POTENTIAL FOR EXPORTING INTO SADC AND COMESA COUNTRIES FROM MALAWI

Master of Arts (ECONOMICS) Thesis

By

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DECLARATION

I the undersigned hereby declare that this thesis is my own original work which has not been submitted to any other institution for similar purposes. Where other people's work has been used acknowledgements have been made.

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Bisa Namarika

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Date

CERTIFICATE OF APPROVAL

I declare that the thesis is the student's own work and effort and where he has used other sources, acknowledgement has been made. This thesis is therefore submitted with my approval.

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DEDICATION

To my Dad and Mum

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ABSTRACT

The economy of Malawi is feeling the effects of persistent trade deficits. This has resulted in recurrent shortage of foreign currency on the formal market. This study puts up a case for increasing exports into the Southern Africa Development Community (SADC) and Common Market for Eastern and Southern Africa (COMESA) regions. A view peddled by the National Export Strategy (NES). The study empirically investigates the determinants of Malawi's exports into COMESA and SADC. Furthermore, it examines the potential that the country has to export to member states of the aforementioned regions. A gravity model for exports is estimated to determine factors that influence Malawi's exports into the region and subsequently export potential into each member state is evaluated. The study observes that Malawi has exhausted its potential to export to the bigger economies (Egypt and South Africa) in the regions. But it has potential to increase its exports into two of the three countries it shares border with. A negative relationship was observed on distance between Malawi and the member states of the regions. The study recommends that when exporting, Malawi should pay more attention to markets closer to its boundaries than those afar.

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LIST OF ACRONYMS AND ABBREVIATIONS

ACP	Asian Caribbean and Pacific
AGOA	African Growth and Opportunity Act
CET	Common External Tariff
COMESA	Common Market for Eastern and Southern Africa
COMTRADE	Commodity Trade
DDA	Doha Development Agenda
DRC	Democratic Republic of Congo
EAC	East Africa Community
EBA	Everything But Arms
ESA	Eastern and Southern Africa
EU	European Union
ECOWAS	Economic Community of West Africa States
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GSP	Generalised System of Preference
HO	Hecksher-Ohlin
IMF	International Monetary Fund
IRS	Increasing Returns to Scale
ITC	International Trade Centre
LDC	Least Developed Countries
MCA	Millennium Challenge Account

MDG	Millennium Development Goals
MGDS	Malawi Growth and Domestic Strategy
MPRA	Munich Personal RePec Archive
NES	National Export Strategy
NTB	Non Tariff Barrier
OECD	Organisation for Economic Cooperation and Development
REC	Regional Economic Community
SADC	Southern Africa Development Community
SAIER	Southern African Institute of Economic Research
SAP	Structural Adjustment Programme
USD	United States Dollar
WTO	World Trade Organisation

CHAPTER ONE

INTRODUCTION

1.1. Background

Over the last two decades (from the 1970's) Malawi has been registering a negative trade balance (Banda, 2007). The main reason behind this dismal situation is an export performance that has remained essentially flat. Sustained export growth in real terms has not been achieved; when the performance of one sector has improved, the performance in other sectors has worsened (AfDB/OECD, 2007).

The country has been implementing a number of policies to address the situation. These include taking measures to create a stable, liberalized trade environment and active participation in the regional and multilateral trading arrangements as well as instituting various exchange rate policies. The liberalization programme that has been pursued since the early 1990's has made Malawi's economy more open to the international market but it has not resulted in a major change in the contribution of the trade to the economy as imports and exports averaged 53% of GDP (Government of Malawi, 2002). On regional integration, Malawi is an active member of both COMESA and SADC.

In terms of exporting, the majority of countries in Sub Saharan Africa have more than doubled their exports in real terms in a decade , Malawi has only managed to increase its exports by a little over a third during the same period (1996- 2006) which is indicative of the fact that Malawi has not been able to take

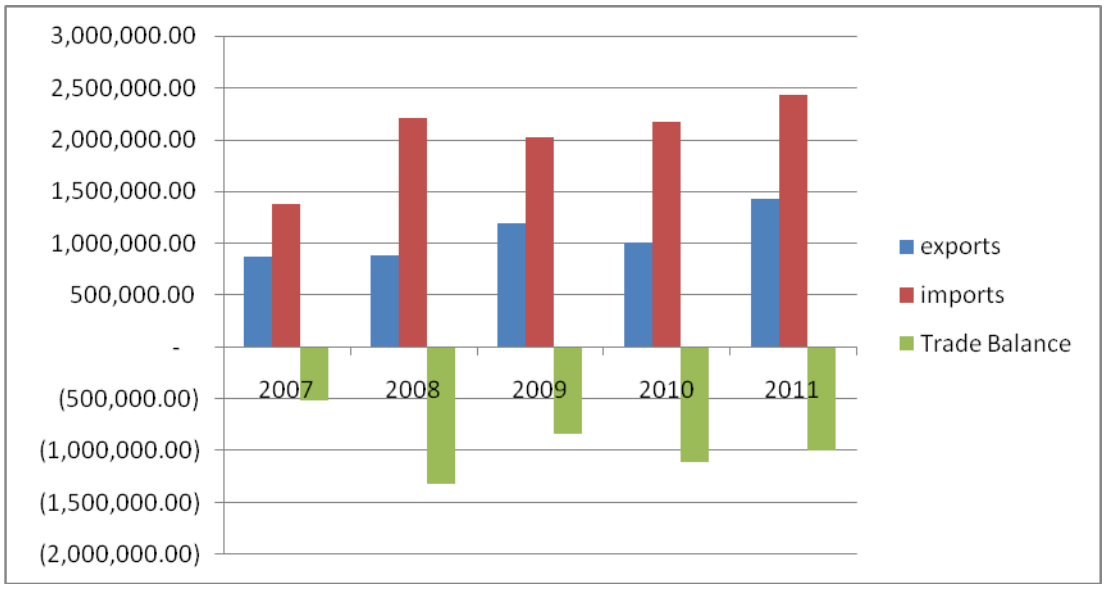
advantage of the various opportunities at its disposal including African Growth and Opportunity Act (AGOA) (MCA, 2011).

1.2. Statement of the Problem

Malawi's development agenda for 2012-2016 is spelt out in the Malawi Growth and Development Strategy II (MGDS II). Under its predecessor, the MGDS I, Malawi managed to achieve economic growth, reduce poverty and attain national food security amongst others (NES, 2012). The MGDS II is premised on the reduction of poverty and achievement of the Millennium Development Goals (MDGs).

The strategic imperative and goal for Malawi as spelt out in the current NES is that export earnings must cover import bills in the long-term. This will allow MGDS II to build on the gains made under MGDS I (Ministry of Trade, 2012). The trade performance for Malawi as indicated in figure 1 below shows that for the past five years Malawi's export revenues have been outstripped by import bills hence the country experiencing trade deficit during the whole period.

Figure 1: Trade balance for Malawi (in USD)



Source: Trade Map

Gondwe (2008) acknowledged that Malawi has been running persistent trade deficits for the past three decades. In her study she used the gravity model to determine factors that influence Malawi's trade and evaluate the influence of the complementarity of bilateral trade structure and regional economic blocks on Malawi's trade flow. She found that Malawi has unrealized potential to export her main commodities (Tobacco, Cotton, Tea, Sugar and Coffee) to COMESA than SADC. The study also found that GDP and GDP per capita of trading partner positively determine exports. Distance between Malawi and SADC and COMESA members was found to have negative effect on exports. Further to this, the study found that regional communities do not enhance Malawi's ability to export.

Other related studies on Malawi include Simwaka (2006). He also used the gravity model to unveil factors that determine Malawi's trade flows to her major trading partners to help in the formulation of right policies. He found that trade is positively determined by GDP of importing country and negatively by distance. He

also found that regional groupings had no influence on trade. The results of a UNESCO (2007) study on Malawi's dual membership of COMESA and SADC were contradicted by those of Gondwe (2008). The UNESCO study found that Malawi's economic development potential is better in SADC than COMESA, particularly in the area of trade, infrastructure, monetary and financial integration, macroeconomic convergence as well as political and cultural issues.

This study will contribute to the effort as spelt out by the NES, of ensuring that export revenues must cover import bills in the long term. The focus of the study is on increasing exports into the SADC and COMESA regions. The study will find out major determinants of Malawi's exports into the SADC and COMESA region and subsequently flag out countries in the regions with which Malawi has the potential to increase its exports to. The study departs from Simwaka (2006) and Gondwe (2008) by focusing on the regions of SADC and COMESA instead of major trading partners. Furthermore it will build on Gondwe's (2008) findings on export potential into the COMESA region by pin pointing countries within the region with which Malawi has potential to increase exports of its commodities to. The results of the study will help in guiding policy makers and exporters on which countries to focus to increase the exports.

1.3. Objectives of the Study

The overall objective of the study is to identify the determinants of exports from Malawi to member states in COMESA and SADC and subsequently identify countries with which Malawi has potential to increase its exports to. This will be achieved by focusing on the following specific objectives

1. To identify countries with which Malawi has potential to increase its exports to

2. To determine the effect of GDP, regional grouping, history and distance on exports into both SADC and COMESA regions.

1.4. Research hypothesis

The study seeks to test the following hypotheses

1. Malawi does not have the potential to increase its exports into member states of COMESA and SADC
2. GDP, regional grouping, history and distance have no significant influence on exports from Malawi into COMESA and SADC countries

1.5. Significance of the Study

The study will contribute to the literature of understanding how best to increase Malawi's exports in particular into the regional markets of COMESA and SADC. For the past three decades Malawi has been running trade deficits which have greatly impacted on the country's ability to raise foreign exchange. Consequently, dependence has been on donor aid. However, there seems to be a shift in the thinking of development partners from donations to trade. As such the need for informed decisions when developing trade policy and in their implementation is more imperative now than ever.

Currently, Malawi has a more liberalized economy as a result of unilateral decision made through the Structural Adjustment Program (SAPs), bilaterally with a number of other Southern African nations, regionally through SADC and COMESA and multilaterally through world trade organization (WTO), EU ACP Cotonou agreement and Everything But Arms (EBA). However, the country continues to experience trade deficits hence the need for more research to help in abating the current trade situation.

1.6. Organisation of the Study

The rest of the study is organized as follows: Chapter 2 of this study gives an overview of Malawi's trade with COMESA and SADC with emphasis on the 2006-2010 periods. Theoretical underpinnings of the basis for trade between economies and Preferential Trade Areas are reviewed in Chapter 3. The chapter will also highlight some empirical studies that made use of the gravity model in their analysis of trade flows for specific countries and regions. Chapter 4 outlines the methodology used by the study. More specifically it presents the specific gravity model that the study will adopt, the calculation of trade potential as well as revealing data sources. The study's empirical findings are presented and discussed in chapter 5. Finally, Chapter 6 presents a summary of the findings, policy recommendations and the limitations that the study faced.

CHAPTER 2

OVERVIEW OF MALAWI'S TRADE POLICY AND TRADE WITH COMESA AND SADC

2.0 Introduction

This section discusses in brief Malawi's trade policy and regional commitments. It will present Malawi's trade structure with member states of COMESA and SADC regions. The intention is to provide the context in which this study is being carried out.

2.1 Trade Policy Framework

2.1.1 Participation in the World Trade Organization (WTO)

Malawi has been participating in the Doha Development Agenda (DDA) negotiations through the Least Developed Counties (LDC), Asian, Caribbean and Pacific ACP, and African groups. DDA is the current trade-negotiation round of WTO which commenced in November 2001. Its objective is to lower trade barriers around the world, which will help facilitate the increase of global trade. The country has expressed its interest in an ambitious outcome of the DDA negotiations, including the elimination of trade-distorting domestic support and export subsidies in the cotton sector and special and differential treatment (World Trade Organisation, 2010).

Developing countries including Malawi view reform in agricultural trade as one of their most important goals. They argue that their own producers cannot compete

against the surplus agricultural goods that the developed countries, principally the EU and the United States, are selling on the world market at low, subsidized prices.

2.1.2 Preferential Trade Agreements and Arrangements

2.1.2.1. Bilateral trade agreements

Malawi maintains bilateral trade agreements with Mozambique, South Africa, and Zimbabwe and a customs agreement with Botswana (World Trade Organisation, 2010).

2.1.2.2. Regional trade agreements

a. Common Market for Eastern and Southern Africa (COMESA)

Malawi is a member of the COMESA Customs Union which was launched in June 2009; member states have a transitional period of three years to align their national tariffs with the COMESA Common External Tariff (CET). The CET has a three-band structure: 0% for capital goods and raw materials, 10% for intermediate goods, and 25% for finished products. During the transition period which was originally from 2009-2012 but extended by another 2 years to 2015, member states are also to finalize the list of sensitive products and agree on their CET rates (World Trade Organisation, 2010).

Malawi is implementing several COMESA trade facilitation initiatives, including the COMESA Simplified Trade Regime, the COMESA Yellow Card Scheme (motor vehicle insurance valid in all participating countries), and the Regional Customs Bond Guarantee Scheme. It is also a party to the COMESA Protocol on Trade in Services and is participating in a number of COMESA institutions.

b. Southern African Development Community (SADC)

Malawi has signed the SADC Free Trade Area, which was launched in August 2008, following an eight-year transition period governed by the SADC Protocol on Trade. SADC's trade facilitation initiatives include harmonizing customs procedures and customs classifications, increased custom cooperation, reducing costs by introducing a single, standardized document (Single Administrative Document) for customs clearance throughout the region and establishing one-stop border posts (World Trade Organisation, 2010).

2.1.2.3 Other preferential trade arrangements

a. United States African Growth and Opportunity Act (AGOA)

Malawi has duty-free and quota-free market access to the United States under AGOA (World Trade Organisation, 2010).

b. EU Everything-But-Arms Initiative

Malawi is a beneficiary of the EU's Everything-But-Arms (EBA) initiative. Currently the main export product to the EU is tobacco, followed by sugar and tea. Under EBA LDC exports enter the EU duty-free and quota-free. The EBA scheme is non-reciprocal.

In the negotiations on an Economic Partnership Agreement (EPA) with the EU, Malawi is party to the Eastern and Southern Africa (ESA) negotiating group, a sub-group of COMESA member states. Malawi has not yet initialed the ESA – EU Interim Agreement, since the Interim EPA does not adequately address issues of interest to the country (World Trade Organisation, 2010).

2.1.2.3 Other non-reciprocal preference schemes

Malawi has an agreement on trade, investment, and technical cooperation with China. From 1 July 2010, Malawi is eligible for tariff preferences in China covering some 4,800 products.

Malawi is also eligible for non-reciprocal tariff preferences under the Generalised System of Preference (GSP) schemes of various WTO Members, including Australia, Canada, the EU, Japan, New Zealand, Norway, Switzerland, Turkey, and the United States.

2.2. Malawi's Trade with SADC and COMESA

2.2.1 Imports from SADC and COMESA region

Over 50% of Malawi's imports by value have been sourced from both COMESA and SADC in the years 2006-2010. Generally, the import value was over 60% of the total in the first four years and it dropped to 53% in 2010.

Imports from SADC hovered above 50% in the years 2006-2009 and then dipped to 42% in 2010. However, imports from COMESA started from 10% then dipped to 8% before picking up to 10% in 2010.

In absolute terms Malawi has been importing more from SADC than from COMESA. In the years 2006 to 2009 Malawi's imports from SADC were almost six times those of COMESA. But in 2010 that ratio dropped to four times. Table 1 gives more details.

Table 1: Malawi's imports from COMESA and SADC (in USD)

Country	2006	2007	2008	2009	2010
Total Imports	1,206,696.00	1,377,845.00	2,203,688.00	2,021,672.00	2,173,038.00
Total SADC and COMESA	842,860.84	883,377.88	1,469,534.26	1,331,060.11	1,160,869.55
% of total	69.85	64.11	66.69	65.84	53.42
SADC	722,105.00	742,404.00	1,283,936.00	1,154,642.00	924,685.00
% of total	59.84	53.88	58.26	57.11	42.55
COMESA Aggregation	120,696.00	140,920.00	185,540.00	176,361.00	236,142.00
% of total	10.00	10.23	8.42	8.72	10.87

Source: Trade Map

2.2.2 Exports into SADC and COMESA

In terms of exports Malawi almost doubled its export value during the period 2006-2010. The exports to SADC started at almost a third of total exports in 2006 and by 2010 they were at 19% of the total exports. However, exports to COMESA were at 11% in 2006 and they peaked at 21% in 2007 and were at 20.62% in 2010. Generally exports into COMESA have almost reached parity with those into SADC (Table 2).

Table 2: Exports from Malawi into SADC and COMESA (in USD)

Country	2006	2007	2008	2009	2010
World	**666,217.00**	**868,559.00**	**878,999.00**	**1,187,917.00**	**1,066,204.00**
Total SADC and COMESA	286,401.31	494,282.73	277,317.83	448,620.33	427,593.48
% of total	42.99	56.91	31.55	37.77	40.10
SADC Total	208,596.00	310,318.00	191,854.00	277,139.00	207,717.00
% of total	31.31	35.73	21.83	23.33	19.48
COMESA Total	77,774.00	183,929.00	85,442.00	171,458.00	219,857.00
% of total	11.67	21.18	9.72	14.43	20.62

Source: Trade Map

2.2.3 Exports by Top Ten Products into COMESA and SADC

COMESA

The major exports into COMESA in the past 3 years were Tobacco, Sugar, oil seeds and Tea. Nevertheless there has been growth in exports of plastics and cereals (Table 3)

Table 3: Exports into COMESA by product

	Product label	Malawi's exports to COMESA in thousand USD		
		2009	2010	2011
1	Tobacco and manufactured tobacco substitutes	91,659.00	104,484.00	101,997.00
2	Cereals	3,213.00	3,808.00	67,548.00
3	Sugars and sugar confectionery	27,453.00	29,572.00	53,525.00
4	Plastics and articles thereof	2,975.00	10,078.00	14,024.00
5	Oil seed, oleagic fruits, grain, seed, fruit, etc, nes	9,584.00	9,820.00	11,814.00
6	Coffee, tea, mate and spices	6,830.00	12,483.00	9,922.00
7	Articles of iron or steel	116.00	2,346.00	6,971.00
8	Cotton	2,839.00	1,371.00	6,811.00
9	Vehicles other than railway, tramway	3,616.00	3,583.00	5,296.00
10	Rubber and articles thereof	1,671.00	3,051.00	3,878.00

Source: Trade Map

SADC

Table 4 below shows the main products exported into the SADC region in the past three years. Tobacco, Sugar, Tea, Oil Seeds and Cereal were the main products that were exported.

Table 4: Exports into SADC region by product

	Product label	Malawi's exports to SADC in thousand USD		
		2009	2010	2011
1	Cereals	14,309.00	4,592.00	55,777.00
2	Tobacco and manufactured tobacco substitutes	30,706.00	14,850.00	51,360.00
3	Sugars and sugar confectionery	18,486.00	28,920.00	42,069.00
4	Coffee, tea, mate and spices	34,628.00	30,808.00	27,266.00
5	Plastics and articles thereof	16,091.00	20,072.00	26,645.00
6	Oil seed, oleagic fruits, grain, seed, fruit, etc, nes	52,993.00	13,590.00	26,014.00
7	Arms and ammunition, parts and accessories thereof	0	0	17,708.00
8	Rubber and articles thereof	4,539.00	10,769.00	14,478.00
9	Cotton	16,628.00	7,087.00	12,813.00
10	Vehicles other than railway, tramway	10,575.00	3,481.00	12,315.00

Source: Trade Map

2.3 Concluding Remarks

Malawi has been actively engaging in both multilateral and regional trade agreements. Currently it is a member of two regional bodies COMESA and SADC. The total exports into the two regions have been less than 50% of the total exports of Malawi and primary products are dominant.

CHAPTER 3

THEORY AND LITERATURE REVIEW

3.0. Introduction

This chapter examines what different trade theories say about the basis for trade. It also evaluates theories of regional trade agreements and finally reviews empirical work that has been done on bilateral trade flow and trade potential.

3.1. Theoretical Review of Literature

Many of the causes of international trade are found in the countries' different abilities to produce certain goods and services. These varying abilities are in turn related to underlying aspects of production such as technologies, factor endowments, competing conditions, government taxes and return to scale (Markusen, 1988).

3.1.1 Absolute Advantage

This is the dominant theory of trade and it is attributed to Smith (1776). The principle of absolute advantage refers to the ability of a country to produce more of a good or service than competitors, using the same amount of resources. Adam Smith first described the principle of absolute advantage in the context of international trade, using labour as the only input. Therefore bilateral trade would involve a country exporting a product which it produces cheaper than the partner country and importing a product which is produced cheaper abroad. Therefore it would be beneficial for the exporting country to concentrate on the product it produces cheaply and imports the product that is produced more cheaply abroad.

3.1.2 The Comparative Advantage Theory

This refers to the ability of the country to produce a good at a lower opportunity cost than another. This theory states that even if a country has no absolute advantage over another, there can still be gains from trading as long as the countries have different relative efficiencies.

This theory was first described by Ricardo (1817). The theory states that if the labour cost of producing two products, say textiles and maize is such that

$L_{th} < L_{tf}$ and $L_{zh} < L_{zf}$ …… (1)

where

L_{th} is labour cost of producing textiles in home market

L_{tf} is labour cost of producing textiles in foreign market

L_{zh} is labour cost of producing maize in home market

L_{zf} is labour cost of producing maize in foreign market

The basis for trade may exist if comparative costs were used instead of absolute such that

$L_{th}/L_{zh} < L_{tf}/L_{zf}$ ……..(2)

where textiles are produced relatively less costly in the home compared to the foreign. Therefore home would export textile and import more maize.

In general, a country has a comparative advantage in a product it can produce at a relatively lower cost than other countries in the rest of the world (Krugman and Obstfeld, 2003). As such countries will export to the rest of the world a product in which it has comparative advantage and import in which it has a comparative disadvantage.

3.1.3 The Hecksher-Ohlin (HO) Model

This theory builds on David Ricardo's comparative advantage theory. In essence it predicts the patterns of commerce and production based on the factor endowments. The HO theory proposes that the pre-trade relative factor cost differences between two countries results from differences in relative resource endowment. HO theory states that a country has comparative advantage in a commodity that in its production, utilizes most intensively a factor that is in relative abundance in that country compared to other countries. This proposition means that a country's direction of trade will be that it exports commodities which are intensive in the relatively abundant factors (Krugman and Obstfeld, 2003).

The model is mathematically build on as follows

$K_f/L_f < K_h/L_h$ ……(3)

Where

K_f means capital employed in production of maize

L_f means labour employed in the production of maize

K_h means capital employed in the production of textile

L_h means labour employed in the production of textile

Inequality (3) presents the dissimilarities relative factor abundance between countries with foreign country being capital abundant than home country which is in turn labour abundant. This is the autarky factor proportions of fixed resource endowments and is measured in absolute physical units. This pre-trade difference in factor endowments forms the basis for comparative advantage and therefore trade is established. With the assumptions that maize production is capital intensive (and less intensive in labor) while textile production is labor intensive (and less intensive in

capital), and that home country is labor abundant (capital scarce) while foreign country is capital intensive (labor scarce), the autarky relative factor costs can be presented as:

$$(w/r)\,f = (MPL/MPK)f > (MPL/MPK)h = (w/r)h \quad \text{……..(4)}$$

Where w is the wage rate

r is the interest rate

MPL is the Marginal Product of Labour

MPK Marginal Product of Capital

f is foreign country

h is domestic country

Difference in product prices originate from this factor cost relationship. With the home country facing a relatively cheaper wage for labor since labour is in abundance, and textile is labor intensive, textiles will be cheaper in the home than in the foreign economy. The relative product prices will be

$$Pf = (Pt/Pz)\,f > (Pt/Pz)h = Ph \quad \text{……..(5)}$$

where Pf and Pz are prices for textile and maize respectively. Pt is price of textile and Pz is price of maize. This means that the home country has a comparative advantage in the production of textiles. Following the same modeling, foreign country will have comparative advantage in the production of maize which is capital intensive, a factor which is in relative abundance in that country. All this stems from the proportion factor endowments as presented in inequality (3).

3.1.4 New Trade Theory

According to traditional trade theories (Ricardian, specific factors and HOS models), trade occurs due to existing comparative advantage between countries (technology, factor endowment differences). Empirical data shows a significant amount of trade occurs between similar countries, countries with similar technology and similar

factor endowments. With little difference to exploit, these countries should have little to gain from trade, yet seem to have prospered from trading with each other. Classical trade theory fails to explain trade between countries with similar factor endowments. This motivated the new trade theory.

Some of the new reasons for trade are increasing returns to scale (IRS), imperfect competition (especially oligopoly), and differentiated goods (variety or quality)

3.1.5 Custom Union Theory

There are numerous preferential trade cooperations that are practiced around the world. The least restrictive is the free trade area in which a number of countries agree to eliminate all trade barriers among themselves while maintaining their own tariffs against outside countries. A slightly stronger form of cooperation, a customs union eliminates all trade barriers amongst nations that are members of the union but impose a common external tariff against non member countries. When cooperation extends beyond the elimination of trade barriers to the movement of factors the cooperation is called common market (Markusen, 1998). Table 5 below give some details of various trade cooperations.

Table 5: Forms of trade cooperation

Type of Arrangement	**Free trade among members**	**Common commercial policy**	**Free factor mobility**	**Common monetary and fiscal policy**	**One government**
Preferential Free Trade Area	No	No	No	No	No
Free Trade Area	Yes	No	No	No	No
Customs Union	Yes	No	No	No	No
Common Market	Yes	Yes	Yes	No	No
Economic Union	Yes	Yes	Yes	Yes	No
Political Union	Yes	Yes	Yes	Yes	Yes

Source: United Nations Economic Commission for Africa

Countries enter into free trade agreements to enjoy a number of benefits from a variety of sources. First there could be gains from trade associated with specialization that takes advantage of inter-country differences in endowments or tastes. Second a free trade area may allow its members to attain increasing returns to scale. Thirdly domestic industries in free trade area will face increased competition so losses due to the

existence of monopolies will be kept to a minimum. Fourth by forming a customs union a group of countries may be able to affect the terms of trade between themselves and the rest of the world and reap benefits associated with common optimum tariff. Nevertheless there is no clear cut way of predicting the order of importance of these effects (Markusen, 1988).

Static effects: trade creation and trade diversion

Four distinct approaches can be identified in the pre-1990s literature (Bhagwati, 1996):

1) The Vinerian welfare analysis using the influential concepts of trade creation and trade diversion;
2) The Kemp-Wan approach focusing on identifying customs unions that would be necessarily welfare improving;
3) The Cooper-Massell-Johnson-Bhagwati analysis of a customs union to minimize the cost of industrialization; and
4) Bhagwati-Brecher approach to analyzing the effect of changes in the exogenous variables such as the external tariff and the terms of trade on individual members of the union.

According to Viner model, static effects of integration result from a one time reallocation of economic factors of production and natural resources and entail negative and positive impacts on welfare. The model provides a tool for analysing the welfare effects of FTAs by introducing the concepts of trade creation and trade diversion. The extent to which the changes in the welfare occur depends greatly on the predominance of either one of these effects (UNECA, 2012).

Trade creation refers to the increased level of trade which results from the abolition of trade barriers within the FTA. According to the assumption of trade creation, the pattern of trade heavily reflects the difference in the comparative advantage among member countries. Trade is said to have been created when countries give up on production of goods and services produced more efficiently by a partner country. Thus regional and global welfare is said to have been enhanced when the changes introduced by the FTA produce a shift in the consumption from a higher-cost domestic product to a lower-cost partner-country product.

The trade diversion effect, in contrast, is seen as a cost to the regional and world at large. Trade is said to have been diverted when a shift in consumption is more in favour of higher cost products and services from the region than lower cost products and services produced by countries outside the region. Thus trade diversion could produce an uncompetitive environment, inefficiency and loss of consumer surplus.

Dynamic gains from FTAs

Dynamic gains from FTA are attained over the long run. They are more than a one off enhancement of welfare through spillover effects. These effects often result from economies of scale (due to an enlarged market); efficiency gains (due to the competitive environment and transfer of technology); increased inward FDI flows. Africa itself may see dynamic gains from regional integration in six main areas (UNECA, 2012).

The enlarged regional markets provide incentives for FDI as well as private cross border investment. Appropriate trade and macroeconomic policy regimes can encourage businesses to set up optimum sized industrial and services projects, which were formerly held back by the small size of national markets. The combination of a

stable investment climate, development of transport and communications infrastructure as well as sound regional economic policy could provide the incentives for large investments in the manufacturing and service projects that require economies of scale.

Regional integration is likely to improve efficiency as a result of competitive pressures among rival firms. Monopolies and oligopolistic market structures are major impediments of efficient production in most African countries. Inefficient national enterprises (including government monopolies) often keep reaping abnormal profits either because laws protect them or because industry offers no credible rivals. Adopting the enforcing regional competition rules throughout the FTA is likely to enhance (or spawn) the free competition needed for an efficient industrial structure.

Potential terms of trade effect of possible trade diversion from regional FTA may lead to welfare improvements in the REC. This is because an increase in the relative price of exportables can expand that sector, stimulating further investment and so raising the output and employment.

Greater intra Africa trade is expected to generate faster growth and income convergence within the RECs. Market integration within the RECs is likely to stimulate regional growth poles that are capable of generating sufficient externalities to the FTA's less developed member states.

As production structures diversify from primary products, Africa's long dependence on developed market economies of manufactures should weaken. The existing structure of commodity specialization in Africa has placed the continent at a long term disadvantage not only seen in terms of trade losses but also of self esteem and growth. One of the potential dynamic effects of FTAs in Africa is that they can provide a better environment for the industrial diversification and regional complementarity than when each country goes its own way.

The apparatus of regional arrangements provide an excellent platform for dialogue, conflict resolution and ensuring peace and security. Sub regional political stability and peace may be some of the non economic effect of regional integration, especially as Africa has suffered too many wars and civil conflict. Over many decades, absence of stability and peace may have constituted potent non economic determinants of poor growth in Africa. This particular notion of dynamic gain highlights the potential significance of the effects of regional integration in Africa.

3.2. Empirical Review of Literature

The classical and new trade theory can successfully explain the reasons for countries to join in world trade. However they cannot answer the question of the size of the trade flows. The gravity model, which has been used intensively in analysing patterns and performances of international trade in recent years, has be applied to quantify the trade flows. The gravity model has outperformed more sophisticated models when forecasting on composition of trade flows.

It has been known since the seminal work of Tinbergen (1962) that the size of bilateral trade flows between any two countries can be approximated by a law called the "gravity equation" by analogy with the Newtonian theory of gravitation. Initially the gravity equation was thought of merely as a representation of an empirically stable relationship between the size of economies, their distance and the amount of their trade. Whereas empirical analysis predated theory, now most trade models require gravity in order to work. The first important attempt to provide a theoretical basis for gravity models was the work of Anderson (1979). He did so in the context of a model where goods were differentiated by country of origin (the so-called Armington assumption) and where consumers have preferences defined over all the differentiated products.

Deardorff (1998) showed that a gravity model can arise from a traditional factor-proportions explanation of trade.

Some of the studies which have used the gravity model to determine trade potential are presented below:

Zarzoso & Lehmann (2001) applied the gravity trade model to assess Mercosur-European Union trade, and trade potential following the agreements reached between both trade blocs. The study found a number of variables, namely, infrastructure, income differences and exchange rates that were added to the standard gravity equation to be important determinants of bilateral trade flows.

The Trade Potential of Pakistan: An Application of the Gravity Model Gul & Yasin (2011), revealed that Pakistan has the highest trade potential with partners in the Asia-Pacific region (ASEAN) followed by Western Europe, the Middle East, Latin America, and North America for 2001-2005.

The study also found that the product of GDP, distance are statistically significant and have positive and negative signs respectively. The dummy for common language was also statistically significant at 5 percent and had the expected positive sign. The South Asian Association for Regional Cooperation (SAARC) and Economic Cooperation Organization (ECO) dummy variables were found to be insignificant.

On potential for trade the study employed the ratio (P/A) of predicted trade (P)—arrived at by the estimated value of the dependent variable—to actual trade (A) of Pakistan with the partner concerned to evaluate their trade potential, and to forecast the future trade direction.

The study found that the maximum trade potential exists for Japan, Sri Lanka, Bangladesh, Malaysia, the Philippines, New Zealand, Norway, Italy, Sweden, and Denmark.

Turkey's Trade Potential with Euro Zone Countries: A Gravity Study Ozdeser, H., & Dizen, E. (2010) the study was aimed at projecting trade potentials between Turkey and the "euro zone" countries. Using a gravity equation, the study estimated parameters of explanatory variables for "euro zone" countries for the years 1990-2005 using panel data. Then, these estimated parameters were employed to project trade potentials for Turkey. Two cases were considered in the prediction of trade potentials which were: the case of 'natural' trade flows under the then current conditions, and the case of Turkey's accession to the EU and adoption of the euro. Empirical results from the estimations suggest that Turkey's potential trade flows with the EU12 would increase by 40% if Turkey becomes a member of the EU and adopts "euro" as its national currency.

The Changing Trade Pattern of Emerging Economies: Gravity Model Of Ghana's Trade Flow Tweneboah (2009), this study applied the augmented gravity model to study the changing pattern of Ghana's bilateral trade flows and to extract practical trade policy implications. Economic classification dummies were included in the gravity equation to characterize the peculiarity of South-South and North-South trade patterns. The result indicated that Ghana's trade especially the export sector has greater trading potential with the emerging and developing economies than the high income economies. The potential was analysed by using the model estimates to predict trade, export and import with all the countries in the sample. The ratio of trade/export/import potential (P) as predicted by the model and actual trade/import/export (A) was used to analyze the future direction of trade for Ghana.

Determinants of Namibian Exports: A Gravity Model Approach (Eita, 2008). The study was undertaken to investigate factors that determine exports of Namibia using a gravity model approach. The study found that increases in importer's GDP and Namibia's GDP cause exports to increase, while distance and importer's GDP per capita are associated with a decrease in exports. Namibia's GDP per capita and real exchange rates do not have an impact on export. Namibia exports more to countries with which it shares a common border, belong to SADC and also those in the European Union. The study further explored on unexploited trade and found unexploited export potential to among others, Australia, Belgium, Kenya, Mauritius, Netherlands, Portugal, South Africa, Switzerland and the United Kingdom. The export potential was estimated using the within sample potential exports of Namibia where potential exports are compared to actual exports in to determine if there is unexploited export potential.

Simwaka (2006), in his study used a sample of eight countries (Malawi, Zambia, Zimbabwe, Mozambique, South Africa, UK and USA) for a time period from 2000 to 2004. The study found that Malawi's trade is positively determined by the size of the economies (GDP of the importing country) and similar membership to regional economic body. On the other hand, transportation cost was found to have a negative influence on Malawi's trade. Regional economic groupings were found to have an insignificant effect on the flow of bilateral trade.

Gondwe (2008), in her study defined trade potential as the overlap between Malawi's exports of her key commodities to the ROW and SADC/COMESA imports of the same commodities from the ROW. The results of the study revealed that distance, GDP and the PCGDP of the trading partners do influence Malawi's exports. Furthermore, while the bilateral trade agreement that Malawi has were found to be

insignificant in influencing her exports. Language and proximity was found to be significant in determining exports.

3.3 Concluding Remarks

The gravity model can be used to explain a great deal about bilateral trade flows and is consistent with some theoretical models of trade. The gravity model has been used to explain unexploited trade potential as well as regionalism amongst others.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 The Gravity Model

Econometric approaches to modeling trade flows have focused on the gravity model specification. The concept of the gravity model is based on Newtonian physics; trade between two partners is affected by their sizes and proximity. In particular, flow of goods between two areas is expressed as a function of the characteristics of the origin and of the destination and of some measure of impedance between them (Kepaptsoglou, 2010).

The gravity model in its most basic form explains bilateral trade (T_{ij}) as being proportional to GDP_i (Y_i) and GDP_j (Y_j) and inversely related to the distance (D_{ij}) between them.

$$Log(T_{ijt}) = \beta_0 + \beta_1 \log Y_{it} + \beta_2 \log Y_{jt} - \beta_3 \log(D_{ij}) + U_{ijt} \quad \text{.....(6)}$$

Where

T_{ijt} is total trade between countries

GDP_i is GDP of the exporting country

GDP_j is GDP of the importing country

(D_{ij}) is the distance between the exporting and importing country

To account for other factors that may influence trade levels, dummy variables are added to the basic model.

The model that has been used in this study was applied by Matya (2000) but was augmented based on the findings of Kepaptsoglou (2010). Kepaptsoglou (2010) in their study on gravity modeling found that in general, GDP and population are the most common mass variables (with a few exceptions), while impedance is described by a variety of factors enhancing or discouraging trade as for explanatory variables. Amongst the impedance variables, distance is always encountered (as expected); other factors such as common language and border are commonly used as dummy variables. The study found that the dummy variables are frequently adopted for capturing impacts of trade agreements, custom unions and similar country characteristics (for example same nation, colonizer, language etc).

The specific model used is an augmented gravity model where history and regional body alignment were added.

The specific gravity model that has been applied in this study is as follow

$$Log(X_{ijt}) = \beta_0 + \beta_1 \log(Y_{it}) + \beta_2 \log(Y_{jt}) + \beta_3 \log(D_{ij}) + \beta_4 His_{ij} + \beta_5 \mathrm{Re}\, g_{ij} + e_{ijt} \quad ..(7)$$

where

X_{ijt}: Malawi's exports to country j in year t

Y_{it} : Malawi GDP in year t

Y_{jt} : Country j GDP in year t

D_{ij} : Distance between Malawi and country j in kilometres

His_{ij} : History Dummy variable

Reg_{ij}: Dummy regional grouping

e_{ijt} : Error term

4.1.1 GDP

A high level of GDP indicates a high level of production in the exporting country which increases the availability of exports, and a high level of income in the importing country suggests high imports, hence β_1 and β_2 are expected to have positive signs.

4.1.2 Distance

The coefficient of distance (D) is expected to be negative because it is a proxy for transport costs. Therefore the longer the distance between trading partners the higher the trading cost hence the lower the trade. As such β_3 is expected to be negative.

4.1.3 Regional and History Dummies

Dummy variable Reg to represent countries which are members of the SADC or COMESA (SADC members take the value 1 and zero otherwise and historical relationship (His) where 1 represents the countries that were colonized by the British and zero otherwise. According to Carrère (2006) membership of regional groupings can generate a significant increase in trade. The coefficients of those of dummy variables are expected to be positive. Regional trade agreements and history enhance exports between countries.

4.2 Trade Potential Estimation

This study will use the absolute difference between the predicted and actual level of trade (P-A). A positive value implies the possibility of export expansion in the future while a negative value shows that Malawi has exceeded its export potential with a particular country. This methodology was used by Gul (2011) in calculating the trade potential for Pakistani.

The predicted export (P) is arrived at by the estimating the value of the dependent variable. Actual export (A) from Malawi with a partner country concerned is obtained from COMTRADE. This study used 2011 data as actual (A) exports.

4.3. Estimation Techniques

A panel framework is designed to cover trade variation between Malawi and member states of COMESA and SADC (list of countries is presented in Appendix 1) during a period of 11 years (2000 to 2010).

Panel estimation reveals several advantages over cross section data and time series data as it controls for individual heterogeneity.

Panel estimation can be done using pool estimation, fixed effect and random effect (Gujarati, 2003). Pool estimation is the simplest approach; its function is as follow:

$$Y_{ijt} = \beta 1 + \beta 2 X_{2it} + \beta 3 X_{3jt} + \varepsilon_{ijt} \quad \text{.....(8)}$$

where i and j stands for cross sectional units,

t stands for time period and error term is normally distributed with mean zero and constant variance.

Pooled estimation assumes there is one single set of slope coefficients and one overall intercept. It disregards the time and space dimension of panel data; the error term captures the difference over time and individuals. The pooled estimation, however, may provide inefficient and biased estimated results because it assumes there are no individual effects and time effects.

The fixed effect takes into account the individual and time effects by letting the intercept vary for each individual and time period, but the slope coefficients are constant, the model is:

$$Y_{ijt} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3jt} + \varepsilon_{ijt} \text{ ………………………………}(9)$$

where it is usually assumed that ε is independent and identically distributed over individuals and time with mean zero and variance σ^2, and all X_{it} are independent of all error terms. By introducing different intercept dummies we can allow for intercept vary according to individuals and time.

Another approach applies to estimate panel data is random effect estimation. The random effect treats the intercept as a random variable and the individuals included in the sample are drawn from a larger population. The model is written as follows

$$Y_{ijt} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3jt} + w_{ijt} \text{ ……………………………………………}(10)$$

Where X_{2it} and X_{3jt} are cross sectional units in time t and W_{ijt} is the error term which is made up of the sum of ε_i and u_{it}

It is assumed that the individual error components are not correlated with each other and are not auto correlated across both cross section and time series units.

4.4 Diagnostic Tests and Handling of Zero Export Values

Diagnostic test that will be undertaken in this study are panel unit root test using Levin, Lin and Chu (2002) test to investigate if the panels are stationary. Hausman test to help in the selection of a model to use, between fixed or random effect. Breuch pagan test langrage multiplier test (LM) to help in deciding whether to use random effects regression or simple OLS regression if random effects are preferred over fixed. Multicollinearity and Wald chi squared test to test the adequacy of the model. The data for this study will be analysed using STATA 11.

Zero export values between Malawi and its trading partners make the estimation of log linear equation unfeasible. This study follows Yamaura (2011) and Hayakawa and Yamashita's (2011) approach that repeats estimations adding a value of one to dependent variables before taking logarithms transformation. Silva et al (2003) employed the option of assigning a value of $1 to the observed zero trades volume but they used a different methodology.

4.5. Data Sources

Annual data will be used in the estimation and covers the period 2000 to 2010. Twenty five countries are included in the estimation. Data for exports and imports in US dollars was sourced from www.comtrade.un.org**.** Data for GDP also in US dollars was obtained from www.imf.org. Distance data was taken from www.timeanddate.com.

CHAPTER 5

RESULTS AND DISCUSSION

5.1 Diagnostic Test

Panel data generalized least squares (GLS) regression results are presented and discussed in this chapter.

Random Effects (RE) as opposed to Fixed Effects model has been run to capture the effects of the time invariant variables such as distance on Malawi's bilateral trade flows.

5.1.1 Panel Unit Root Test

This study uses the Levin, Lin and Chu (2002) test to investigate if the panels are stationary. This test of panel unit roots assumes that the autoregressive parameters are common across countries and it uses a null hypothesis of a unit root. The results of the test indicate that all panels are stationary (see Appendix 2).

5.1.2 Hausman Test

Hausman test was conducted to test whether we should use fixed or random effect model. The Hausman statistic is used to test the null hypothesis that the regressors and individual effects are not correlated. Failure to reject the null hypothesis implies that the random effects model will be preferred. If the null hypothesis is rejected, the fixed effects model will be appropriate. The results in appendix 3 show

that there is no evidence to reject the null hypothesis hence random effect is an appropriate model to use in this study.

5.1.3 Breuch Pagan Test Lagrange Multiplier Test (LM)

The LM test helps to decide whether to use random effects regression or simple OLS regression. The null hypothesis in the LM test is that variance across entities is zero. That is there are no significant differences across units (i.e. no panel effect). The results shown in appendix 4 indicate that we should use random effects regression as we have failed to reject the null hypothesis.

5.1.4 Multicollinearity and Wald Chi Squared Test

To check whether there is multicollinearity in the model each independent variable was regressed on the remaining independent variables and compute R_i^2 . If any R_i^2 is greater than the original R_i^2 then we can conclude that there is severe multicollinearity in the model. The results for the multicollinearity are presented in appendix 5. From the results we note that there is no multicolinearity problem.

The model has $R^2 = 0.48$, and $F\ [25, 275]= 55.19$. The results of the F statistic reveal that all the coefficients in the model are different from zero hence the model is adequate.

5.2 Regression Results and Interpretation

5.2.1 Determinants of Malawi's Trade

The estimation results in Table 6 below show that the estimated coefficient values for GDP for trading partner, is positive and significant as expected. This is consistent with the theoretical expectation. This means a partner country's GDP positively influences exports from Malawi. On the other hand, Malawi's GDP was

found to be insignificant. Therefore, the size of the Malawi's economy does not have an influence in exports. The distance variable has negative sign as expected theoretically. The regional economic grouping dummy variable (REG) is insignificant implying that trade gains from the regional trade agreements have been minimal.

The history dummy (His) which in some studies is depicted as language dummy to reflect colonial ties was found to be insignificant. This is a clear indication that colonial effects have no influence on Malawi's exports. This result is inconsistent with the findings of Gondwe (2008) who found it to be positive and significant. The difference might arise because the focus of this study was SADC and COMESA members and that of Gondwe (2008) was on major trading partners.

Table 6: GLS regression results for the model

Log X_{ijt}: (Exports)	Coefficient	Standard Error
Log Y_{it} (Malawi's GDP)	0.5265001	0.7751277
Log Y_{jt} (Partner Country GDP)	1.798245	0.4010163***
Log D_{ij} (Distance)	-4.036508	1.416231***
His_{ijt} (History)	1.04828	1.481325
Reg_{ijt} (Regional Grouping)	2.295618	1.50195

***denotes significance at 5%, **denotes significance at 10%

5.3 Trade potential

A study by Gondwe (2008) found that Malawi has unexploited potential in COMESA than in SADC to export its main commodities (tobacco, cotton, tea, sugar and coffee). Table 7 below shows the countries with which Malawi has potential to

expand its exports to. Indeed Malawi has potential to increase its exports to more countries in COMESA than SADC.

Surprisingly, Malawi has potential to increase its exports to Zambia and Tanzania. These are two of the three countries that it shares its borders with. Given that distance has been confirmed to be negatively affecting exports from Malawi, the expectation was that nearby countries could have been the first to be fully utilized. A possible explanation might be that some of the trade is informal hence not recorded officially.

Further afield, Malawi has exhausted its exports potential with Zimbabwe and South Africa. These are Malawi's major trading partners within the region. South Africa being the biggest economy within the two regions has what it takes to attract huge imports. This has been confirmed by the study that GDP of partner country influences positively exports from Malawi.

In general most of the countries that Malawi has potential to increase its exports to are in the COMESA region and are located at a reasonable distance from Malawi. Distance has been shown in this study to be a factor that negatively affects exports from Malawi. Therefore, for Malawi to fully utilize the potential export markets further afield it has to overcome the distance factor.

Table 7: Trade potential with SADC AND COMESA members

COUNTRY	PREDICTED	ACTUAL	VALUE	RESULT
Angola	141.0712	78.84	62.23	Potential
Botswana	140.7594	157.35	(16.59)	No Potential
Burundi	86.41579	88.83	(2.42)	No Potential
Comoros	72.03166	31.70	40.34	Potential
Djibouti	34.22078	10.19	24.03	Potential
DRC	112.1183	136.59	(24.47)	No Potential
Egypt	115.6833	189.11	(73.42)	No Potential
Eritrea	37.63557	-	37.64	Potential
Ethiopia	102.2586	97.98	4.27	Potential
Kenya	147.5013	179.24	(31.74)	No Potential
Lesotho	107.6954	108.32	(0.63)	No Potential
Libya	95.09408	50.54	44.55	Potential
Madagascar	111.8304	102.36	9.47	Potential
Mauritius	85.71395	130.03	(44.31)	No Potential
Mozambique	172.3899	183.77	(11.38)	No Potential
Namibia	99.20282	97.98	1.23	Potential
Rwanda	104.3331	100.37	3.97	Potential
Seychelles	44.47639	89.48	(45.00)	No Potential
South Africa	172.8163	199.53	(26.71)	No Potential
Sudan	118.5446	48.46	70.09	Potential
Swaziland	108.2063	122.54	(14.33)	No Potential
Tanzania	178.7975	171.27	7.53	Potential

Uganda	129.978	142.31	(12.33)	No Potential
Zambia	196.8985	177.97	18.93	Potential
Zimbabwe	162.0412	182.96	(20.92)	No Potential

The structure of Malawi's exports shows that the country still exports primary products into bigger economies with the region (Egypt and South Africa) most of which the country has no potential to increase its export into. Technically the industrial diversification as postulated by dynamic theory is yet to happen for Malawi.

CHAPTER 6

CONCLUSION

6.0. Summary of Results

The main objective of the study was to identify countries within SADC and COMESA with which Malawi has potential to increase its export to and ascertain the major determinants of exports from Malawi into the SADC and COMESA market. This was done with the view of supporting the stance taken by Government as articulated in the NES. A panel data framework was employed for this study and it covered the years 2000-2010 and data from 25 countries in SADC and COMESA was used.

Empirical results suggest that partner GDP and distance were significant in influencing exports from Malawi into countries in COMESA and SADC. These factors had the expected signs of positive and negative respectively. Malawi's GDP was found to be insignificant.

Regional dummy was found to be statistically insignificant indicating that Malawi has not benefitted much in exporting by belonging to both SADC and COMESA. Geda and Kibret (2002) found that intra-COMESA trade is not significantly different from its trade with non-member countries. They explained that this depends on the extent to which African leaders (and other stakeholders) are ready to overcome past constraints and adopt approaches that are incentive compatible with stated objectives of COMESA. Khandelwal (2004) also found that the prospects for expansion of intraregional trade might be limited within SADC and COMESA by basing its inference on low levels of intraregional trade and product complementarities.

Exports of eastern and southern African countries are concentrated in a few primary commodities. In this regard, the study estimates indicates that the relatively developed economies of South Africa, Egypt, and Kenya might not be able to function effectively as markets for the products of other economies in SADC and COMESA.

History dummy was also found to be insignificant indicating that colonial influence does not have any effect on exports from Malawi into COMESA and SADC. This result is consistent with Gondwe (2008) findings.

The export potential results indicate that Malawi has potential to increase its export to more COMESA than SADC member states. This has much to do with market opportunities information availability as most export promotional activities are undertaken in SADC member countries and also the fact that there are more embassies with dedicated trade and investment staff in SADC than COMESA countries. Consequently, there is more market opportunities information on SADC member countries as compared to those of COMESA.

6.1 Policy Recommendations

Malawi has to increase its trade and investment staff presence and its export promotion activities in COMESA region. This will increase the availability of market information of region for domestic exporters to exploit.

In terms of trade the regional two regional groupings are not benefitting the country much. However, as more and more donors are interested in regional projects, Malawi's presence in the regional groupings will be vital for it to benefit from regionally initiated initiatives.

Consideration on trade promotion activities should not be influenced by historical relation/or language but distance from Malawi as it has been found to be insignificant in affecting exports.

6.3 Limitations

The study employed secondary data which was not consistent as different sources gave different figures for the same variable in the same year. It was very difficult to tell which source was correct. Nevertheless, one source was used for one variable across all the countries in the study.

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APPENDICES

APPENDIX 1: Countries that were employed in the analysis

	COUNTRY		COUNTRY
1	Angola	13	Madagascar
2	Botswana	14	Mauritius
3	Burundi	15	Mozambique
4	Comoros	16	Namibia
5	Djibouti	17	Rwanda
6	DRC	18	Seychelles
7	Egypt	19	South Africa
8	Eritrea	20	Sudan
9	Ethiopia	21	Swaziland
10	Kenya	22	Tanzania
11	Lesotho	23	Uganda
12	Libya	24	Zambia
		25	Zimbabwe

APPENDIX 2: Unit Root Test

Xtunitroot llc logexports

Levin-Lin Chu unit-root test for logexports

Ho: Panels contain unit roots	Number of panels = 25
Ha: Panels are stationary	Number of periods =11
AR parameter: Common	
Panel means: Included	Asmptotics N/T-> 0
Time trend: Not included	
ADF regressions: 1 lag	
LR variance: Bartlet kernel, 7.00 lags average (chosen by LLC)	

	Statistic	p_value
Unadjusted t	-9.1985	
Adjusted t*	-4.1812	0.0000

Xtunitroot llc gdplg

Levin-Lin Chu unit-root test for gdplg

Ho: Panels contain unit roots	Number of panels	= 25
Ha: Panels are stationary	Number of periods	=11

AR parameter: Common

Panel means: Included Asmptotics N/T-> 0

Time trend: Not included

ADF regressions: 1 lag

LR variance: Bartlet kernel, 7.00 lags average (chosen by LLC)

	Statistic	p_value
Unadjusted t	-4.4708	
Adjusted t*	-2.8050	0.0000

Xtunitroot llc gdpmwlg

Levin-Lin Chu unit-root test for gdpmwlg

Ho: Panels contain unit roots — Number of panels = 25

Ha: Panels are stationary — Number of periods =11

AR parameter: Common

Panel means: Included — Asmptotics N/T-> 0

Time trend: Not included

ADF regressions: 1 lag

LR variance: Bartlet kernel, 7.00 lags average (chosen by LLC)

	Statistic	p_value
Unadjusted t	-5.7887	
Adjusted t*	-4.7487	0.0000

APPENDIX 3: Hausman and Breusch Pagan Test

	----------Coefficients----------			
	(b) (V_b_v_B) Fixed	(B) random	(b-B) Difference	sqrt (diag S.E.
gdplg	0.5698184	1.798245	-1.228427	0.8293098
gdpmwlg	1.776023	0.5265001	1.249523	0.8424152

b= consistent under Ho and Ha; obtained from xtreg

B = Inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

Chi2 (2)= (b-B)' [(v_b-v_B)^(-1)] (b-B)

= 2.19

Prob> chi2= 0.3338

(v_b-v_B is not positive definite)

LM Test

Breusch and Pagan Lagrangian multiplier test for random effects

Logexports [country, t] = Xb + u [country] + e [country, t]

Estimated results:

	Var (var)	sd=sqrt
Logexports	38.51833	6.20631
e	12.5946	3.548887
u	9.10714	3.017804

Test: Var (u) = 0

Chibar2 (01) = 176.81

Prob> chibar2 = 0.0000

APPENDIX 4: Hausman Test

hausman fixed random

---- Coefficients ----

(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
fixed	random	Difference	S.E.
realexrate	-.0315733	.1857003	-.2172736	.4189696
marketsize	-.1024029	.122248	-.2246509	3.289153
ecosize	.8628245	.8247162	.0381083	.5893844

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 0.66

Prob>chi2 = 0.8818

APPENDIX 5: Multicollinearity

Independent Variable	**R^2**
Log X_{ijt}: (Exports)	0.48
Log Y_{it} (Malawi's GDP)	0.049
Log Y_{jt} (Partner Country GDP)	0.1717
Log D_{ij} (Distance)	N/A
His_{ijt} (History)	N/A
Reg_{ijt} (Regional Grouping)	N/A

Note: Table shows R^2 when one of the dependent variable is treated as an independent variable.