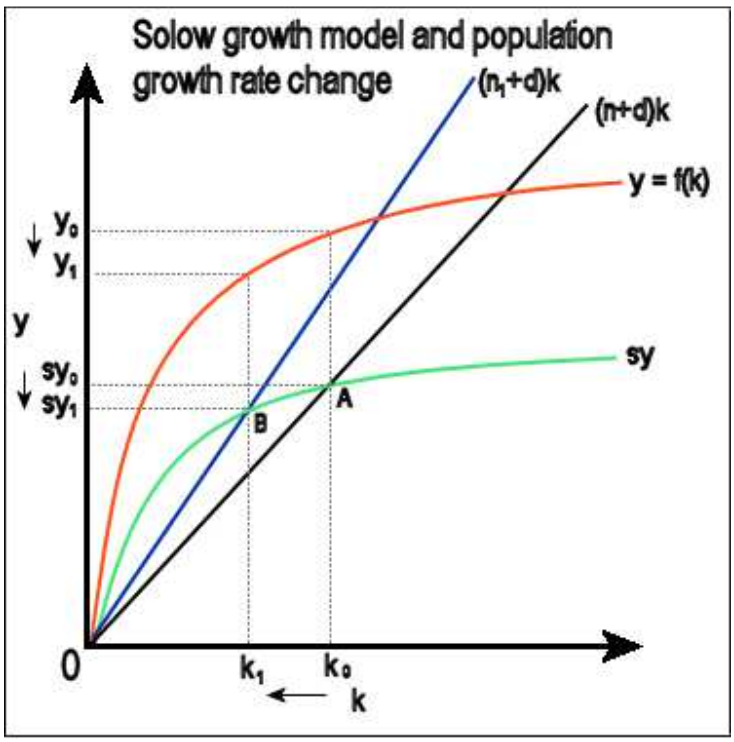


Figure 3.3 Changes in the Population in the Solow's Growth Model

Source: Perkins et al. (2006:22)

With an a increase in a country's population depicted in the graph as an upward movement from *(n + d)k* to *(n_1 + d_1)k*, the equilibrium level or steady state moves from a higher point A to a lower point B. This downward shift in the steady state reduces both the national output and the amount of capital per worker. As shown in Figure 3.3 above, GDP decline is depicted by a shift in output from y_0 to y_1 and capital reduction is given by a shift from k_0 to k_1.

An important prediction of the above growth model is that LDCs will eventually catch up with developed nations in the long run, provided they have levels of savings, depreciation rates and population growth rates similar to the developed nations. This is called unconditional income convergence. However, empirical evidence from the majority of LDCs point to the contrary i.e. over the years developed countries have grown richer than developing countries. What is now clear is that for income convergence to occur between countries, it is not enough for countries only to have similar savings and population growth rates. LDCs also need to have in place similar institutional arrangements, free domestic markets, international trade policies and education policies to those of the richer nations if their incomes are to converge in the long run. This is called conditional convergence (Easterly, 2001:52-54).

3.2.2 Strengths of Solow's Neoclassical Growth Model

One of the major advantages of the above model is that it constitutes a considerable improvement over other one-sector growth models such as the Harrod-Domar Model that try to explain GDP growth through only a fixed capital coefficient. This is so because the Solow's neoclassical model incorporates other factors such as labour, technology and other important exogenous factors such as international trade (Todaro and Smith, 2009:129).

Furthermore, since the model uses an aggregate production function, it allows for substitution between the factors, unlike in other economic growth models. With this comes the concept of returns to productivity which are not present in earlier growth theories. Many prominent development economists find it theoretically more grounded than most of contemporary economic growth theories (Mankiw, 1995:124).

Solow's neoclassical economic growth model also offers clear insights into the interactions between economic growth on one hand and the role of technology, innovation, and other exogenous factors such as international trade, on the other hand (Jones, 2002:74).

3.2.3 Criticisms of Solow's Neoclassical Growth Model

The main criticism leveled against the neoclassical growth model is that it just states that the determinants of the steady state such as savings rates, technical change, human capital, and population growth rates are given in the model. However, it fails to clearly explain how these factors emerge and change during the course of the growth process (Perkins et al., 2006:43).

But despite the above criticisms Solow's model is still very crucial in economic growth, so much so that many of the later economic growth models are developed largely based on it. In other words, it constitutes the building blocks of economic growth theory (Easterly, 2001:52).

3.3 Neoclassical Growth Theory and International Trade

As already mentioned, in the neoclassical growth framework, apart from the changes in the factor inputs such as labour, capital, and technology, economic growth can also result from other exogenous factors such as international trade. The linkage between the neoclassical growth theory and international trade is best explained by the David Ricardo (1817) principle of 'comparative advantage'. By comparative advantage economists mean a situation where a country produces one or more commodities at less opportunity cost relative to other countries.

As observed by Sodersten and Reed (1994:126) this occurs under the neoclassical trade regime where economies are assumed to produce their GDP from changes in capital and labour after employing equal quantities of technology. Moreover, these economies are assumed to be perfectly competitive with factor mobility and constant returns to scale, just like in the Solow Growth Model discussed earlier on. With comparative advantage, the Hecksher-Ohlin Model observes that a country will enjoy increased productivity as long as its Terms of Trade (ratio of exports to imports) is different from its relative factor prices. Thus a different Terms of Trade will enable a country to export the factor abundant commodity and import those it cannot produce locally such as advanced technology, in the case of many LDCs (Appleyard et al., 2001:87-89).

As clearly demonstrated in the studies by Feder (1982) and Ram (1985, 1987, and 1990), neoclassical trade theory argues that international trade has a positive effect on the level of economic growth. These studies argue that the effect of international trade on economic growth can be easily analysed using neoclassical production function in which exports and imports enter as additional factors of production. In other words, national output results from a combination of the factors of production (labour and capital) and international trade. This can be shown in the aggregate production function below.

$$\mathbf{Y = \mathit{f}\,(L, K, EXP, IMP)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{(3)}$$

Where Y is the level of GDP, K is total capital stock, L is labour force, EXP is exports, and IMP is imports.

Due to the vital role labour and capital play in the productive process, neoclassical economic theory argues that these factors should have positive effects on level of output i.e. $\Delta Y/\Delta L > 0$, and $\Delta Y/\Delta K > 0$. Similarly, Lipsey and Chrystal (2005:77) argue that, holding everything else constant, basic macroeconomic theory views international trade as having positive externalities on the level of GDP and therefore both imports and export variables should have a positive effect on growth i.e. $\Delta Y/\Delta EXP > 0$, and $\Delta Y/\Delta IMP > 0$.

But in practice there are some other unobservable important factors apart from labour, capital and international trade that affect economic growth. As already indicated, some of these factors may include government policies, or international geopolitical factors which the above neoclassical growth model has not captured. Therefore a random term μ will be added to

equation (3) in order to capture these factors and increase the above neoclassical growth functions analytical and predictive power as shown below.

$$Y = f(L, K, EXP, IMP) + \mu \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Therefore, this "Analysis of the impact of exports and imports on economic growth in Malawi" will use an aggregate neoclassical production function as shown by equation **(4)** given above.

3.4 Some Empirical Studies that have used Neoclassical Growth Theory in Analysing the Relationship Between International Trade and Economic Growth

International trade-growth literature contains numerous studies that have employed neoclassical growth equations based on aggregate production functions in analyzing the ELG and ILG hypothesis. For the purposes of this study, however, only influential ones are cited below.

Two of the most quoted studies validating the ELG hypothesis are the ones done by Ram (1985 and 1987) who run an OLS regression on annual time series data for several developed and developing countries. He employed a production function comprising GDP, exports, capital and labour force to examine the export-growth nexus. The study found a strong positive relationship between exports and economic growth in all these countries.

In an analysis of the export-growth nexus for some developing countries, Feder (1982) used a neoclassical growth model with capital, labour exports and real GDP as its main variables. Using OLS regression he confirmed the ELG hypothesis but also found that the export-growth nexus stimulated efficiency and productivity in the sampled countries.

For Tunisia, Hachicha (2003) used time series data for the period spanning from 1961 to1995 to establish the export and economic growth relationship. Hachicha used neoclassical Cobb-Douglas growth models to estimate export demand and supply functions in relation to real GDP. The results of the study showed equivocal support for the export-growth nexus for the country during this period.

Sentsho (2002) used neoclassical aggregated growth functions to establish the export-growth nexus for Botswana from 1976 to 1997, with special emphasis on mineral exports. Apart from labour, capital, exports and imports, these growth models also contained inputs from other exogenous variables such as government, private sector and world GDP. OLS regression

equations were run on the data. In the end the author confirmed the ELG hypothesis and that this economic growth was heavily influenced by primary mineral exports.

Using a neoclassical Cobb-Douglas growth model Medina-Smith (2001) attempted to find the export-growth nexus for Costa Rica for the period 1950 to 1997. The neoclassical growth model had real GDP, gross capital formation, real exports, real domestic income and labour force as some of it variables. After running an OLS regression he found strong support for the ELG hypothesis during both the short and long run periods.

Similarly, Siddique and Selvanathan (1999) employed a neoclassical growth model comprising total real exports, manufacturing exports and real output to validate the export-growth nexus for Malaysia. Several econometric diagnostic tests such as Augumented Dickey-Fuller, Engle-Granger and Wald were run on the data collected from 1966 to 1996. However, the above scholars did not find any evidence of causality between the variables during this period.

In a study targeting four Middle Eastern countries namely Oman, Kuwait, United Arab Emirates and Saudi Arabia, Al-Yousif (1997) used neoclassical production/growth functions to establish the ELG hypothesis. The functions had exports as one of the inputs and real GDP as the output. Using time series annual data from 1973 to 1993, Al-Yousif found a positive and significant relationship between exports and growth.

As for the ILG hypothesis, Awokuse (2007:389-395) tried to validate the import-growth nexus for three Eastern European countries: Czech Republic, Poland and Bulgaria using VAR models. He employed a neoclassical economic growth model with imports, exports, GDP, and technology as some of the factors. He found that imports have a positive effect on GDP growth and that exclusion of the import variable leads to spurious regression results.

In a similar vein, Lopez and Thomas (1990) tested the validity of the imports-growth nexus on data from the period 1966 to 1986 for seven Sub-Saharan African countries using the OLS regression technique. Their model used a neoclassical growth function which had export-debt ratio, import capacity, GDP absorption percentage, real exchange rate and real GDP as the variables. They found that imports have a positive and significant effect on economic growth in only five of the countries.

Gulati (1978:519-522) tried to validate the ILG hypothesis in several developing countries using a neoclassical production function and time series data. The neoclassical function had savings, capital, imports, exports and GDP as some of the variables. He found that capital imports have a positive and significant effect on GDP growth and that the precise effect of the ILG depends on the availability of capital.

3.5 Chapter Summary

The chapter sought to generate an analytical framework through which the impact of exports and imports on economic growth in Malawi will be analysed. Owing to its strong theoretical and empirical grounding, the neoclassical economic growth model was chosen as the framework of analysis. But in order to precisely capture the impact of trade (exports and imports) on the level of GDP, a modified version of the model was adopted based on two pioneering studies on the trade-growth nexus conducted by Feder (1982) and Ram (1985, 1987 and 1990). In addition, several empirical studies that have employed the neoclassical growth framework in analyzing both the ILG and ELG hypothesis across the world were also cited in defence of the study's use of this model. The next chapter presents a detailed account of the research methodology used in this study.

Chapter Four: Research Methodology

4.1 Introduction

This chapter describes in detail the research methodology followed in the study. It presents the step by step process through which this study was carried out. In particular, it discusses issues of research design, data collection methodology, sampling techniques, model specification, data analysis, and the estimation of the model.

4.2 Description of the Study Area

The study location for this research is Malawi. All the data used in this research originate from this country. Malawi is a small, landlocked country located in the southeast of Africa. It lies between latitudes 9° and 18° south of the equator and longitudes 33° and 36° east of the Greenwich Meridian. The country forms part of the east Africa's Great Rift Valley and is bordered by Tanzania to the north and northeast, with Zambia to the west and Mozambique to the south and east. It covers a total land mass of 114485 km^2 while 20 percent (approximately, 370 km^2) of the land is covered by Lake Malawi (Malawi Investment Promotion Agency, 2010:3). See Appendices B and C for details.

Socially, the country has a population of 15.1 million, mostly Bantu peoples, with a minority of Asian and European communities. The majority of the population (65 percent) lives in rural areas while the rest is spread among the small peri-urban and urban sectors of the country. Recent social indicators indicate that the country's life expectancy is at 54.6 years while the HIV prevalence rate sits at 9.1 percent. The literacy rate is at 72. 8 percent and infant mortality per 1000 live births is 86.1. Nevertheless Malawi is on track to achieve four of the eight United Nations Millennium Development Goals by 2015 (World Bank, 2012:2).

Economically Malawi is an agro-based developing economy with agriculture contributing about 40 percent to the total annual GDP while the service sector, wholesale and retail trade, contributes 27 percent to the national output. Macroeconomic indicators show that at present the inflation rate is at 29.7 percent, while the unemployment rate is 40 percent, and the exchange rate value of the Kwacha against the US Dollar is around MK 330.00. With regard to living standards, the country's annual GDP per capita (purchasing power parity) is currently at US$900 while the poverty head count ratio for the country's rural and urban areas are 57 and 17 percent

respectively. In addition, the Gini coefficient inequality measure is 0.45 and the aid dependency per capita is at US$68.6 (GoM, 2013:4-8).

4.3 Research Design

Before conducting any study it is necessary to come up with a plan of the study's methodology and how that plan fits with the study's purpose. These plans direct decisions on when, how, where and how often to collect and analyse data. This is what is basically known as a research design. More generally, there are four main types of research designs, namely cross-sectional, time series, case studies and experimental. In studies covering a long span or period of time, time series research designs are generally preferred to the other types of research designs because it is easier to collect data on their variables since the data are often readily available and they are also easy to analyse and interpret (Bhattacherjee, 2012:29-31).

Therefore, in analysing the impact of exports and imports on economic growth in Malawi from 1970 to 2010 a time series research design will be employed. According to Bryman (2000:71) a time series research design involves measurement and collection of data on the same variable at different points in time mainly in order to study and analyse socio-economic trends. This stands in sharp contrast with cross-sectional designs in which data collection is done once. Generally, time series data refers to data gathered periodically such as annually, monthly or weekly. This study collected annual time series data from 1970 to 2010.

4.4 Research Methodology

According to Cresswell (1994:76-81) a research methodology basically refers to a structured process of collecting, analyzing and interpreting data for the purpose of answering research questions. He further notes that there are three types of research methodology namely qualitative, quantitative and mixed approaches. Quantitative research methodologies primarily employ numerical and statistical tools in order to test theories and generalisations and hence answer research questions. On the other hand, qualitative methodologies aim at getting deeper meaning from social phenomena by directly observing the research subjects in their natural environment. They do not use numerical figures but look at the meanings people attach to them. In contrast, mixed approaches combine aspects of both quantitative and qualitative methodologies in solving research problems (Rubin and Babbie, 2011:453-454).

Since the nature of this study involves comparing data in a systematic way, testing theory and making generalisations on the whole population, the quantitative research methodology offers

the best option compared to the other two research methodologies. Therefore, a quantitative research methodology is employed involving in-depth statistical analyses on the collected time series data from 1970 to 2010.

4.5 Data Collection: Sources and Techniques

This study used secondary annual time series data collected for the period 1970 to 2010. This secondary annual time series data was collected on GDP, exports, imports, labour force and capital (Gross Capital Formation) from the World Bank Malawi Country Office records. The World Bank Malawi Country Office Online Library was chosen not only because of its credibility but also because of its comprehensive statistics record keeping of these variables. Annual time series data has been chosen because in Malawi data on the above variables is normally compiled annually. It is therefore easier to collect annual rather than monthly or quarterly time series. Furthermore, since the World Bank Malawi Country Office Library/Archive is free and open to the public it was easy to access the data as there was no requirement to seek prior permission. Nevertheless, it still has to be stated that the data obtained from the Country Office Library were used for academic research purposes only and full acknowledgement has been given to the sources.

4.6 Sample Size and Sampling Technique

The credibility of any research study is judged mainly by the precision of the results generated and the validity of the inferences that can be drawn from them. Both of these factors depend on the sampling techniques and the sample size generated. Generally, the higher the sample size the more accurate are the results because sample statistics come closer to the actual population parameter (Bhattacherjee, 2012:46-49). This study employed simple random sampling in coming up with a sample of 40 annual observations collected for the period 1970 to 2010. The sample size of 40 is adequate for the power of probability and consequently to make the desired statistical inferences. The data were collected in Microsoft Excel format before being imported into Stata Software Version 12.0 for analysis and interpretation.

4.7 Model Specification and Variable Description

As mentioned in the previous chapter, this study uses a neoclassical growth model as its theoretical and analytical framework. Basically, Solow's neoclassical growth theory looks at economic growth as occurring through a Cobb-Douglas aggregate production function which looks at growth in national output as emanating from several factors such as labour force, capital,

level of technology and other exogenous factors such as government policy, international trade and market concentration. Studies by Ram (1985, 1987 and 1990) and Feder (1982) clearly demonstrated how international trade impacts on the level of economic growth in the neoclassical framework. Ram and Feder did this by incorporating exports and imports in the neoclassical growth function as follows:

$$\mathbf{Y = \mathit{f}\,(L, K, EXP, IMP) + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (i)}$$

Where Y is the aggregate level of output, K is total capital stock, L is labour force, EXP is exports, and IMP is imports. However, the model assumes that the level of technology (A) is endogenous i.e. determined from within the model or given.

Since a typical neoclassical growth model assumes a Cobb-Douglas production function with exponential form, therefore equation **(i**) will be given as below.

$$\mathbf{Y = A\,(L)^{\beta 1}\,(K)^{\beta 2}(EXP)^{\beta 3}(IMP)^{\beta 4} + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (ii)}$$

But in order to make equation (ii) linear we can take logarithms on both sides of equation and this will generate a growth equation of the form:

$$\mathbf{LOG(Y) = \beta_1\,LOG\,(L) + \beta_2\,LOG\,(K) + \beta_3 LOG\,(EXP) + \beta_4\,LOG\,(IMP) + \mu \ldots\ldots\ldots\ldots\quad (iii)}$$

Since some of the variables in the model such as labour force, output and capital, cannot be easily observed there is a need to generate some proxies that can easily be quantified. Thus labour force will be approximated by the country's population between 15 and 65 years, given as 'POP'. On the other hand, capital will be approximated by gross capital formation ('GCF') and 'GDP' will approximate economic growth. Technical definitions of the aforementioned proxies are given below.

'EXP' approximates the total value of goods and services made in Malawi but sold abroad. In this study exports are measured in millions of US Dollars.

'IMP' gives the total value of goods and services purchased from abroad by Malawians. In this study imports are also measured in millions of US Dollars.

'GCF' represents the estimated additions to fixed assets and inventories in the economy. In this study the GCF is measured in millions of US Dollars. In fact, studies by Ram (1987) and Medina-Smith (2001) showed that gross capital formation satisfactorily approximates capital growth rate. In simple terms, total capital formation refers to the net increase or growth in the level of a country's physical capital stock (Fischer, 1993:84).

'GDP' is used as a proxy of the total market value of goods and services produced within Malawi's geographical boundaries regardless of the nationality of the producers. It approximates economic growth. In strict economic terms, economic growth implies the sustained increase in the rate of growth of national income/output (GDP) over time (Todaro and Smith, 2009:74). In this study GDP is also measured in millions of US Dollars.

'POP' will approximate the country's labour force (L) between the ages 15 to 65. Although this approximation is somewhat unsatisfactory, it offers the best proxy available considering the fact that it is generally very difficult to get usable time-series data on labour force in many Least Developed Countries due to data collection problems (Fei and Ranis, 1964:57). Secondly, since the majority of these exports are primary commodities which are seasonally produced, using the population of the labour force between 15 and 65 years is a better proxy than the aggregate/total labour force (Ram, 1985:116). In this study labour force in measured in millions.

With the incorporation of the above proxies, equation **(iii)** changes as below.

$$\mathbf{LOG\ (GDP) = \beta_1\ LOG\ (POP) + \beta_2\ LOG\ (GCF) + \beta_3\ (EXP) + \beta_4\ LOG\ (IMP) + \mu} \quad \textbf{(iv)}$$

The above equation **(iv)** was therefore used to estimate the total impact of exports and imports on economic growth in Malawi from 1970 to 2010. The model was also sufficient for capturing not only the individual impacts of the ELG and ILG hypotheses but also the influences of other important factors that determine the GDP such as capital and labour force. In addition, some other exogenous factors that also significantly impact on the level of GDP in Malawi but cannot be determined by the model were captured by the random disturbance term **(μ).** It is, therefore, safe to conclude that the above **(iv)** regression model provides the best measurement tool for analyzing the study.

4.8 Procedure for the Estimation for the Neoclassical Growth Model

In estimating the above equation **(iv)** the OLS regression method was used. The concept of regression refers to the study of dependence relationships between variables. In essence, this involves statistically predicting the mean value of a variable Y based on the fixed value of another variable(s) X. In this case the variable Y is called the regressand or dependent variable while X is the regressor or explanatory variable. It should be noted, however, that regression involves analyzing the dependence among statistical variables which contain probability distribution properties i.e. they are stochastic or random variables. Normally such random variables have a whole set of values, positive and/or negative (Gujarati and Porter, 2010:31-34).

According to Gujarati (2003:18) a regression analysis involving the study of one dependent variable on another explanatory variable is called simple or two-variable regression analysis. On the other hand, a multiple regression obtains if the analysis involves finding the value of a dependent variable based on the values of two or more explanatory variables. There are two common methods of estimating regression equations and these are OLS method and Maximum Likelihood (ML) method. However, because of its mathematical simplicity and intuitiveness, most scholars prefer the OLS method to the ML method. However, it should be pointed out that both these methods give the same results after estimation. For the reasons given above this study will therefore employ the OLS method in analyzing the impact of exports and imports on economic growth in Malawi.

Despite the OLS linear regression shedding some light on the linear relationship between variables, this does not automatically imply that the estimates are reliable. The OLS method only gives reliable results if it satisfies BLUE (Best Linear Unbiased Estimators) conditions (Salvatore and Reagle, 2001:130).

Salvatore and Reagle observe that in a single-variable linear regression, the OLS method seeks to find the values of intercept (b_0) and gradient/slope (b_1) of a straight line equation given by:

$Y = b_0 + b_1X + \mu$. The OLS formulae for the single-variable equation are given below.

$$b_o = \frac{\Sigma Y_i - b_1 \Sigma X_i}{n}$$

$$b_1 = \frac{n\Sigma X_i Y_i - \Sigma X_i \Sigma Y_i}{n\Sigma X_i^2 - (\Sigma X_i)^2}$$

With a multiple regression model containing three regressors: $Y_i = b_0 + b_1X_i + b_2X_{2i} + \mu$, the OLS estimation procedure differs slightly from that of the two-variable regression equation. The OLS formulae for multiple regression equation can be given as follows:

$$b1 = \frac{(\sum \text{yixi})(\sum \text{x22i}) - (\sum \text{yix2i})(\sum \text{xix2})}{(\sum \text{x2i})(\sum \text{x22i}) - (\sum \text{xix2i})^2}$$

$$b2 = \frac{(\sum \text{yix2i})(\sum \text{x2i}) - (\sum \text{yixi})(\sum \text{xix2})}{(\sum \text{x2i})(\sum \text{x22i}) - (\sum \text{xix2i})^2}$$

From b_1 and b_2, b_0 can be derived as follows:

$$b_0 = \bar{Y}_i - b_1 \bar{X}_1 - b_2 \bar{X}_2$$

Under the multiple regression framework, b_1 for example, gives the effect of X_1 on the mean value of Y_i holding the value of X_2 constant. Similarly, b_2 gives the net effect of X_2 on the mean value of regressand Y_i when the value of X_1 is fixed. Thus since b_1, and b_2 measure the impact of a unit change an explanatory has on a dependent variable holding another explanatory variable constant, therefore they can also be called partial gradient coefficients. As in the single-variable regression, b_0 is still the intercept term i.e. the value of the regressors when the regressand is equal to zero (Gujarati, 2003:208).

Therefore the study's main regression model **(iv)** needs to be transformed into a multiple linear regression equation for easy estimation using the OLS Regression Method by adding a y-

intercept term (β_0) as follows:

$$\mathbf{LOG\ (GDP) = \beta_0 + \beta_1 LOG\ (POP) + \beta_2 LOG\ (GCF) + \beta_3 LOG\ (EXP) + \beta_4 LOG\ (IMP) + \mu}$$

4.9 Expected Signs for the Exports and Imports Coefficients

Theoretically, the regression coefficient for labour force, capital, exports, and imports is expected to have positive signs i.e. ($\beta_1, \beta_2, \beta_3$ *and* $\beta_4 > 0$). In practice, however, the above variables may have a positive or negative or even zero effect on the level of GDP (economic growth). But in this research the emphasis was mainly on the exports coefficient (β_3) and import coefficient (β_4) which were expected to exhibit either of the above signs as follows:

$\beta_3 > 0$	implying that exports increase GDP
$\beta_3 < 0$	implying that exports decrease GDP
$\beta_3 = 0$	implying that exports have no effect on GDP
$\beta_4 > 0$	implying that imports increase GDP
$\beta_4 < 0$	implying that imports reduce GDP
$\beta_4 = 0$	implying that imports have no effect on GDP

4.10 A Summary of the Diagnostic Tests for Ols Regression

In order for the results of the above OLS regression estimation technique to be reliable, the assumptions of the BLUE (Best Linear Unbiased Estimates) must hold. Violation of these properties leads to spurious regression and hence incorrect conclusions (Gujarati and Porter, 2010:74). Therefore to ensure the adherence to the BLUE properties the following diagnostic tests were conducted on the time series before an OLS regression could be run.

4.10.1 Test for Linearity

Before a successful OLS regression can be run, the nature of the time series needs to be examined. In particular, the data set needs to clearly exhibit some linear patterns. This reduces the chances of running a spurious regression on the collected times series data (Gujarati, 2003:100-101). As a result, the study employed scatter diagrams in order to show linear patterns between each of the four explanatory variables (regressors) and the dependent variable (regressand).

4.10.2 Test for Serial Correlation

Kirchgassner and Wolters (2007:52-53) argue that serial correlation occurs when error terms from previous periods affect future time periods. With serial correlation even though OLS estimators are still linear and unbiased, they are inefficient (i.e. they do not have minimum variance). As a result the estimators are not BLUE. To test for serial correlation of the residuals, the Breusch-Godfrey test, also known as the Lagrange Multiplier test, was used. This is a test of the null hypothesis that there is no serial correlation up to lag order *p.* In the STATA, the Obs*R-squared statistic is the Breusch-Godfrey LM test statistic, which is computed as the number of observations multiplied by the (uncentred) R^2 from the test regression.

4.10.3 Test for Heteroscedasticity

Basically, heteroscedasticity refers to a situation in time series data where the error terms have different scatterplots irrespective of the value of the explanatory variable (X). In the presence of heteroscedasticity OLS estimates are consistent but their standard errors are not valid. The Breusch-Pagan test, which involves the auxiliary regression of the squared residuals on the original regressors and all their squares, was used to test for heteroscedasticity. This test simply determines whether or not the estimated variance of the error (residual) terms is dependent on the values of the regressors/explanatory variables. (Harvey, 1990:43-45).

4.10.4 Test for Multicollinearity of the Regressors

Multicollinearity simply refers to the existence of a very high degree of correlation between variables. In fact, regression in the presence of perfect or near perfect linear relationship among some or all explanatory variables in an OLS regression model creates problems in accurately estimating the regression coefficients and their standard errors. Paradoxically though, multicollinearity is not a serious problem since even in the presence of multicollinearity the OLS estimators are still BLUE. Nevertheless, it becomes a problem when the value of the pair wise correlations between the explanatory variables exceeds 0.80 (Gujarati, 2003:341). To test the presence of multicollinearity in the equation the Explanatory Variables Correlation Matrix was used.

4.10.5 Test for Correct Model Specification

In order to test for the likelihood of incorrect model specification, that is, whether the model has omitted certain variables, has incorrect functional form, or there is correlation between

explanatory variables and the residuals, the Ramsey Regression Error Specification Test (RESET) was used.

4.10.6 Test for Normality of the Random Error Terms

One important assumption that underpins classical linear regression is that of normality in the residual terms. As with other parametric tests in statistics and econometric tests, the collected data are assumed to be normally distributed i.e. bell-shaped, symmetric density curved and single-peaked. For OLS regression models normality extends to the random disturbance terms. Indeed, these error terms are expected to be normally distributed around a zero mean and constant variance. Violation of this assumption implies that even though OLS estimators will still exhibit BLUE properties, their statistical reliability cannot be easily ascertained by statistical significance tests (Gujarati, 2003:147-148). The study therefore employed the Shapiro-Wilk (W) test to test the normality of residuals not only because of its good predictive statistical powers but also because of its specialization in testing sample sizes below 50 (Razali and Wah, 2011:5).

4.10.7 Test for Cointegration

In order to avoid running a spurious regression there is a need to establish a long-run association or equilibrium between variables i.e. cointegration. The advantage of cointegration is that it can establish the long-run linear combination between both stationary and non-stationary time series (Kirchgassner and Wolters, 2007:204). In undertaking this endeavor, this study employed one of the most common and powerful tests of cointegration, the Johansen Test.

4.11 Chapter Summary

Based not only on the theoretical and analytical framework but also on literature reviewed in the previous chapters, the above study used a time series research design to collect and analyse quantitative annual time series data. In addition, a neoclassical economic growth framework was used to generate and specify an empirical model to be employed in capturing the trade-growth nexus. Sampling and other data collection, operationalization and measurement issues were also discussed. The OLS regression method was endorsed as the best method to be used in empirical estimation. The chapter finished by discussing some of the diagnostic tests that were to be performed on the time series data before OLS regression is run in order to come up with accurate, efficient and unbiased results. The next chapter provides a comprehensive account of the research findings, and discussion on the findings.

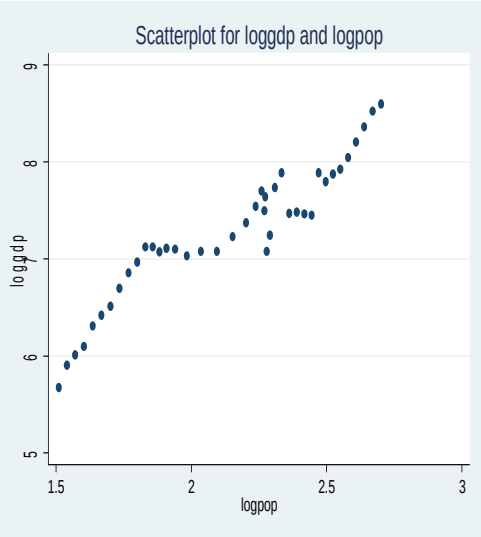
Chapter Five: Research Findings and Discussion
(Estimation of the Model and Interpretation of Results)

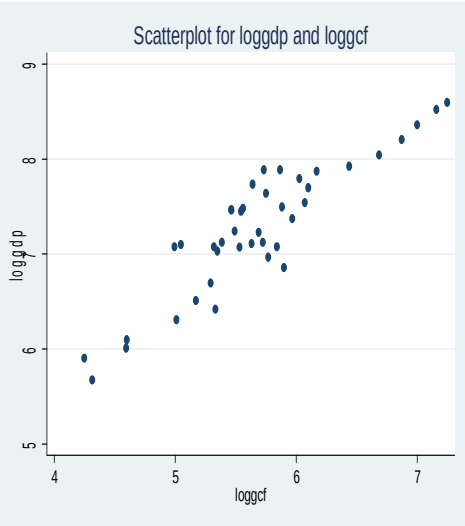
5.1 Introduction

This chapter presents the findings of the study and their interpretation based on the regression model that was estimated using the OLS method by Stata 12:0 Statistical Software. However, before the regression was run and interpretations made, several time series diagnostic states were conducted on the data and the model to ensure the robustness of the results. These include test for linearity, multicollinearity, autocorrelation, heteroskedasticity and correct model specification. Thereafter, the regression model was estimated using the OLS method and results interpreted as is shown below.

5.2 Testing for Linearity of the Time Series Data

In order to avoid conducting spurious regression on the collected data there is need to test for linearity of the data i.e. the presence of a linear relationship between the variables. Scatterplots offer the easiest way to test for linearity between the dependent variable and its explanatory variable (Bhattacherjee, 2012:88). This study therefore plotted scatter diagrams using Stata on the time series data as shown below.





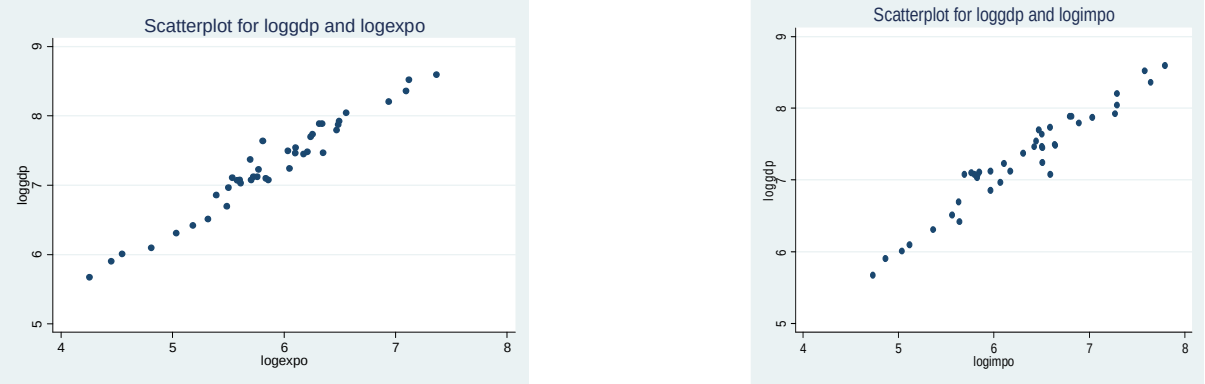


Figure 5.1 Scatterplots of the dependent variable and the explanatory variables

Source: author's secondary data analysis using Stata

From the above scatter diagrams it is clear that there is a linear relationship between the dependent variable, the GDP and its explanatory variables (GCF, population, import and exports) as depicted by linear patterns of the scatters. Therefore OLS regression can be run on the data.

5.3 Diagnostic Tests

In order for the results of OLS method of estimation to be reliable, its assumptions must hold. To ensure this, the study employed the Breusch-Godfrey test for serial correlation of the residuals, the Breusch-Pagan test for heteroscedasticity, the Correlation Matrix for multicollinearity, and the Ramsey RESET test to test for correct model specification.

5.3.1 Test for Serial Correlation

In the presence of autocorrelation, OLS estimators are linear and unbiased but not efficient (i.e. they do not have minimum variance). As a result, the estimators are not BLUE. To test for serial correlation of the residuals, the Breusch-Godfrey test, also known as the Lagrange Multiplier (LM) test, was used. The results are summarized in Appendix D. This is a test of the null hypothesis that there is no serial correlation up to lag order *p*. (Kirchgassner and Wolters, 2007:523-53).

From the Stata results depicted in Table 5.1 below the p-value for this test is 0.4310, which is greater than the 5 percent level of significance (0.05). This leads to the decision of failing to reject the null hypothesis of no serial correlation. Therefore, there is no serial correlation in the regression model.

Table 5.1 Breusch Godfrey Test for serial correlation/auto-correlation

Null hypothesis	Lags (p)	Chi2	DF	Prob > Chi2
H_0: no serial correlation	1	0.620	1	0.4310

Source: author's secondary data analysis using Stata

5.3.2 Test for Multicollinearity among the Explanatory Variables

As already alluded to, multicollinearity which basically refers to very strong correlation between explanatory variables, only causes efficiency problems in estimation, if and only if, the value of the pair-wise correlations between the regressors exceeds 0.8 (Gujarati, 2003:359-362). From the simple correlation matrix obtained from Stata and given by Table 5.2. below, it is clear that the collected time series have no serious multicollinearity problems, since all the pair-wise correlation coefficients are below 0.8. This implies that the regression estimates of the model will be efficient.

Table 5.2. Correlation matrix of coefficients of regression model

e (V)	logpop	loggcf	logexpo	logimpo	constant
logpop	1.0000				
loggcf	0.5880	1.0000			
logexpo	-0.2953	-0.1155	1.0000		
logimpo	-0.6747	-0.7464	-0.3838	1.0000	
constant	0.6623	0.3041	-0.3118	-0.4435	1.0000

Source: author's secondary data analysis using Stata

5.3.3 Test for Correct Model Specification

In order to test for the likelihood of incorrect model specification, that is whether the model has omitted certain variables, has incorrect functional form, or there is correlation between explanatory variables and the residuals, the Ramsey RESET (Regression Error Specification Test) was used. This is a test of the null hypothesis that the model is correctly specified. If the F-Statistic is greater than the p-value at a 5 percent level of significance we accept the null hypothesis of correct model specified, and vice versa (Gujarati, 2003:521-523).

In Table 5.3 the p-value of the F- statistic from this test was 0.1170, which is greater than the 5 percent level of significance (0.05). This implies failure to reject the null hypothesis that the model is correctly specified at 5 percent level of significance.

Table 5.3 Ramsey RESET test using powers of the fitted values of loggdp

Null hypothesis	F (3, 33)	Prob > F
Ho : model has no omitted variables	2.12	0.1170

Source: author's secondary data analysis using Stata

5.3.4 Test for Heteroskedasticity

As discussed earlier on, the classical OLS regression method assumes that the random error terms or disturbance terms contained in the regression model exhibit constant and equal variance, in other words homoscedasticity. However, failure to meet the above assumption results in a condition of heteroscedasticity in which even though the OLS estimates are consistent, the error terms are invalid thus violating the property of Best Linear Unbiased Estimator (BLUE). Therefore in order to test for the presence of heteroscedasticity in the regression model a Breusch-Pagan/Cook-Weisberg Heteroscedasticity Test was conducted on the data using Stata. Basically, the above test aims at accepting or rejecting the null hypothesis of homoscedasticity (constant variance) by comparing the computed Chi-square probability value i.e. Chi2(1) and the p-value at a given level of significance. If the Chi2 (1) value is greater than p-value then there is no heteroscedasticity and vice versa (Maddala and Kajal, 2009: 56). The results of this test are shown below.

Table 5.4 Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Null hypothesis	Variables	chi2(1)	Prob > chi2
Ho : constant variance	Fitted values of loggdp	0.08	0.7752

Source: author's secondary data analysis using data

As can be seen from the above results, the model contains no heteroscedasticity i.e. the null hypothesis of homoscedasticity is accepted because the computed Chi-value (0.08) is greater than the critical value (0.05) and therefore statistically insignificant at 95 percent level of confidence.

5.3.5 Test for Normality of the Residuals

OLS assumes that the random variable or error term is normally distributed around a zero mean and constant variance. The absence of this condition implies that OLS estimators are still BLUE but we cannot assess their statistical reliability by classical tests of significance. The Shapiro-Wilks (W) Test was therefore employed to test the null hypothesis of normality in the residuals.

It is a parametric test that investigates the presence of a normal distribution in residuals with a sample size (n) of less than 50. Basically the above test confirms normality only when the Shapiro-Wilk (W) value is greater than the p-value (0.05) (Mendes and Pala, 2003:126). The table below shows computed results of the test.

Table 5.5 Shapiro-Wilk (W) Test for Normal data

Variable	Observations	W	V	z	Prob>z
Rvar	41	0.97944	0.828	-0.397	0.65430

Source: author's secondary data analysis using Stata

From the above table it is clear that the residuals are normally distributed because the Shapiro-Wilks probability value (0.65430) is greater than the critical p-value (0.05). Therefore the null hypothesis of residual normality with 95 percent level of confidence is accepted. Graphically, the above normality of the residuals is also shown by the histogram below.

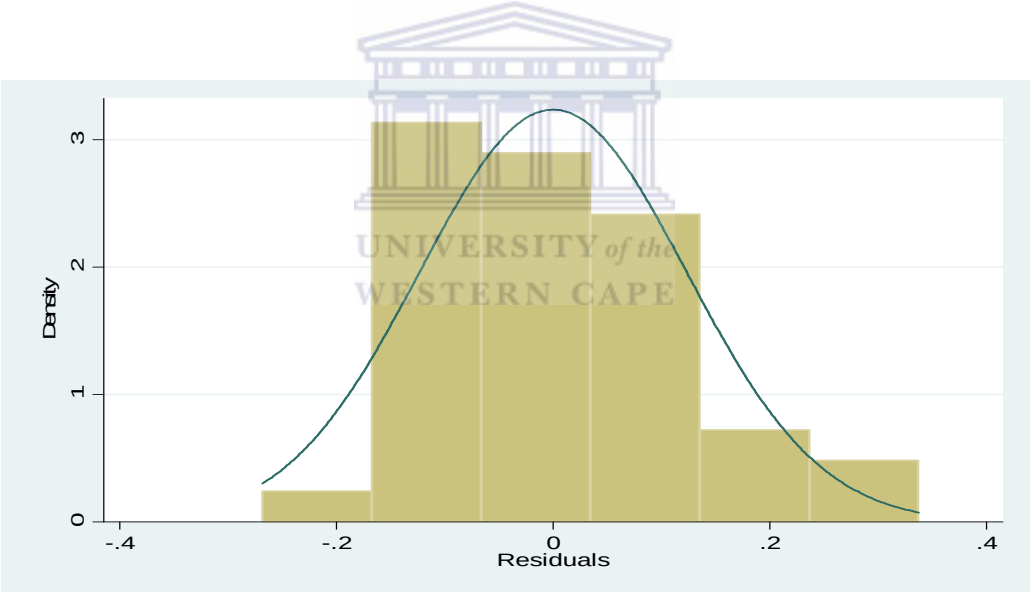


Figure 5.2 Histogram for normality of residuals.

Source: author's secondary data analysis using stata

The confirmation of residual normality as shown by Figure 5.2 above implies that the estimated regression model has credible predictive powers. As such valid conclusions can be drawn from its results.

5.3.6 Johansen Test for Cointegration

Gujarati (2003:822-826) observes that it is prudent to determine the existence of cointegration (i.e. long-run relationship among variables) before any meaningful OLS regression can be run on the time series data. The concept of cointegration is based on the findings that even though individually variables may not be stationary, their linear combination may be. By stationary, econometricians simply refer to a condition where random variables exhibit constant mean and variance in the long run, independent of space and time. Estimating cointegrating variables in levels might still be meaningful despite individual variables being non-stationary. Cointegration is preferred to differencing because a cointegrating equation retains important long-run information which would otherwise be lost if an alternative method of differencing were used. In testing for cointegration the study used the Johansen Test. It basically, rejects the null hypothesis of no cointegration if the trace statistic (Johansen Statistic) is greater than the critical value at a given level of significance and vice versa (Maddala and Kajal, 2009:117). Table 5.6 below gives the results of the cointegration test as obtained from Stata.

Table 5.6 Johansen Cointegration Test

Rank	Eigen value	Trace statistic	Critical value
0		106.7821	68.52
1	0.73001	55.7163	47.21
2	0.53210	26.0956*	29.68
3	0.38528	7.1188*	15.41
4	0.14399	1.0555*	3.76
5	0.02670		

Source: author's secondary data analysis using Stata

* indicates the presence of cointegrating equations at 5 per cent level of significance

From the above table it can be seen that the trace statistic (26.0956) is less than the critical value (29.68) at rank 2. Therefore from the above results it can be concluded that there are three cointegrating equations between the variables and hence the null hypothesis of no cointegration is rejected with 95 percent level of confidence. Therefore the regression estimated will be real and meaningful and not spurious.

The confirmation of cointegration gives the study licence to not only estimate the regression model but also answers the research question that indeed there is a long-run equilibrium

relationship between the four explanatory variables (EXPO, GCF, POP, and IMPO) and the dependent variable (GDP).

5.4 Estimation of the Regression Equation and Interpretation Of Results

After conducting diagnostics tests it is clear that there is no evidence of non-linearity, multicollinearity, autocorrelation, heteroscedasticity, or incorrect model specification. This therefore shows that the regression results will be valid and robust. Therefore, after establishing that there is a long run relationship between variables, the study proceeds with estimation of the regression equation. Table 5.7 below provides regression results for the relationship between gross domestic product, exports, imports, population (labour force) and gross capital formation (capital). From the regression results the following is the estimated form of the model:

$$\textbf{loggdp= 1.79631 + 0.4889741logpop + 0.1889956loggcf + 0.6157923logexpo - 0.423872logimpo + } \mu$$

Table 5.7 OLS Regression Results

Explanatory Variables (regressors)	Variable Coefficient	Standard Error.t	Prob>t	Prob>F	R-Squared	Number of observations
logpop	0.4889741	0.2332324 2.10	0.043			
loggcf	0.1889956	0.1031681 1.83	0.075			
logexpo	0.6157923	0.124762 4.94	0.000			
logimpo	-0.0423872	0.1847291 -0.23	0.820	0.0000	0.9683	41
Constant	1.79631	0.2372569 7.57	0.000			

Source: author's secondary data analysis using Stata

5.5 Discussion on the Estimated Regression Results

The discussion below gives an interpretation of the regression estimates that transpired from the OLS estimation as is given in the table above. More specifically, the following discussion presents an interpretation of OLS regression variables as obtained from Stata results such as F-Statistic, R-Squared, regressor coefficients, and the constant term.

5.5.1 F-Statistic

From the above table, since the F-Statistic has a probability of 0.0000 which is less than the p-value (0.05) this shows that the regression model is statistically significant at a 5 percent level of significance. Davidson and McKinnon (1999:48) argue that the above statistically significant result shows that the regression model is true and does not occur randomly.

5.5.2 R-Squared (R2)

Basically the R^2 is a measure of goodness of fit of the regression model. It explains how best the model fits the data (Maddala and Kajal, 2009:63). From the table above, the R^2 value (0.9683) shows that 96.83 percent of the variations in the regressand/dependent variable (GDP) is explained by the regressors (exports, imports, capital and labour force). This implies that the remaining 3.17 percent or 0.0317 of the changes in the GDP are not explained by the regressors of this model but by other factors outside the model. But on the whole, the above R^2 shows that the regression model has a very high explanatory power.

5.5.3 Population (Labour Force) Coefficient

The above regression results indicate that labour force (population) has a coefficient of 0.4889741 which is also statistically significant at a 5 percent level of significance i.e. the computed test statistic (0.043) is less than the level of significance (0.05). This implies that a 1 percent increase in labour force leads to a 0.4889741 percent increase in the level of GDP or economic growth, and that this relationship is true.

The explanation of the above result lies in the fact that since Malawi is largely an agro-based economy heavily reliant on a large labour force of smallholder farmers, therefore GDP will be obviously influenced by labour productivity. Malawi's agricultural sector, which contributes between 45 and 55 percent of her GDP, is characterized by very low levels of mechanization (World Bank, 2012:15). This therefore implies that the majority of the country's agricultural produce is generated by manual labour. From this it can be seen that, *ceteris paribus*, the higher the labour force the higher the agricultural output and hence more GDP as well.

Theoretically, the neoclassical economic growth model also confirms this fact by arguing that an increase in the labour input has a positive effect on the national output and hence economic growth. Empirical studies by Mkandawire and Chipeta (2004) and Durevall and Mussa (2010) also found that labour force has a positive and statistically significant effect on the GDP in Malawi.

5.5.4 Gross Capital Formation (Capital) Coefficient

The aforementioned regression model has a Gross Capital Formation coefficient of 0.1889956 which is statistically insignificant at a 95 percent level of confidence i.e. its p-value (0.075) is greater than the critical value (0.05). From this it can be deduced that a unit percentage increase in capital leads to a 0.1889956 increase in the GDP. However, this relationship between the two variables might be a result of chance and may not be replicated in repeated sampling.

The positive relationship between the capital stock and GDP growth is also supported by general macroeconomic and economic growth theory. Macroeconomics theory argues that an increase in the level of capital stock results in an increase in investment which in turn results in an expansion of aggregate demand and hence the GDP (Mankiw, 2013:46). On the other hand, economic growth theories such as Solow's neoclassical growth theory, the Harrod-Domar Model and the Two-Gap Model, posit that an increase in a country's capital stock, mainly through savings increases the total level of a country's output and thus leads to economic growth (Ghattak, 1978:31-33).

The statistical insignificance of the capital value in the model can be attributed to the fact that domestic savings rates in Malawi are very low, so much so that they have a very negligible impact on the country's GDP levels. Now since savings determine the level of capital formation therefore a reduction in their levels will depress GDP. In line with this, a study by Chipeta and Mkandawire (1989) found that in Malawi domestic savings rates are very low and in some instances negative. This finding can be attributed to the fact that most Malawians do not have a savings culture and access to financial institutions such as banks and other financial institutions is limited to a small minority of the population in urban areas while the overwhelming majority of the nation's population remains unbanked (World Bank, 2012:2).

5.5.5 Export Coefficient

The above OLS regression results from Stata show that exports have a 0.6157923 coefficient which is also statistically significant at a 5 percent level of significance i.e. it has a smaller p-value (0.000) relative to the critical value (0.05). From this it is clear that a 1 percent expansion

in the level of exports triggers a 0.6157923 percent growth in GDP or national output. The strong statistical significance and strongly positive coefficient shows that export-led growth (ELG) hypothesis truly holds in Malawi.

The positive relationship between exports and GDP is also supported by macroeconomic theory which argues that exports are an injection or an addition to the circular flow of income, and an increase in their level results in the expansion of the aggregate demand and hence national output. Similarly, as already alluded to, the two-gap economic growth model argues that since exports together with savings are the main determinants in GDP expansion in the economy, therefore an increase in either of these two factors results in economic growth (Ray, 2003:76).

Empirically, studies conducted by Chanthunya (1992), Matemvu (1997) and Njikam (2004) also confirm the fact that exports are one the major determinants of GDP increase and hence economic growth in Malawi.

5.5.6 Import Coefficient

The import coefficient was found to be not only negative (-0.0423872) but also statistically insignificant at 95 percent level of confidence. In other words, a unit increase in the level of imports causes a 0.0423872 percent decrease in the GDP level. However, the strong statistical insignificance shows that this negative relationship between imports and GDP might be due to chance. This implies that the import-led growth hypothesis (ILG) does not hold.

The main explanation that can be given for this is that in Malawi, most of import expenditure is on consumption goods and not on machinery and productive capital or technologies. This can be seen in her import bill which is heavily dominated by food items and medicines. Even the huge fertilizer and petroleum imports are to a large extent used for consumption purposes i.e. for subsistence agricultural production and personal transportation respectively (Banda, 2008:16). Therefore this increased expenditure on imported consumables reduces the country's capital stock which depresses Malawi's national productive capacity and thus reduces GDP in the long run.

Over and above this, the above indicated negative relationship between imports and GDP is supported by standard macroeconomics theory. In Macroeconomics, imports are considered as a leakage to the circular flow of national income i.e. expenditure on imports reduces spending on domestic goods and services and thus total aggregate demand in the economy. Now, with a reduction in aggregate demand national production goes down and hence economic growth slows down as well (Mohr and Fourie, 2006:445).

5.5.7 The Constant Term

The above results show that the constant term has a positive value and is statistically significant at a 5 percent level of significance i.e. its p-value (0.000) is less than the critical value (0.05).

This implies that when the values of the explanatory variables (exports, gross capital formation, population and imports) are equal to zero, the GDP will be equal to 1.79631. In other words the value of the constant term gives the y-intercept value of the estimated regression model.

5.6 Chapter Summary

Chapter 5 sought to estimate the regression model and interpret the results that emerged from the study. After conducting several time series diagnostic tests on the data, there was no evidence of non-linearity, multicollinearity, heteroskedasticity, autocorrelation or incorrect model specification. This therefore eliminated any possibility of conducting spurious regression and the validity and robustness of the regression model were ensured. After running regression on the data using the OLS method, it was found that exports, capital and labour force have had a positive effect on GDP (economic growth) in Malawi from 1970 to 2010. However, out of the three variables only exports and labour force results were statistically significant at a 5 percent level of significance. On the other hand, imports were found to have a negative and insignificant effect on the economic growth of the country at a 5 percent level of confidence during the aforementioned period. Therefore the study confirmed the validity of the ELG hypothesis but strongly rejected the idea of import-led growth in Malawi.

Despite the majority of the study's findings being in agreement with the *a priori* theoretical assumptions, some did not hold. For example, the negative sign for the imports variable was against the theoretical expectation of the model. This therefore shows the limited applicability of most economic growth theories to developing countries. Given that most of these theories are generated in developed countries by people with limited knowledge of the LDCs, their validity is often questionable. This therefore implies that developing countries need to exercise great caution when applying them. A long term solution to this would be for developing countries such as Malawi to invest heavily in improving the capacity of its researchers in order for these economists to generate and harness indigenous knowledge with which they can come up with growth models that are responsive to the socio-economic and political conditions and characteristics of these LDCs i.e. devise 'indigenous economic solutions to indigenous economic problems'. Alternatively, there is need for greater collaboration between researchers not only from developed and developing countries but also among LDCs themselves (the South-South

Cooperation) in order to generate economic growth theories that can be perfectly applicable to both of these countries. The next chapter presents final conclusions and policy recommendations that have been drawn from the study.

Chapter Six: Conclusion and Policy Recommendations

6.1 Summary and Conclusion

There is a reasonable consensus among development economists that theoretically international trade (export and import promotion) leads to economic growth. As a result, Malawi and many other developing countries have implemented trade-led economic growth policies in order to achieve economic development and poverty alleviation. However, empirical studies conducted in several different countries give very conflicting results, a situation which has generated serious doubts about the validity of the export and import-led growth consensus. To date no known research on this topic has been done that specifically targets Malawi. This is the sole reason that motivated the undertaking of this study in order to find out whether or not the trade-led hypothesis holds for Malawi.

The study specifically aimed at empirically investigating the impact of exports and imports on economic growth in Malawi during the period spanning from 1970 to 2010. In fulfillment of the above objective, specific null hypotheses were tested investigating whether or not exports and imports, in combination with other factors such as labour and capital contribute to the rise in the level of GDP. In addition, the structure of international trade in Malawi was analysed through reviewing past and present Government of Malawi policies on exports and imports. The study then went on to review both theoretical and empirical literature on the nature of the relationship between exports, imports and economic growth through some of the main economic growth theories and empirical studies on the topic.

A neoclassical economic growth framework largely based on econometric studies by Feder (1982) and Ram (1985, 1987, and 1990) was adopted analyzing the relationship between the aforementioned variables. A time series research design was generally employed in the collection of annual data for the study period but also in addressing other methodological issues. Coupled with this, the OLS regression method was used not only in conducting time series diagnostic tests on the data but also in the actual estimation and interpretation on the results.

The study revealed that during this period, while exports contributed significantly to economic growth, imports reduced GDP growth. The study found that a 1 percent increase in exports leads to an approximately 0.616 percent expansion in GDP and that this result was statistically significant at 95 percent level confidence. On the other hand, a 1 percent increase in imports

reduced GDP by approximately 0.042 percent and this finding was statistically insignificant at 95 level of confidence. Moreover, the study also confirmed the existence of a long-run relationship (cointegration) between exports and GDP, implying that indeed ELG is truly a sustainable way of achieving economic development in Malawi in the long run. Laborforce and capital were found to be the other factors that increase GDP growth. According to the study a unit percentage increase in laborforce (population) expands GDP by approximately 0.489 percent and this is statistically significant at 95 percent level of confidence. Similarly, a 1 percent increase capital (gross capital formation) was found to increase the level of GDP by approximately 0.189 percent and this result is statistically insignificant at 95 percent level of confidence.

From the above findings therefore, it was concluded that since it is exports that lead to economic growth in Malawi, policies attempting to achieve growth through imports should be abandoned in favour of export policies. In other words, the study not only confirmed the validity of the ELG hypothesis but also rejected the notion of imports-induced economic growth in Malawi. Moreover, the study showed that the Government of Malawi will achieve economic growth if exports are promoted in combination with increased investments in capital formation and improvements in her labour force quality since these two factors also positively contribute to GDP growth.

6.2 Policy Implications and Recommendations

The study's findings have serious implications for the country's socio-economic development policy. In this study, the resultant policy implications from the findings were categorized based on the determining variable such as exports, imports, capital and labour force. From these implications important policy recommendations were also drawn as outlined below.

6.2.1 Exports-Related Policy Implications and Recommendations

As was shown in the study, the positive and statistically significant result for exports has important policy implications for the country's economic growth and development agenda. Firstly, it shows that the ELG hypothesis strongly holds as was alluded to earlier on. Therefore, the Government of Malawi should continue with export-led economic growth and development strategies such as the Economic Recovery Plan (ERP) and the Malawi Growth and Development Strategy II (MGDS II) since there is strong empirical evidence in support of the export-led development agenda. The government should also go ahead in implementing the recently

launched National Export Strategy (NES) to achieve sustainable socio-economic development through export promotion as prescribed by the two development plans (MGDS and ERP).

More importantly, Malawi needs to diversify her export basket if the export-led growth agenda is to be sustained. As pointed out earlier on, Malawi fails to maximize export revenues and suffers from export price volatilities because its export basket is still undiversified as shown by the country's over-reliance on tobacco exports. But, with tobacco production currently facing a strong global anti-smoking lobby led by the World Health Organisation, reliance on it for export in order to achieve economic growth is surely a risky decision for the country. Malawi needs to quickly find a viable alternative to tobacco and indeed diversify her export composition. One possible option is to venture into mining, as the country is currently doing with the recent opening up of several uranium and niobium ventures with foreign companies. In a similar vein, the government needs to continue awarding licences to mineral exploration companies as it has been doing with petroleum exploration companies on Lake Malawi. If successful, minerals could not only significantly diversify the country's export baskets, but also boost export revenue because on average minerals fetch higher prices than agricultural commodities on the international market.

Malawi also needs to embark on value-addition if the ELG agenda is to bear meaningful fruit. The government needs to invest in technologies that can help in processing its primary export commodities in order to boost its export quality and the revenues they can fetch. Alternatively, this can be done in partnership with foreign investors. Thus Malawi needs to create a conducive investment climate for foreign direct investment in the export sector. As observed by the World Bank (2007:16) one major disincentive for foreign investment in Malawi is erratic power supply, and the government needs to invest heavily in the energy sector since value-addition is also hugely dependent on a reliable energy supply system.

Another policy option government should consider is maintaining a lower domestic currency value relative to foreign currencies. This promotes exports because the undervalued domestic currency makes it cheaper for foreigners to buy Malawi's exports while making it expensive for Malawians to purchase foreign goods. In terms of export promotion, Malawi did well to devalue her currency in 2012 as this will increase her export volumes and revenues in the long run, *ceteris paribus*. However, for devaluation to bear fruit Malawi needs to contain its resultant high inflation rate of more than 25 percent which is the highest in the whole SADC region. High inflation rates discourage exports by making them expensive relative to imports. On the other hand, inflation encourages imports because foreigners are attracted to sell to a country with high

prices (Sodersten and Reed, 1994:143). Therefore the government needs to employ appropriate fiscal and monetary polies aimed at curbing inflation in order to avoid the possibility of wiping out the export revenue gains from devaluation.

As a way of promoting exports, the Government of Malawi should also consider providing subsidies to export-oriented producers especially smallholder farmers and small and medium scale enterprises (SMEs) who drive the economy. In addition, export producer prices should be increased on the country's major export commodities such as tobacco and cotton. These subsidies and high producer prices will incentivize smallholder farmers to continue with export production and consequently lead to more export revenue for the country.

The continued success of Malawi's export-led development agenda is also dependent on the urgent resolution of supply-side challenges which have for a long time undermined the country's competitiveness. These include volatile macroeconomic and trade conditions, production bottlenecks, poor physical and technical infrastructure, and inefficient trade institutions (Chikhasu, 2007:8-10). To begin with, Malawi's economy is currently undergoing a turbulent period as exhibited by the extreme volatility of its interest rates, exchange rates, inflation rates and other fundamental macroeconomic variables. This instability has been present since 2010 when the country's major international donors froze most of their foreign aid due to the country's poor human rights record. This resulted in shortages of foreign currency and essentials such as fuel and medicine, thus worsening the macroeconomic instability as interest rates and inflation rates have increased significantly, up to 35 percent and 25 percent respectively. The World Bank (2012:3) identifies the above macroeconomic instability as the major factor that discourages not only exports but also foreign direct investment and economic growth in Malawi. Therefore the government needs to implement prudent fiscal and monetary policies that can bring the economy back into equilibrium and hence encourage exports-led growth.

Malawi also lacks adequate productive capacity to take full advantage of the multitude of international trading opportunities available in global markets. The deficiency in productive knowledge is exhibited through the presence of an unskilled labour force, insufficient technology and poor access to financial capital. This reduces Malawi's export volumes through inefficient utilization of the country's productive resources and thus leads to high opportunity cost in terms of export revenue (GoM, 2012:4-6). Therefore the government needs to invest heavily in acquiring modern technology and in skills development of the labour force. In addition to this, the state needs to provide easy access to financial capital to export-oriented industries more

especially small and medium scale enterprises (SMEs). State-owned development banks can easily facilitate funding for export-oriented industries.

The country should also urgently address the lack of institutional capacity to comply with international export quality assurance standards which reduces Malawi's export revenue through exportation of unprocessed and substandard products. Malawi should invest in physical and institutional infrastructure that can ably test, accredit, and certify its export commodities in line with the technical standards of the international trading system. This can be done by either upgrading the facilities of the already existing Malawi Bureau of Standards, or creating a new statutory body to perform the above export quality assurance functions.

Most importantly, the shortage of an adequate transport infrastructure is a barrier to export promotion and international trade in general. The MGDS (2005:74) observed that the poor transport infrastructural system in Malawi including roads, railways, air services and water transport, greatly reduces the country's export volumes by increasing the domestic production costs by about 55 percent. This makes foreign goods cheaper relative to Malawi's domestically produced goods, a situation that greatly depresses Malawi's export revenue. As a way of facilitating export-led growth, the government therefore needs to substantially invest in both physical infrastructure, for example roads and rail, and soft infrastructure such as finance, information technology (ICT) and logistics. This will greatly reduce production costs and hence help to make Malawi's exports internationally competitive.

Export promotion in Malawi is also hindered by poor institutional bureaucratic tendencies of state-owned trade-related organisations. Inefficiencies in institutions dealing with customs clearing, export licensing, and other trade-related documentation and registration issues greatly increases transactionary costs for Malawi's exporters and thus negatively affects the general competitiveness of the country's export products. These inefficiencies are normally in the form of huge delays and corruption (Chikhasu, 2007:14). Therefore the Government of Malawi should streamline the functions of these trade institutions and also move towards simplifying some of its export requirements. This will reduce delays and cut the transactionary costs. In addition, the introduction of more transparent export-related procedures could curb institutional corruption and boost Malawi's export promotion drive.

Malawi's institutions dealing with exports are heavily characterized by weak capacity in the form of very low levels of trade-related knowledge and technical expertise, the absence of support for private sector development and inability to attract domestic and foreign direct

investment. This situation puts Malawian exporters at a huge disadvantage relative to their foreign counterparts when it comes to the utilization of international export opportunities since the latter have better international market information than Malawi (WTO, 2010:7-9). As a result, Malawi is robbed of precious export revenue which could have been used to finance economic development. The government must therefore improve the capacity of its trade support institutions by organizing capacity building programmes for officers of these institutions in collaboration with regional and international trade bodies such as COMESA and WTO respectively. This will enable Malawi to effectively stay updated on recent developments in international export markets.

6.2.2 Import-Related Policy Implications and Recommendations

The negative and statistically insignificant relationship between imports and the GDP level implies that the Import-led Growth Hypothesis does not hold for Malawi. From this it is clear that the government should abandon policies promoting imports in favour of alternative ways of achieving economic growth, such as export-driven economic policies.

Several economic and trade policies aimed at restricting imports while still promoting economic growth should be urgently implemented by the government. However, as shown by the statistical insignificance, it is quite clear that these policy actions should be applied cautiously in order not to prevent the country from acquiring productive foreign technology which is essential in achieving economic growth especially for technology-deficient economies like Malawi. One of these can be the imposition of import quotas on certain non-essential imports like luxuries. This will enable the country to allow in only growth-enhancing imports and also make a saving on its foreign exchange expenses on non-essential foreign products.

Furthermore, a restriction on non-productive imports can be achieved through the prudent increasing of import tariffs. This basically involves systematic imposition of some form of tax on goods and services purchased from abroad. If the import tariff is carefully implemented and high enough, it will not only discourage importation of non-essential foreign products but will also avoid retaliation (i.e. tariff war) from the countries from which the imports originate (Sodersten and Reed, 1994:113).

Government, through the Reserve Bank of Malawi, can also implement some exchange control policies aimed at restricting foreign exchange allocation to only importation of growth-enhancing products. In the long run this will discourage the importation of non-essentials since importers of these commodities would find it difficult to access foreign currencies that would

enable them to undertake such transactions. Similarly, even if the importers would try to access foreign currency illegally through 'black markets', the high foreign exchange prices on the 'black markets' due to restrictions on the official markets would also act as a further deterrent.

Lastly, government can significantly reduce import demand for non-productive foreign goods by implementing deflationary monetary and fiscal policies. These could involve policy instruments that reduce government spending and reduce money supply to reduce inflation rates. With low domestic inflation rates foreigners find it unprofitable to sell commodities to a country whose general price level is lower than theirs. This would reduce the supply of imports into Malawi.

6.2.3 Labour-Related Policy Implications and Recommendations

The positive and statistically significant relationship between labour force and economic growth in Malawi, implies that the country should also continue with its labor-intensive economic growth strategies. The majority of Malawi's population range between 15 and 35 years old which implies that the country is a labour-surplus economy. It is therefore prudent for the government to achieve economic growth through labour-intensive industrialization through the export sector. The country's agricultural sector provides a good platform for launching such a labour-driven GDP growth agenda.

In addition, there is need for the government to improve the quality of its labour force if it is to increase its GDP growth rate and achieve its long term development aspirations. This can be done by improving the technical skill levels of its workforce through engaging them in technical and vocational training programmes in public institutions of higher learning. But for this to happen, the state needs to significantly and holistically revamp its technical and engineering colleges and empower the Technical and Vocational Education and Training Authority (TEVETA) both financially and technically. This will enable workers to translate the skills gained from the training programmes into increased levels of productivity.

Another way of improving the quality of the labour force is to improve the health status of the workforce. Over the past two decades Malawi has lost a sizeable proportion of its workforce to HIV/AIDS and tuberculosis pandemics thus negatively affecting its GDP growth rate. The government needs to move in quickly to offer workers free or subsidized medication and to conduct sensitization campaigns on these two diseases. There is also a need for the state in Malawi to enact and enforce labour laws that champion workers' safety and other employment rights in order for the country to achieve sustainable labour-driven growth. This will reduce

incidences of child labour and wage exploitation in many labour-intensive primary export sectors such as tobacco farming and thus lead to the achievement of 'clean' growth.

6.2.4 Capital-Related Policy Implications and Recommendations

From the study's regression results it is clear that capital has a positive effect on economic growth in Malawi and this has important policy implications for the country's economy. This means that the government should continue with her policies aimed at promoting domestic investment and attracting foreign investors in order to achieve economic growth. However, the statistical insignificance of the result does also imply that there are several challenges in the capital formation process in the country. Firstly, Malawi's economy has been quite unstable over the years as shown by volatile macroeconomic variables such exchange rate, interest rates, inflation rates, and GDP growth rates, just to mention but a few. This macroeconomic instability has discouraged foreign investment and crowded out domestic investment resulting in low capital formation and reduced growth rates (Ngwira, 2012:17-19). The government needs to implement appropriate fiscal and monetary policies in order to contain the economic disequilibrium. In particular, the government needs to bring down interest rates which are currently above 35 percent in order to bring back investor confidence in the economy. Moreover, the value of the Malawi Kwacha has to stabilize against major foreign currencies. This will bring certainty to the economy which will then increase capital formation and GDP growth.

In addition, the country's poor infrastructure, especially energy problems in the form of intermittent power cuts and unstable fuel supplies, has hindered foreign investment (World Bank, 2012:2-3). Therefore, the country needs to invest significantly in its infrastructure especially the transport and energy sectors (electricity and fuel) in order to attract foreign direct investment which leads to capital formation and economic growth.

As already indicated, the statistical insignificance of the capital-economic growth nexus can also be a result of Malawi's low domestic savings rates which retard capital formation. The country needs to cultivate a culture of saving among its citizens. But for this to happen, government in collaboration with the financial sector, should devise policies that increase the rate of return on domestic savings in order to attract more savers. Commercial banks also need to extend their services to rural parts of the economy which have the country's largest unbanked population. The state and private employers should also encourage pension funds and contributory pension schemes for their employees in order to boost savings among workers.

6.3 Areas For Further Research

In conclusion therefore, having analysed the impact of exports and imports on economic growth in Malawi in detail, the study noted the need to determine the direction of causation between the aforementioned variables in order to enhance evidence-based decision making as regards to the adoption of trade-driven economic development policies. Future studies may therefore use other more advanced econometric measures such as Granger Causality test in probing the above subject matter even further.

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Appendix A: Data Used in the Study

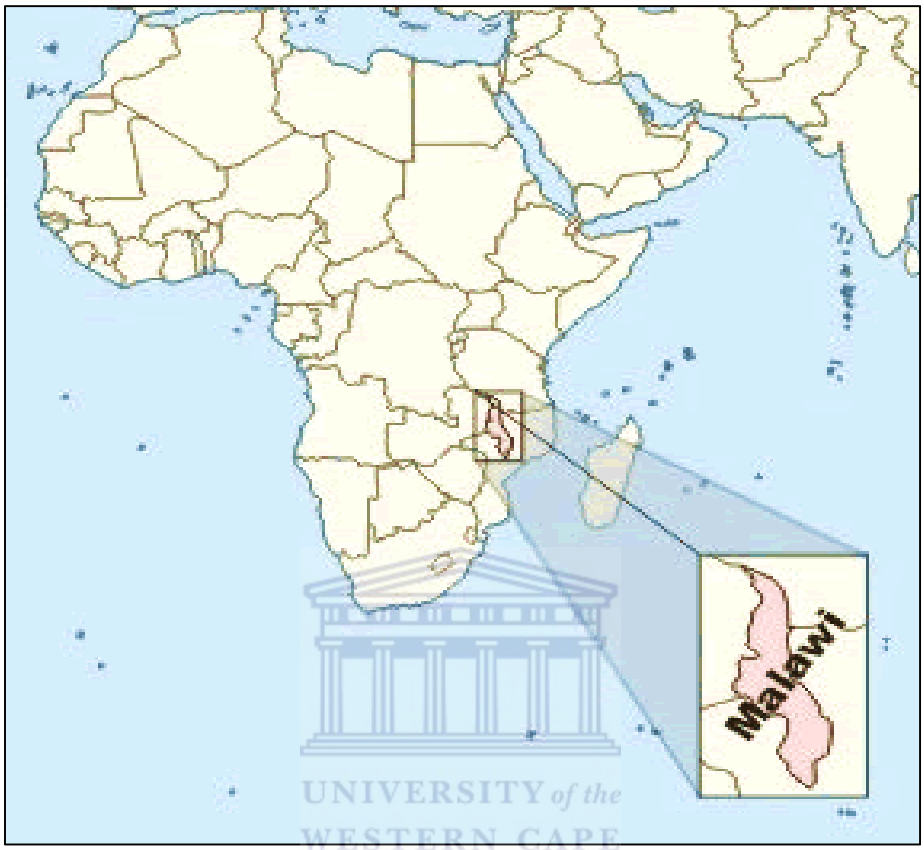
Year	Population	GCF	GDP	Exports	Imports
1970	4.53128	74.76003	290.5201	70.44003	113.76
1971	4.667889	70.04504	365.3896	85.69083	129.6194
1972	4.814073	99.0571	406.0842	94.56584	154.075
1973	4.969175	99.47976	444.3022	122.7934	166.9795
1974	5.132087	149.9043	548.6188	153.7084	213.7414
1975	5.301861	206.7528	613.1969	178.6224	281.42
1976	5.481074	176.0109	670.3093	204.05	260.5663
1977	5.670199	199.0192	806.2658	241.8797	279.2027
1978	5.863933	364.8021	948.9833	220.0902	390.1652
1979	6.055046	319.9989	1058.298	245.4467	432.1331
1980	6.239898	306.2447	1237.662	307.4761	480.239
1981	6.409111	218.1394	1237.687	317.6592	389.8139
1982	6.567327	252.5795	1180.094	265.4643	340.4045
1983	6.741249	278.8647	1223.225	253.8384	346.4528
1984	6.967388	155.5845	1208.026	342.7245	319.2347
1985	7.268257	210.2849	1131.35	273.6903	338.2591
1986	7.661008	147.603	1183.672	271.1876	296.4956
1987	8.12834	204.3244	1183.071	301.1216	329.0108
1988	8.616602	295.5529	1379.924	321.8287	449.0687
1989	9.051225	390.5021	1590.202	298.6384	548.899
1990	9.380892	433.3414	1880.784	447.2895	628.5725
1991	9.583696	445.9011	2203.536	512.7977	645.7971
1992	9.681728	358.7292	1799.529	417.6028	764.0052
1993	9.72162	314.1426	2070.647	334.0016	667.2033
1994	9.772164	343.8829	1181.802	350.2013	729.7052
1995	9.88335	243.0472	1397.454	424.3856	672.0136
1996	10.07061	281.1857	2281.039	520.6643	727.1193
1997	10.31913	308.9041	2663.239	568.7749	894.4596
1998	10.61235	235.7167	1750.585	573.6696	667.0608
1999	10.92227	260.1724	1775.92	497.6533	768.8614
2000	11.22876	236.5014	1743.506	446.4013	616.0677
2001	11.52934	255.6992	1716.502	480.47	671.6188
2002	11.8331	352.4946	2665.159	554.4241	910.2606
2003	12.14495	414.6995	2424.657	647.3037	984.3155
2004	12.47279	478.1588	2625.127	655.228	1133.91
2005	12.82259	624.9659	2754.996	662.49	1437.747
2006	13.19533	800.1652	3116.79	705.0041	1468.318
2007	13.5894	965.5676	3647.817	1033.382	1468.753
2008	14.00511	1097.855	4276.77	1205.569	2091.637
2009	14.44229	1286.526	5030.64	1239.999	1959.765
2010	14.90084	1402.942	5398.617	1585.9	2426.168

Source: World Bank Online database

Appendix B: Malawi and Neighbouring Countries

Source: Department of Surveys (2012:14)

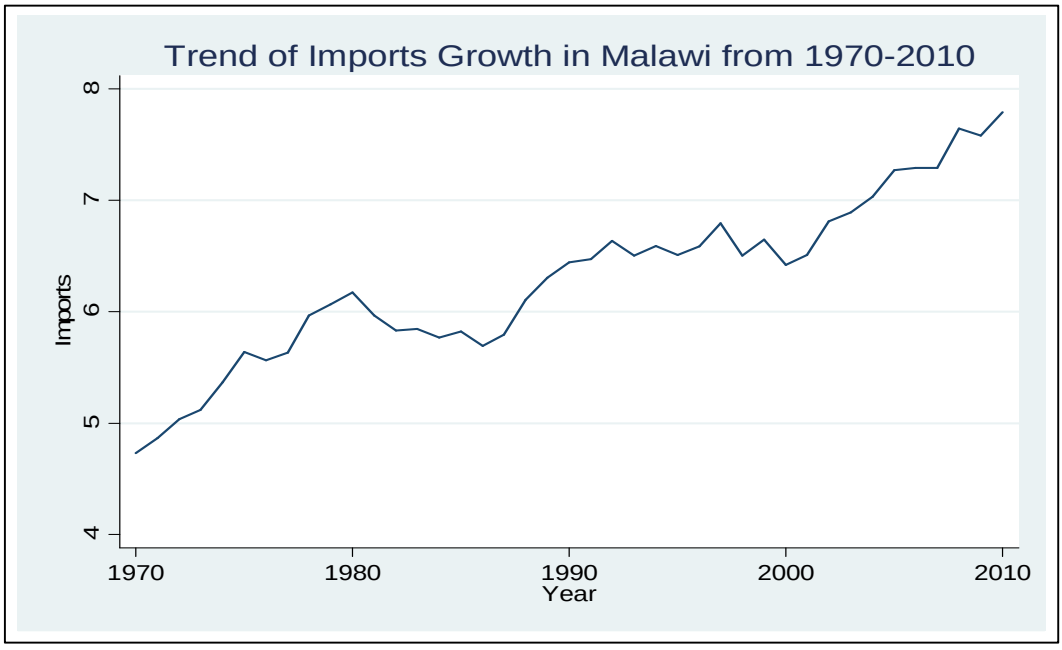
Appendix C: Location of Malawi on the Map of Africa



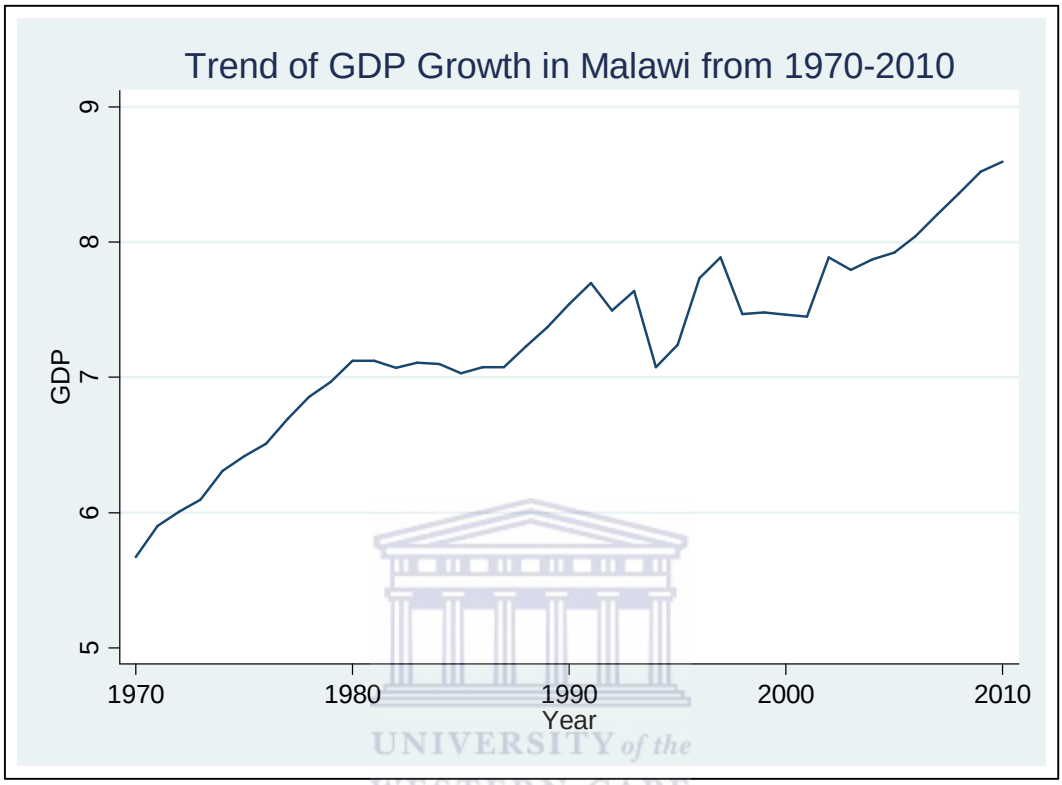
Source: Department of Surveys (2012:14)

Appendix D: Graphs Showing Trends of Exports, Imports, and Gdp Growth for Malawi from 1970 to 2010

Source: The author's secondary data analysis using Stata



Source: The author's secondary data analysis using Stata



Source: Author's secondary data analysis using Stata