

**RESPONSIVENESS OF MALAWI-SOUTH AFRICA BILATERAL
TRADE FLOWS TO CHANGES IN RELATIVE PRICES AND
INCOME**

Masters of Arts (Economics) Thesis

BY

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partial fulfilment of the requirements for the award of the degree of Master of
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DECLARATION

I hereby declare that the text of this thesis entitled: RESPONSIVENESS OF MALAWI-SOUTH AFRICA BILATERAL TRADE FLOWS TO CHANGES IN RELATIVE PRICES AND INCOME is substantially my own work and to the best of my knowledge has never been submitted for similar purposes to this or any other university or institution of higher learning. Acknowledgements have been duly made where other people's works have been used. I am solely responsible for all errors contained herein.

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STATEMENT OF APPROVAL

The undersigned certify that they have read and recommend to the Postgraduate Studies and Research Committee and the Senate for acceptance of this thesis entitled: RESPONSIVENESS OF MALAWI-SOUTH AFRICA BILATERAL TRADE FLOWS TO CHANGES IN RELATIVE PRICES AND INCOME submitted by HOPE EPHRON MFUNI in partial fulfilment of the requirements for the degree of Master of Arts (MA) in Economics.

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DEDICATION

To my Parents, Mr Joseph Mfuni and Mrs Kettie Mfuni, and my brothers and sisters
Pyoka, Nitta, Geoffrey, Dumisani & Joy and Milly

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ABSTRACT

This study estimated responsiveness of Malawi - South Africa bilateral trade flows to changes in relative prices and income. The analysis was carried out using ARDL bounds testing approach to cointegration. The modeling strategy gave an opportunity for a joint examination of both short run reactions to changes in trade flows as well as the long run determinants of Malawi – South Africa trade flows using annual data from 1980 to 2012.

The results revealed a heterogeneous reaction to variables for both export supply and import demand models. Short run joint tests on both models which also incorporated the error correction term revealed no effects from variable changes. On the other hand, Malawi's export supplies in the long run were effectively altered by domestic prices and bilateral exchange rate. Likewise, the import demands in the long run were successfully altered by domestic income, domestic prices, foreign prices, and bilateral exchange rate. However, the inclusion of the dummy variable to capture the bilateral trade agreement influence in both models was not effective.

The findings pointed to the fact that bilateral trade policy should look more on domestic price as a policy instrument. This can be done by focusing on policies that control money supply as money supply is directly linked to Consumer Price Index of Malawi. Furthermore proper bilateral exchange rate alignment was also found to be an effective policy tool for mitigating trade deficits. Additionally, an instigation of

long term export-led growth targets such as export industry promotion in support of the Malawi National Export Strategy would fundamentally help Malawi.

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ABBREVIATIONS AND ACRONYMS

ADF:	Augmented Dickey Fuller
AIC:	Akaike Information Criterion
ARCH:	Auto Regressive Conditional Heteroscedasticity
ARDL:	Auto Regressive Distributive Lag
B-G LM:	Breusch-Godfrey Lagrange Multiplier
CPI:	Consumer Price Index
ECT:	Error Correction Term
ER:	Exchange Rate
FDI:	Foreign Direct Investment
FTA:	Free Trade Area
GDP:	Gross Domestic Product
HO:	Heckscher Ohlin
HQC:	Hannan Quinn Criterion
IMF:	International Monetary Fund
MK:	Malawian Kwacha
ML:	Marshall Lerner
MW:	Malawi
NES:	National Export Strategy
NSO:	National Statistical Office
OLS:	Ordinary Least Squares
PP:	Phillips Perron
RBM:	Reserve Bank of Malawi
SA:	South Africa

SADC:	Southern Africa Development Community
SAP's:	Structural Adjustment Programs
SBC:	Schwartz Bayesian Criterion
TRALAC:	Trade Law Centre
UECM:	Unrestricted Error Correction Model
VECM:	Vector Error Correction Model
WB:	World Bank
WPI:	Wholesale Price Index
WTO:	World Trade Organisation

CHAPTER ONE

INTRODUCTION

1.0 Chapter Overview

This introductory chapter gives the background to the study, and states the problem and purpose of the study. It also outlines the objectives, the hypotheses of the study, and explains the significance of the study.

1.1 Introduction

World Trade Organisation (1995) defines bilateral trade agreement as “an exchange agreement between two nations or trading groups that gives each party favoured trade status pertaining to certain goods obtained from the signatories. The agreement sets purchase guarantees, removes tariffs and other trade barriers.” Being an agrarian economy Malawi has a few manufacturing industries and little mining activity; as a result Malawi exports mostly agriculture commodities (Gondwe, 2008). On the other hand, South Africa boasts of a broad industrialisation base for manufacturing together with large mineral deposits of commodities such as gold and platinum. Thus South Africa exports mostly manufactured commodities (SADC, 2007).

1.2 Background

Trade relations between Malawi and South Africa date from 07th August 1967. This was when an agreement relating to the employment and documentation of Malawian nationals working and living in South Africa was signed¹ (Malawi Government, 1967). Following this agreement the relations between the two nations saw a rise in trade flows between them. Malawi's imports from South Africa consist mainly of fuel, vehicles, chemicals and pharmaceutical products. On the other hand Malawi's exports to South Africa mainly comprise of textiles, tobacco, beverages, sugar and fruits (National Statistical Office, 2012).

The combination of low primary export base of Malawi and high tertiary imports from South Africa poses challenges to local authorities in terms of managing the domestic economy (Gondwe, 2008). Nevertheless, the government of Malawi through the Ministry of Industry and trade has instituted several trade policy reforms and signed various trade protocols in an attempt to improve market access and trade (Chigaru, 2006). For example, the signed trade protocols can be found at organizations such as the World Trade Organization (WTO) with several trade negotiations for various countries in which Malawi is part primarily concerned with trade related development issues².

With support and help from the International Monetary Fund and the World Bank in 1981 Malawi opened up to embrace trade reforms by adopting and implementing the

¹Famously known as Wenela Ltd, "Agreement between the Governments of Malawi and South Africa relating to the Employment and Documentation of Malawi Nationals in South Africa"

²These include improved market access, preservation of existing preferences, provision of special and differential treatment to poor countries as well as the reduction of technical barriers to trade, non-tariff barriers and other distorting measures that hinder its trade performance.

Structural Adjustment Programs (SAP's)³. The SAP's period extended up to 1995 and led to liberalization of the economy, broadening and diversifying of the product base towards non-primary products plus allocation of resources productively (Mulaga and Weiss, 1996). On 19th June 1990 Malawi and South Africa signed a non-reciprocal bilateral trade agreement. This mutual trade agreement in which South Africa allowed duty free imports of all goods grown, produced or manufactured in Malawi subject to a minimum value added content of 25 percent. Quotas also applied to some products such as tea, which is limited to 10 000 tons annually.

However, the agreement revealed that South Africa had erected many non tariff measures to limit imports of tobacco, cereals, fruits and vegetables. Some Malawian products such as cotton and ground nuts or oil seeds required import permits to benefit from the preferential trade (Malawi Government, 1990). In 1994, Malawi chose regime change from dictatorship to democracy. This regime change resulted in more economic changes in trade policy which included further liberalization reforms and privatization of state entities, to enable a vibrant environment for competition and private sector led economic growth (Chigaru, 2006).

Recently in 2012, Malawi launched the Malawi National Export Strategy (NES) whose goal was to match long term export and import trends. The NES aimed at providing a clearly prioritized road map for building Malawi's productive base to generate sufficient exports to match the upward pressure on Malawi's imports while at the same time maximizing the direct contribution of exports to economic and social development (Malawi Government, 2012). Although the NES provides direction for

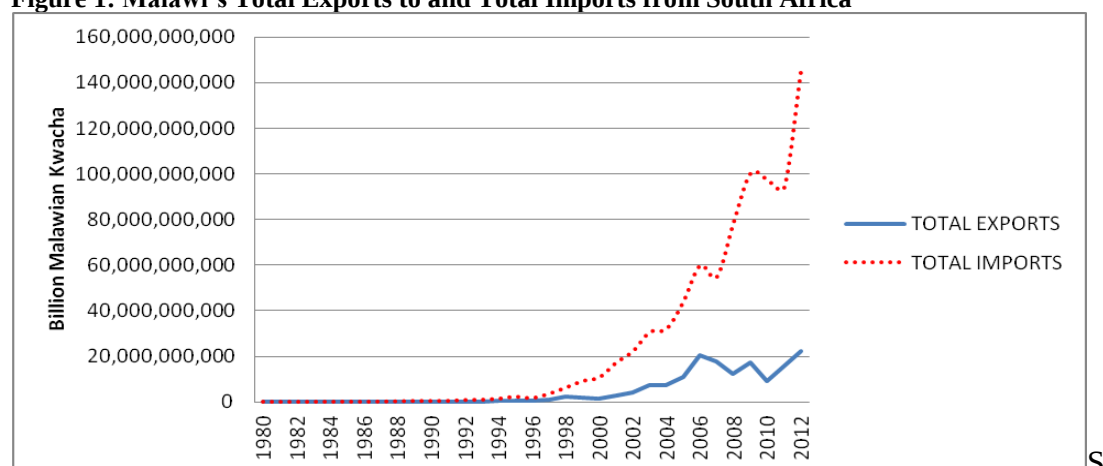
³ This was due to the structural collapse of the Malawian economy caused by the global rise in fuel prices, civil war in Mozambique and severe drought.

building Malawi's export base, it does not point out to the main factors determining bilateral trade flows between Malawi its trade partners (in our case South Africa).

1.3 Problem Statement

According to Markusen et al. (1995), economic base for trade hinges on the fact that countries differ in resource endowments, preferences, technologies and sizes of their economic institutions. Nevertheless, the momentous growth in bilateral trade and improvement in trade relations between Malawi and South Africa has seen the emergence of large and persistent bilateral trade deficits for Malawi⁴. As depicted in Figure 1, Malawi's exports to South Africa stood at MK 22 billion in December 2012 while imports from South Africa rose to MK 145 billion in the same period (National Statistical Office, 2013). This widening trend of deficits is often highlighted as an indication of underlying rigidities and distortions in trade (Tiwari, 2012).

Figure 1: Malawi's Total Exports to and Total Imports from South Africa



source: National Statistical Office, Malawi

⁴ The World Trade Organization (2010) reported that Malawi imports about 41.5 percent of its commodities from South Africa, while South Africa imports only 14.2 percent of Malawian goods.

In order to mitigate this trend of deficits since it poses a threat to local industries growth and survival. It is prudent for Malawi develop policies that would improve its export base and export growth with South Africa. The trade trend in Figure 1 shows the trade gap to have started growing more in 1997, Chigaru (2006) pointed out that regime change in 1994 resulted in more economic changes in trade policy which included further liberalization reforms and privatization of state entities, to enable a vibrant environment for competition and private sector led economic growth. Hence the widening trend in Figure 1 from 1996 suggests maybe that the now privatized local entities were not fully prepared for competition from outside.

In this regard, an analysis of the bilateral trade elasticities between these two nations is crucial to obtain the trade flow responsiveness to changes in relative prices and income. Some attempts have been done to analyze Malawi's trade flows with other nations, covering such areas as overall trade patterns, trade flows and trade sensitivity to exchange rate (Kwalingana et al. 2012; Mangani, 2011; Gondwe, 2008; Simwaka, 2006). However this has been done on aggregate basis. Regrettably there has been an omission with regards to analyzing Malawi's trade elasticities with a specific partner country. This study therefore is an attempt to address this omission.

1.4 Purpose of the Study

The purpose of this study is to measure the responsiveness of Malawi – South Africa bilateral trade flows to relative changes in prices and income. The relative price variations may have resulted from changes in national price levels, tariff reductions and exchange rate.

1.5 Objective of the Study

The principal objective of this study was to identify the main determining factors of Malawi – South Africa trade flows in decomposed form.

The specific objectives of the study were:

- To compute income and price elasticities in decomposed form of export and import demand equations in a bilateral trade framework.
- To determine the direction of the causality among the test variables in a static framework.
- To ascertain the direction of the causality among the test variables in a dynamic framework.

1.6 Hypotheses of the Study

The following null hypotheses were posited:

- Export and import demand functions cannot be influenced by income and price elasticities.
- There is no causality among test variables in a static framework.
- There is no causality among test variables in a dynamic framework.

1.7 Significance of the Study

The study estimated the bilateral trade elasticities between Malawi and South Africa in order to inform the formulation of bilateral trade policy. As a result, this will help Malawi;

- ✓ Build capacity by highlighting main areas of improvement in production using the determining factors of trade flows to meet standard requirements of importing countries, thus helping high standard quality production of Malawian exports.
- ✓ Improve its trade negotiation capacity by setting up measures or controls referring to the determinants of trade flows to direct trade growth in Malawi's favor, hence helping growth of Malawi export.
- ✓ Address non tariff barriers by setting up checks and balances based on the established determinants, therefore reducing hidden costs in trade flows.

1.8 Chapter Summary

Malawi as a country compared to South Africa, is seen to have a combination of low primary export base and high tertiary imports. A look at the exports and imports trend between the two countries in recent years shows an increase in trade deficits in which Malawi is greatly lagging behind. This trade deficit is seen as a threat to local Malawian industries growth and survival. The study will seek to identify the main determining factors of Malawi – South Africa bilateral trade flows in decomposed form. Thus the study will help in bilateral trade policy reformation for Malawi by finding ways to build capacity to meet standard requirement of importing countries, improve trade negotiation capacity and addressing non tariff barriers while focusing on the main determining factors.

1.9 Organisation of the Study

This study has been organized as follows: Chapter Two presents an overview of Malawi – South Africa trade flows in the period of 1980 to 2012. In Chapter Three we look at what determines trade and who benefits from it, exploring the traditional to modern trade theories. The chapter also reviews relevant literature by taking a look at some studies that used bilateral trade modeling framework between nations to determine trade flows. Chapter Four presents the methodology (Auto Regressive Distributive Lag bounds testing approach proposed by Pesaran et al (2001)) that the study will adopt as well as data sources and data manipulation techniques. Chapter Five gives the empirical results that will be obtained from estimation of the models and the other findings. Chapter Six gives the conclusion of the study, policy recommendations and suggested areas for further research.

CHAPTER TWO

OVERVIEW OF MALAWI – SOUTH AFRICA TRADE FLOWS

2.0 Chapter Overview

This Chapter takes a look at the overall trade between the two nations and explores the different aspects of trade between the two nations; such as the commodity composition of the trade, the trade pattern, trade policy, transport cost, exchange rate and the regional commitments.

2.1 Introduction

Historically the trade partnership between Malawi and South Africa has evolved over the years since the signing of the employment and documentation of Malawian nationals living and working in South Africa in 1967 (Malawi Government, 1968). It was further enhanced by the bilateral trade agreement signed in 1990. The latest mutual engagement was in 2008, which saw the signing of a memorandum of understanding to boost the relationship between the two nations through enhanced security and trade.

2.2 Commodity Composition of trade

Malawi's trade is highly characterized by a continuous reliance on rain-fed agriculture, a narrow industrial base and weak inter sector linkages (Gondwe, 2008).

According to the National Statistical Office (NSO) trade report in 2012, the composition of Malawi's imports from South Africa generally consists of fuels such as petrol, diesel, paraffin and lubricants. In addition chemical imports include fertilizers, lime and pharmaceutical products such as medicine; and metal product imports consisting of vehicles, machinery and electronics. Other non metals are plastics, rubber and iodine salts. Live animals and animal products such as meat, hides and skins are also imported.

Seasonal fruits and vegetables imports include apples, lattice, broccoli, grapes and pears. Meanwhile the same NSO trade report of (2012) shows that Malawi's exports to South Africa consist of textiles which include shirts, t-shirts, jeans and trousers. In addition vegetable and fruits exports include sunflower seeds, mangoes, bananas, guavas, oranges, cabbages and tomatoes. Cereal exports include maize, rice and soya beans while legumes compose of oil seed and ground nuts. Also spices like paprika, pepper and beverages like tea and coffee are exported. Sugar and tobacco take up a big share of exports to South Africa.

2.3 Trade pattern

Figure 2 presents the annual exports and imports percentages between Malawi and South Africa from 2000 to 2012.

Figure 2: Percentage Exports and Imports



Source: National Statistical Office, Malawi

Figure 2 shows that Malawi registered a trade deficit of about 14 percent in 2000 which increased to above 24 percent by 2005. The deficit further sharply rose to about 34 percent in 2006 and declined to 32 percent in 2007, it sharply fell to about 16 percent in 2008 and further declined to a low 10 percent in 2010 and rose again in subsequent years. Looking further at Figure 2, when comparing Malawi's yearly exports and imports to South Africa, we see that the exports rose from about 6 percent in 2000 to 9 percent in 2002 while in this same period imports also increased from 56 percent to 59 percent.

By the year 2006, imports from South Africa had gone over 65 percent while exports remained below 20 percent. The exports maintained stability with slight decline between 2006 and 2007, but they drastically reduced to below 10 percent in 2008. Figure 2 depict an up and down pattern of a further decrease to below 5 percent in 2010 and rising back again to 8 percent in 2011 and 2012. While in this same period imports also declined from 68 to 66 percent, then also drastically reduced to 58

percent in 2008 and to a further low of 54 percent in 2010 and then began to rise back up in 2011 and 2012.

A commodity view attributes the increase in exports in the years between 2000 to 2006 in which the deficit were reduced significantly to be due to the increase in the price value of domestic exports such as tobacco, sugar and tea on the international market (SADC, 2007). In 2004 a large value of exports in articles of apparel, sugar and sugar confectionery, tobacco and manufactured tobacco substitutes, tea, coffee and spices were exported to South Africa. Export sales in Malawi were affected mostly by cross border trade, low prices, post harvest losses, high farm inputs and high interest rates (Malawi Government, 2008). Other impediments are that Malawi has few textile companies that are included in the preferential quota of textile exports to South Africa.

2.4 Malawi's market environment

The entry of South African retail shops like Shoprite and Spar lead to an increase in the importation of processed foods and vegetable products (SADC, 2007). Shoprite mostly sources its goods from its foreign suppliers in South Africa, in an aim of ensure ring constant supply of food items. This has led to an increase in Malawi's total cereal, vegetable, fruits and beverage imports (Malawi Government, 2006). According to Ferguson (1988), the stages of production within an economy can be divided into three: primary, secondary and tertiary.

He defined primary production as involving the extraction of raw materials for example farming, forestry, fishing and mining. With regards to secondary production,

Ferguson (1988) said it involves transforming raw materials into goods such as consumer goods and industrial or capital goods. Lastly on tertiary production he defined it as being associated with the provision of services (an intangible product) for example hotels, health care and tourism. South African companies operating in Malawi can therefore be categorised into these various production stages. In the Primary production we have Illovo sugar Malawi which grows and extracts sugar cane for sugar production.

While the Secondary production has various companies such as Alexander Forbes, Pep chain stores, Shoprite, Game stores, Mr Price and Spar who all sell already manufactured products and finally the Tertiary production is composed of Commercial bank, Standard bank, Ned bank and South African Airways who deal in service provision. A further analysis of the market environment was conducted by looking at different sets of commodities of imports and how they performed over the years in Table 1.

Table 1: Malawi's Imports from South Africa in Malawian Kwacha

	2002	2004	2006	2008	2010	2012
BEVERAGES & FRUITS	6,593,977	12,071,520	13,533,880	24,350,810	25,779,559	34,254,125
CEREALS	1,715,675,789	118,276,081	653,203,363	94,686,675	26,383,615	12,117,767
SUGAR	-	7500	-	-	-	-
TOBACCO	49,329,199	66,573,583	474,030,825	163,958,799	12,675,206	5,934,733
SALT	89,093,211	126,681,098	195,301,282	81,378,759	721,565,616	1,275,092,549
PETROLEUM	3,414,559,383	3,956,542,784	3,356,488,995	2,223,685,503	18,389,868	23,146,405
FERTILIZER	2,170,473,331	3,418,415,007	2,280,148,578	9,134,948,800	102,498,204	40,351,171
TEXTILES	1,283,909,072	3,099,091,657	3,465,476,379	6,116,013,749	4,759,085,430	6,304,154,296
VEHICLES	2,327,325,093	2,951,221,979	19,400,165,594	11,562,059,426	61,309,330	36,731,708

Source: National Statistical Office, Malawi

Table 1 shows that in the period of 2002 to 2004 the fastest growing imports from South Africa were fertilizer, textiles and vehicles. From Table 1, a large fertilizer import was mainly due to the implementation of the fertilizer subsidy program and supporting the government efforts of tackling the drought that had impacted the countries food production (Malawi Government, 2005). The preparation of general elections in 2005 and retransformation of the transport sector to increase competition led to a high demand for motor vehicles by different individuals which saw a great increase of vehicle imports spilling over to about MK 19.4 million in 2006 (Malawi Government, 2008).

This exerted pressure on fuels and oils consumption leading to more fuel imports to about MK 3.3 million by 2006. The beverages and fruits show a continuous growth pattern from period to period in Table 1; this can be attributed to the fact that more different fruit types like apples and tea plus coffee of SA origin had found easy access into the Malawian market through supermarkets like Shoprite and Spar (National Statistical Office, 2008). Cereal importation reduced from period to period since the fertilizer subsidy program insured that most cereals were easily found locally. Sugar was only imported in 2004. Taking a look at the exports from Malawi to South Africa in the Table 2, we see that a different sort of pattern is displayed.

Table 2: Malawi's Exports to South Africa in Malawian Kwacha

	2002	2004	2006	2008	2010	2012
BEVERAGES & FRUITS	700,645,898	2,351,442,457	1,528,600,270	4,570,028,043	3,726,002,289	5,345,889,223
CEREALS	119,172,031	17,402,678	72,114,762	1,367,941,033	33,108,673	-
SUGAR	13,001,665	22,327,615	23,368,158	43,340,060	7,209,808	4,069,613
TOBACCO	716,794,292	1,983,738,825	411,498,074	1,105,141,181	603,159	130,000
SALT	-	-	465,916	-	-	-
PETROLEUM	-	53,404	356,500	4,182,987	-	-
FERTILIZER	-	-	-	-	-	6,249
TEXTILES	552,575,977	1,215,832,960	3,148,042,491	1,828,506,998	1,322,100,355	1,570,613,093
VEHICLES	13,646	286,945,965	228,797,746	452,342,318	-	107,757

Source: National Statistical Office, Malawi

From Table 2 cereals, sugar, tobacco and textiles were the fastest growing exports to SA. Salt and fertilizer had little export values in 2008 and 2012 respectively while in other periods we see no export input for these commodities. Tobacco, sugar and cereal growth in export is attributed to the annual fertilizer subsidy program which had a big impact in their production (Malawi Government, 2011). But the presence of tariffs and permit requirements highlighted in the trade agreement affects their full penetration into SA market. The textile performance reflects the benefits the Malawi economy would get if they put in place measure to promote industrialisation and manufacturing.

This textile industry could perform better though if the quotas and restrictions imposed on the trade agreement were removed (National Statistical Office, 2012). Notably South Africa is a more developed economy than Malawi. It seems Malawi is unable to meet South Africa import needs on major industrial commodities like fertilizer, salt, sugar and petroleum (SADC, 2007). Thus South Africa mostly sources

its high value products which Malawi cannot supply from bigger industrialized countries. On the contrary, Malawi's need for industrial products and food items can easily be provided by South African firms at a cheaper transportation cost than from other sources (Malawi Government, 2010).

2.5 Trade Policy

International trade policy in Malawi has mostly been influenced by macroeconomic policies that have evolved over time since the country's independence in 1964 (Chigaru, 2006). According to Mulaga and Weiss (1996), the evolution could easily be categorised into three diverse periods with regards to trade and economic regime change. Mulaga and Weiss (1996) classified the early economic policies to have been motivated by the structuralist view to development which advocated government involvement in the market.

The first years after independence between 1964 and 1979 were pre-occupied by import-substitution policies with associated restrictive trade policies and limited emphasis on export-orientation. The period that followed from 1980 to 1993 was a transitional regime, as most African countries pursued a series of structural adjustment reforms which opened up various sectors of the economy with prominence on export orientation (Mulaga and Weiss, 1996). This saw the implementation of more restrictive trade policies such as an increase in import tariff⁵ as well as the tightening of access to import licensing (Chigaru, 2006).

⁵All tariffs are basically ad- valorem, meaning they involve charging a tax as a percentage of the value of the goods.

Muluga and Weiss (1996) further stated that the third regime was in the years from 1994 going beyond which was associated with trade liberalization making international trade almost free. In this period Malawi saw open trade with export promotion and democracy as the political regime moved into the multiparty system of government. The ministry of trade and industry (1997) reported that tariffs were eliminated on raw materials and the number of tariff band was reduced to six. With rates of zero or 5 percent apply to necessities and 10 percent to intermediate goods (Chigaru, 2006).

In 1998, export taxes on tobacco, tea, coffee and sugar were eliminated and the maximum import tariff was 25 percent. The high protection level that the tariff structure provides greatly distorts the producer incentives in favour of processed goods (Chigaru, 2006). Besides the Bilateral trade agreement signed in 1990 between the two nations, in 2008 the government of Malawi and South Africa signed a Memorandum of Understanding designed to further boost the relationship between the two countries through enhanced security cooperation and trade (Government of Malawi, 2008).

The Trade Law Centre (TRALAC) report in 2012 on trade in the Southern Africa Development Community (SADC) region indicates that all countries in the region have tariff free access to South Africa except for used clothing and selected vehicles and vehicle parts. TRALAC's brief notes in the trade report (2012) indicate that Malawi has offered 380 of its 790 tariff lines for South Africa's free duty access. Furthermore the launch of the National Export Strategy (NES) in 2012 will see Malawi prioritising three export oriented clusters for diversification: oil seed

products, sugar cane and manufactures. It also includes support plans to stakeholder efforts in other major existing clusters such as tobacco, mining, tea, tourism and services (Malawi Government, 2012).

2.6 Transport

High transaction costs have been a major setback to Malawi's trade competitiveness; estimates from ministry of industry and trade (2012) show that these costs cover about 45 percent of total production costs. As a landlocked country, Malawi's trade sector greatly relies on overland transportation. The availability of overland transport links that are both dependable and less costly are thus very crucial for Malawi to compete successfully in merchandise trade.

The main trade route that links Malawi to South Africa is the Tete – Harare – Beit bridge road. Most goods are transported through this road which handles about 70 percent of the traded goods, while some are ferried through the skies by South African Airways and Malawian Airlines.

2.7 Exchange Rate

The frequent devaluations that had been taking place before 1994 led to the proliferation of parallel markets in Malawi (Mangani, 2011). Mangani (2011) further explained that in February 1994 the kwacha was floated and the immediate effect of this floatation resulted in a 62 percent depreciation of the domestic currency. Several factors contributed to the adoption of the floating exchange rate regime these were disequilibria in balance of payments pressures emanating from the 1993 drought and

the withdrawal of non-humanitarian development assistance by the international community (Malawi Government, 2000).

The floating regime was meant to achieve certain objectives being improvement of the country's export competitiveness, dampen speculative attacks on the Kwacha and restore both investor and donor confidence (Reserve bank of Malawi, 1995). Consequently due to the depreciation, the import unit prices increased more as compared to the export unit price. As a result the terms of trade for commodities traded had worsened due to high production costs making the income terms of trade to reduce (Mangani, 2011). In nominal terms exports exhibited an increasing trend but in real terms domestic exports decreased resulting in lower real export volumes and values (Malawi Government, 2005).

2.8 Regional commitments

Malawi and South Africa are both members of the Southern Africa Development Community (SADC) and are party to the bloc's agreement on trade (SADC, 2007). Historically the SADC treaty was signed in 1992 with the aim of creating a development community that would achieve broad economic and trade integration (SADC, 2007). Based on the fundamental principles of the sovereign equality and mutual benefit among others, the treaty provides a framework for coordinating, harmonizing, rationalizing policies and developing strategies for sustainable development (SADC, 2007).

The SADC trade protocol was launched in 2000 and planned the establishment of a Free trade Area (FTA) by 2008 to liberalise inter regional trade in goods and services

to enhance economic development in the region. Nevertheless due to different member country development levels, the liberalization program has been asymmetric with more advanced countries liberalizing their markets faster (Chigaru, 2006). A customs union was set to be launched by 2010 for SADC member states to reduce trade barriers and tariffs among member states.

2.9 Chapter Summary

Since independence Malawi has been greatly characterized by high trade transaction costs and narrow export base among other things. External and internal shocks in the early 1980's led to the implementation of restrictive and complex trade policies which were based on pervasive non-tariff barriers as well as a large number and dispersion of tariff bands. The country still has a long way to go in developing its export products so that the country can increase its market share and compete favourably with South Africa.

CHAPTER THREE

LITERATURE REVIEW

3.0 Chapter Overview

This chapter examines various competing trade theories say about the basis for trade. It also looks at the competitiveness theory which informed the study. Furthermore the chapter analyses the ARDL model that was adopted in this study and some literature review of trade studies in different countries plus empirical work that has been done on trade flows in Malawi.

3.1 Introduction

Different schools of thought generally agree that overall, economies benefit more with trade than without trade. Providing a wide spread belief that international trade stimulates a country's economic growth (Gondwe, 2008). Trade leads to utilization of otherwise underutilized domestic resources, overcomes the narrowness of the domestic market thereby improve the country's division of labour and raising its level of productivity (Myint, 1958).

3.2 The Traditional Trade Theory

According to the classical trade theory by Adam Smith, (1776) mutual benefit in trade would only exist if a country specializes in the production of the good it has an absolute advantage and then export such goods to a country that is not efficient in the

production of that good. In return, that country should import goods which it cannot efficiently produce. Ricardo (1817) took a different view to Smith's views. He argued that by employing the labour theory of value to measure the cost of production ascertained that there is still a basis for mutually beneficial trade even if one country had an absolute advantage in both commodities (Markusen et al. 1995). In 1817, he introduced the 'theory of comparative advantage; which has remained one of the most important and probably still unchallenged laws in economics with many practical applications.

One of the applications resulted in the Heckscher-Ohlin (H-O) model which describes a world in which comparative advantage hence trade to be determined by national differences in factor endowments and also by the differences in factor intensities of the traded commodities (Markusen et al. 1995). The model assumes equal tastes and equal income distribution among nations and further argues that the difference in the supply of various factors of production give rise to different autarkic factor prices which generate different production costs for different goods in different nations (Salvatore, 2004).

The H-O model states mutually beneficial trade occurs when countries export commodities that intensively use their relative abundant and cheap factors of production and imports commodities that intensively use their scarce and expensive production factors (Markusen et al. 1995). Additionally, it further postulates that when a country opens up to free trade based on comparative advantage, the country in question gains even more from trade by implicitly importing the services of its scarce factor and exports the services of its abundant factor (Markusen et al 1995).

Thus, it's also generally believed that international trade in commodities accomplishes the task of exchanging surplus factor services between countries. Despite some technical difficulties in proving this in the real world, the consensus among trade economist is that factor endowments provides one of the most important explanations for the observed international trade patterns (Salvatore, 2004). A different aspect was taken in the establishment of the Stolper-Samuelson theorem (Markusen et al. 1995). The theorem consisted of some set of restrictive assumptions the Stolper-Samuelson theorem posit that apart from the gains that motivate economies to engage in trade, there are also redistribution effects in the economy associated with opening up to trade.

The Stolper-Samuelson theorem model predicts that opening of trade will cause an increase in the real income of the country's abundant factor and a reduction in the real income of the country's scarce factor (Markusen et al. 1995). Taking assumptions of perfect competition and constant returns to scale, the Stolper-Samuelson postulates that as the relative price of the export good increases relative to that of the import-substitute there will be an increase in the demand for factors used intensively in export production and a reduction in the demand for factors used intensively in the domestic import substitute production (Appleyard et al. 2009). The increase in demand for factors used intensively will in turn raise the real nominal return of the export production factors and lower the nominal return of the other factors measured in terms of the price of the commodities in question.

Thus, while the economy as a whole benefits from trade, the theorem predicts that importing products of your abundant factor makes that factor worse off. The model therefore posits that countries export products that intensively use their abundant factors so that both the economy and the factors gain more from trade (Appleyard et al. 2009). When it comes to measuring the main causes of direction of trade flows between countries the two theories could not single handed point of to the main causes of the direction of trade in which this study is mainly composed of. Their approach was general in conceptualising the resource factor as the main base of trade.

3.3 New Trade Theory

The failure of classical trade theories which are mainly based on comparative advantage to explain the causes of trade and key trade trends such as intra-industry, developing countries trade and underdevelopment had resulted in a birth of new trade theories taking into account various considerations such as externalities, economies of scale and product cycle have emerged to better explain technology intensive trade than the traditional comparative advantage theory. Comparative advantage is natural and fairly static for natural resources and agricultural products. However it can be induced and dynamic for most industrial, technological, and services sectors (Chikhasu, 2007).

Consequently a trade-enabling environment, availability of productive resources and quality of infrastructure are the vital determinants of a country's trade competitiveness. According to Attaran and Zwick (2006) the Trade Competitiveness Index and Concentration Ratios are tools for policy makers to lay the foundations for future growth in the countries trade. Attaran and Zwick's (2006) research also

highlighted that firms need an educated labour force to produce, supportive institutional or economic policies and a vibrant business environment. These are aspects, which do not flow into the concept of “comparative advantage” which was pioneered by the classical school of thought. These new trade theory concepts make comparative advantage notion look stagnant and only relating to resource endowment of economies. Professor Harry Markowitz a Nobel prize winner in the year 1990, developed the concept of diversification. The diversification concept gained importance with the modern theory of portfolio management (Chikhasu, 2007). This concept is based on the common adage that “Don’t put all your eggs in the same basket” as such the concept of diversification came to be regarded as a means of reducing a country’s dependence on a particular product or a very restricted range of primary products generally exported before processing (Love, 1979).

The portfolio theory emphatically states that many developing countries with low economic growth and relying heavily on a handful of commodities for trade, income and employment would benefit from diversifying their economies by selecting export portfolios that optimize market risks against anticipated returns (Love, 1979). Eric Strobl in 2002 further analyzed portfolio theory and found considerable welfare gains from moving towards a more “optimal” export structure on the mean-variance efficient frontier. In the new millennium economic literature on trade has linked export diversification to the process of self discovery or innovation which implies the discovery of new export products by firms or the Government (Klinger and Lederman, 2005).

It appears from self discovery literature that export diversification can be shaped by Government policies, and that an appropriate mix of microeconomic interventions in specifically addressing the market failures is important in the development process at different levels of development (Rodrigues - Clare, 2005). Linder (1961) hypothesis looked at production quality and hence tastes as the main determinant for the basis and direction of trade. He emphasize that countries with high (low) per capita income have a preference for high (low) quality goods. Following domestic demand, high (low) income countries would therefore develop comparative advantage in the production of high (low) quality goods and would also import high (low) quality goods to meet excess domestic demand (Markusen et al. 1995). In essence, the hypothesis predicts that the absolute value of the difference of the logs of per capita incomes between trading partners will have a negative effect on the log of trade.

This study is mainly driven by the competitiveness theory advanced by Attaran and Zwick (2006). In essence competitiveness is relevant for policy makers as it is based on variables that they can act upon to create conditions conducive to economic activities and prosperity. This concept incorporates most aspects from the traditional and new theories in interlinking both schools concepts and graduates a better way to measure the main direction and determining factors of modern trade. Additionally enhancing competitiveness is vital for developing countries to overcome their inherent vulnerabilities, such as narrow resource base, external shocks, and limits to achieving economies of scale resulting in high transport costs (Hammauda, 2006).

3.4 Auto Regressive Distributive Lag (ARDL) bounds testing

Estimation of bilateral trade elasticities in Africa between two countries is less documented than is with the case of aggregate trade flows. There are several models that have been used in analyzing trade flows between countries. A large number of past studies opted for the Johansen cointegration technique to determine the long run relationship between variables. In recent years a study by Pesaran et al (2001) has introduced an alternative cointegration technique known as the Auto Regressive Distributive Lag (ARDL) bounds testing approach. Compared to other cointegration procedures the bounds testing approach appears to have gained popularity due to the following reasons:

- Firstly both long-and short run parameters of the specified model can be estimated simultaneously.
- Secondly the approach is applicable irrespective of the order of integration whether the variables under consideration are purely $I(0)$, purely $I(1)$ or fractionally integrated.

A lot of literature on bilateral trade elasticities has been done in the developed countries. Studies which have utilized the ARDL bounds testing approach in an analysis of bilateral trade flows between countries are: Bahmani-Oskooee and Brooks (1999) who tested the J-curve phenomenon by employing co-integration and single equation error-correction modelling between the U.S. and her trading partners. Results showed that in the short-run the trade balance does not necessarily follow the J-Curve phenomenon, but in the long-run it improves.

Chang et al (2005) used the unrestricted error correction model, the bounds test analysis to re-analyze the long-term relationships between the demand for imports and its determinants for South Korea over the period 1980-2000. They found co integration relationship among the volume of imports, income, and relative prices and the estimated long-run (short-run) elasticities of import demand with respect to income and relative price were 1.86 (0.86) and -0.2 (-0.05), respectively. The authors concluded that neither monetary nor fiscal policies may be used as instruments to maintain the trade balance in South Korea's favour during this sample period.

Tiwari (2012) in his study an error correction analysis of India – United States (US) trade flows, used the vector error correction mechanism and found out that India's exports to the US have been significantly affected by GDP per capita of the US, Wholesale Price Index (WPI) of the India and the US, and exchange rate; and India's import from the US is significantly affected the India's GDP and WPI in the long-run. Moreover, GDP of the India Granger causes her imports from the US; and WPI of the India and exchange rate Granger cause WPI of the US.

In Africa, Oyinlola et al. (2012) examined the responsiveness of trade flows to changes in exchange rate and relative prices in Nigeria. Using the bounds testing (ARDL) approach to co-integration, the results indicate that in both the short-run and long-run Nigeria's trade flows are chiefly influenced by income- both domestic and foreign relative prices, nominal effective exchange rates and the stock of external reserves. The results also reveal that in the long-run, devaluation is more effective than relative prices in altering imports demand at both baseline and augmented models.

3.5 Empirical Evidence

The omission of a study to look at specific partner country bilateral trade responsiveness to price elasticities with Malawi has prompted the current study to explore new trade research revelations in Malawi adding on to the existing ones. In Malawi the following literature covers aspects of trade flows between Malawi and its trading partners using various econometric models.

Kwalingana et al (2012) explored the short run and long run effects of real exchange rate changes on the trade balance in Malawi. The estimation uses the multivariate cointegration framework and the paper finds out that the impact of a real depreciation on the trade balance is not significant enough to change the trade pattern in the long run, while a J-curve pattern is observed in the short to medium term. On the other hand, the trade balance seems to respond more positively to shocks in domestic income. The study focuses more on Malawi's trade balance and exchange rate, hence differs from the current study. The methodology used also is different from the current study.

Mangani (2011) examined the effects of the exchange rate on foreign trade in Malawi. The study used the Auto Regressive Distributive Lag bounds testing approach. Separate export value and import value models were estimated using a single equation error correction modelling framework. The paper finds out that foreign trade in Malawi is not responsive to the real effective exchange rate both in the long run and in the short run. And there was no compelling support for either the Marshall-Lerner condition or the J-curve effect.

Mangani's study differs from the current study in the area of concentration. He explores the effect of exchange rate on Malawi's foreign trade flows with various trading partners, while the current study looks at price elasticities effects on Malawi – South Africa bilateral trade flows. Although both studies will follow the same methodology parallels are drawn in areas of concentration.

Chikhasu (2006) opted for the Trade Competitive Index and Concentration Ratio to analyze Malawi's trade competitiveness in a policy paper. His qualitative analysis approach was however limited as it did not give him a broader spectrum to further analyze other trade phenomena that are possibly affecting Malawi's trade competitiveness. Chikhasu's study is driven by the same theory as this current study, it follows that his approach to measurement is qualitative unlike the current study which follows a quantitative approach.

Kamoto (2006) investigate the effects of devaluation on the trade balance in Malawi and South Africa using a vector error correction model (VECM). The vector error correction model suggests the existence of a long-run equilibrium relationship among the variables for both Malawi and South Africa. There is a positive relationship between the trade balance and the real effective exchange rate indicating that a real depreciation will improve the trade balance in the long run. Kamoto's study has a different area of concentration. It looks at the effects of devaluation on trade balance for both Malawi and South Africa. It does not cover the two countries bilateral relations and is not specific on elasticities. The methodology used also is different from the one to be used by the current study.

Simwaka (2006) examines dynamics of Malawi's trade patterns using an econometric gravity model. In the model, the bilateral trade is a linear function of economic size of the country, geographical distance, and exchange rate volatility, among other factors. Malawi's bilateral trade is positively determined by the size of the economies (GDP of the importing country) and similar membership to regional integration agreement. On the other hand, transportation cost, proxy by distance, is found to have a negative influence on Malawi's trade. The study is generalised to trade patterns and is not mutual country specific. The methodology used differs with the one to be followed by the current study.

3.6 Chapter Summary

Using the ARDL bounds testing approach, for example Mangani (2011); his study was able to estimate both short run and long run parameters of the trade flows simultaneously. The approach was applicable irrespective of the order of integration of variables under consideration. Thus the ARDL approach can be successfully utilized in analyzing different trade issues including elasticities and hence in explaining several trade policy implications as it offers a dynamic framework for measuring bilateral trade flows.

CHAPTER FOUR

METHODOLOGY

4.0 Chapter Overview

This chapter looks at the data definition and collection methods, data manipulation, the data analysis technique and the methodology applied in the analysis.

4.1 Introduction

To get a real measure of the responsiveness of export and imports to relative changes in prices and income, the study employed a quantitative design that used secondary data. The study covered years from 1980 to 2012.

4.2 Sample

The target period for this study was the years from 1980 to 2012. This is a period before the signing of the Malawi – South Africa bilateral trade agreement which was signed in 1990 and to the period after the agreement. The researcher felt that both “before and after” bilateral trade agreements periods were as significant in giving balanced results.

4.3 Data Collection

Data was collected from National Statistical Office (NSO), Reserve Bank of Malawi (RBM), South African Reserve Bank and World Bank. The researcher personally

visited the National Statistical office library in Zomba, Malawi to collect data on Exports and Imports between Malawi and South Africa. Several Statistical year books and various editions of RBM (Financial economic reviews) were also sourced at NSO library. In addition the bilateral Exchange Rate⁶ figures were supplied through email by the Exchange Rate Division of the South African Reserve Bank. These exchange rate values were compared with the ones sourced from the RBM website and they matched.

The researcher also used the website (www.worldbank.org) to source variables such as GDP per capita Malawi, Consumer Price Index of Malawi and Malawi's Foreign Reserves from the World Bank: Malawi country data statistics. GDP per capita South Africa and Consumer Price Index of South Africa were also sourced from the World Bank: South Africa country data statistics. The collected revealed that the Malawi country data statistics do not have the Wholesale Price Index, in which better bilateral trade conclusions can be made when analysed with comparison to that of South Africa. The researcher therefore decided to use the consumer price index for both countries instead.

4.4 Data Analysis

Descriptive statistics were used to analyse quantitative data. Eviews 7 software was used in this regard. A dummy variable was incorporated in the period after the signing of the bilateral trade agreement to capture the effect of the trade agreement. The researcher chose to convert all the variables data figures collected into a unit

⁶ Bilateral exchange rate in this paper represents the Nominal exchange rate between the two countries. The nominal exchange rate was used in this study because employing a real exchange rate would cause variable correlation resulting in spurious results, as the calculation of real exchange rate encompasses the use of foreign prices and domestic prices which are already defined in this model as separate independent variables

currency using the prevailing exchange rate for better interpretation in relative prices and income. The chosen currency was the South African Rand. The Rand was chosen on the basis of its strength as compared to the Malawian kwacha, this will enable a better valuation of determinants of short run and long run causality effects.

Regression analysis was conducted on separate export supply and import demand models to derive short run and long run results estimations. Furthermore cointegration analysis was conducted to determine the long run relationship between variables involved in the study in each model. Short run effects incorporating the error correction term were conducted to determine causality between variables in the dynamic framework. Long run effects were also conducted on variable to determine causality among test variables in the static framework.

Economic theory in a bilateral trade framework suggests that the long run quantity export supply is related to foreign income of trading partner (GDP per capita of SA), the domestic price of exports (CPI of MW), the price of export substitute goods in foreign country (CPI of SA) and the exchange rate (ER) relative to exports. Similarly the long run imports quantity demand is a function of domestic income or activity variable in our country (GDP per capita of MW), foreign currency price of imported goods (CPI of SA), the price of domestic goods competitive with imports (CPI of MW), the ability to access foreign currency locally (Foreign Reserves) and the exchange rate (ER) relative to imports.

Similar types of studies assume a zero degree of homogeneity of price, in which exports and imports prices are defined as relative prices (Tiwari, 2012). In this study

the researcher did not make such kind of an assumption because this has been in debate since the study by Murray and Ginman (1976). The researcher did not use the homogeneity assumption because of the reasons highlighted out by Fullerton and Sprinkle (2005). These reasons were that: Firstly the split price specification is less restrictive and valid even if the homogeneity assumption is fulfilled. Secondly the homogeneity assumption implicitly forces one to define imports and exports in terms of the domestic price of the importing country. Because of this reason a significant amount of information is lost as it becomes impossible to determine the effects of exchange rate changes on trade flows in isolation from changes in relative prices. This is especially important if the effect in exchange rate is different in magnitude than changes in relative prices.

4.5 Estimation Technique

The study followed a methodology used by Bahmani-Oskooee and Ratha (2008). The log-linear quantity export supply and quantity import demand models for the trade flows between the two countries can be specified as:

$$\ln(QX_t) = \alpha_0 + \alpha_1 \ln(GDPSA_t) + \alpha_2 \ln(CPIMW_t) + \alpha_3 \ln(CPISA_t) + \alpha_4 \ln(ER_t) + \alpha_5 dum + \mu_t$$

$$(\alpha_1 \geq 0, \alpha_2 \leq 0, \alpha_3 \geq 0, \alpha_4 \leq 0, \alpha_5 \geq 0) \quad (1)$$

where

QX_t = value of exports of Malawi in Rands.

$GDPSA_t$ = is the gross domestic product per capita of South Africa in Rands.

$CPIMW_t$ = is the consumer price index of Malawi.

$CPISA_t$ = is the consumer price index of South Africa.

ER_t = is the nominal exchange rate.

dum = is the dummy which represents the absence or presence of a mutual trade agreement between the two nations. From 1980 to 1990, 0 is assigned to dum and from 1991 to 2012 we assigned 1.

μ_t = is the error term.

The impact of increase in the GDP per capita of SA is hypothesized to be such that it induces Malawi's exports to increase. An estimate of α_1 is expected to be positive. Given an increase in Malawian commodity prices relative to South African prices consequently leads to a decrease in the demand for Malawi's exports. Thus, an estimate of α_2 is expected to be negative. It is expected that an increase in South African commodity prices induces increase in Malawi's exports so an estimate of α_3 will be positive.

An increase in nominal exchange rate will cause Malawi's exports to fall. So an estimate of α_4 is expected to be negative, premised on the theoretical preposition that a higher external value of the kwacha makes Malawian goods unattractive to foreigners. The absence of a trade agreement is expected to have negative effects on Malawi, estimate of α_5 is negative.

$$\ln(QM_t) = \alpha'_0 + \alpha'_1 \ln(GDPMW_t) + \alpha'_2 \ln(CPISA_t) + \alpha'_3 \ln(CPIMW_t) + \alpha'_4 \ln(FRS_t) + \alpha'_5 \ln(ER_t) + \alpha'_6 dum + \mu_t$$

$$(\alpha'_1 \geq 0, \alpha'_2 \leq 0, \alpha'_3 \geq 0, \alpha'_4 \geq 0, \alpha'_5 \geq 0, \alpha'_6 \leq 0) \quad (2)$$

where

QM_t = value of imports from South Africa in Rands.

$GDPMW_t$ = is the gross domestic product per capita of Malawi in Rands.

$CPISA_t$ = is the consumer price index of South Africa.

$CPIMW_t$ = is the consumer price index of Malawi.

FRS_t = Malawi's foreign reserves.

ER_t = is the nominal exchange rate.

dum = is the dummy which represents the absence or presence of a mutual trade agreement between the two nations. From 1980 to 1990, 0 is assigned to dum and from 1991 to 2012 we assigned 1.

μ_t = is the error term.

The estimates of $\alpha'_1, \alpha'_2, \alpha'_3, \alpha'_4, \alpha'_5$ and α'_6 are expected to be positive, negative, positive, positive, negative and negative respectively. The propensity of imports to increases with an increase in domestic income yields a positive expectation. The commodity price of import goods in relation to domestic goods is expected to cause a reduction in imports. A reduction in commodity prices domestically leads to a fall in imports. With exchange rate a decrease in nominal exchange rate dampens imports. The absence of a trade agreement is expected to have a negative effect on Malawi's trade.

Now, investigating the responsiveness of trade flows to changes in relative price and income entails thorough examination of dynamic adjustment nature of both export and import demand models specified above (Bahmani-Oskooee and Kara, 2008). Hence, this study shall employ the Unrestricted Error Correction Model (UECM)

which follows the order of Autoregressive Distributed Lag proposed by Pesaran et al. (2001) to investigate the existence of cointegration relationship among variables. Specified as:

ARDL export supply model:

$$\begin{aligned}\Delta \ln(QX_t) = & \alpha_0 G_{it} + \alpha_1 \ln(QX_{t-1}) + \alpha_2 \ln(GDPSA_{t-1}) + \alpha_3 \ln(CPIMW_{t-1}) + \alpha_4 \ln(CPISA_{t-1}) + \\ & \alpha_5 \ln(ER_{t-1}) + \sum_{i=1}^p \alpha_{6i} \Delta \ln(QX_{t-i}) + \sum_{i=1}^q \alpha_{7i} \Delta \ln(GDPSA_{t-i}) + \sum_{i=1}^r \alpha_{8i} \Delta \ln(CPIMW_{t-i}) + \\ & \sum_{i=1}^s \alpha_{9i} \Delta \ln(CPISA_{t-i}) + \sum_{i=1}^t \alpha_{10i} \Delta \ln(ER_{t-i}) + \mu_t\end{aligned}\quad (3)$$

ADRL import demand model:

$$\begin{aligned}\Delta \ln(QM_t) = & \alpha'_0 G_{it} + \alpha'_1 \ln(QM_{t-1}) + \alpha'_2 \ln(GDPMW_{t-1}) + \alpha'_3 \ln(CPISA_{t-1}) + \alpha'_4 \ln(CPIMW_{t-1}) + \\ & \alpha'_5 \ln(FRS_{t-1}) + \alpha'_6 \ln(ER_{t-1}) + \sum_{i=1}^p \alpha'_{7i} \Delta \ln(QM_{t-i}) + \sum_{i=1}^q \alpha'_{8i} \Delta \ln(GDPMW_{t-i}) + \\ & \sum_{i=1}^r \alpha'_{9i} \Delta \ln(CPISA_{t-i}) + \sum_{i=1}^s \alpha'_{10i} \Delta \ln(CPIMW_{t-i}) + \sum_{i=1}^t \alpha'_{11i} \Delta \ln(FRS_{t-i}) + \\ & \sum_{i=1}^u \alpha'_{12i} \Delta \ln(ER_{t-i}) + \varepsilon_t\end{aligned}\quad (4)$$

Where Δ is the first difference operator and G_{it} is included to capture the inclusion of deterministic such as intercept terms and dummy variables. White noise error terms are represented as μ_t for export model and ε_t for the import model. The first step in the (ARDL) bounds testing procedures is to estimate equation (3) and (4) by Ordinary Least Square method. We test and conduct an F-test using the Wald test for linear restrictions to determine the joint significance of the coefficients of the lagged level of

the variables with the aim of testing for the existence of long run cointegration relationship among the variables in both equations of exports and imports:

For equation (3):

Ho: $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$ against H1: $\alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq 0$

For equation (4):

Ho: $\alpha'_1 = \alpha'_2 = \alpha'_3 = \alpha'_4 = \alpha'_5 = \alpha'_6 = 0$ against H1: $\alpha'_1 \neq \alpha'_2 \neq \alpha'_3 \neq \alpha'_4 \neq \alpha'_5 \neq \alpha'_6 \neq 0$

Consequently, the computed F-statistic is then compared to the non-standard critical bounds values reported in Pesaran et al. (2001) which are also given in the Appendix B. If the computed F-statistic exceeds the critical upper bounds value, then the null hypothesis of no cointegration is rejected. If the computed F-statistic falls below the critical lower bounds value, then the null hypothesis of no cointegration is not rejected.

But when the computed F-statistic falls between the critical lower and upper bounds values, then the knowledge of integration of the variables under consideration is required, or else, no conclusion can be reached about cointegration status. Kremers et al. (1992) argued that in such an inconclusive case an efficient way of establishing cointegration is by applying the error correction model version of the ARDL model. The joint estimates of the short run and long run effect of the regressor on exports and imports will be examined through the normalization procedure.

In order to determine appropriate lags for the two models we will look at the model characteristics that provide us with the lowest Akaike Information Criterion (AIC),

the Schwarz Bayesian Criterion (SBC) and the Hannan-Quinn Criterion (HQC). Taking serial correlation into account the models will be tested by applying the Breusch- Godfrey Lagrange Multiplier (B-G LM) test.

Model misspecification and other diagnostic test will be conducted using the Ramsey RESET test and the Auto Regressive Conditional Heteroscedasticity (ARCH) Lagrange Multiplier test up to the fourth order. Cumulative tests based on the cumulative sum of residuals will be conducted to check the stability of the of the regression coefficients. If the plots of these statistics remain within the critical bound of the 5 percent significance level the null hypothesis that all coefficients in the error correction model are stable will not be rejected.

CHAPTER FIVE

RESULTS AND INTERPRETATION

5.0 Chapter Overview

This chapter augments the analysis by applying the ARDL bounds testing approach and the analytical techniques proposed on annual data covering the period 1980 to 2012. The results from this chapter provide answers to the questions which were raised in the first chapter of this study.

5.1 Model diagnostics

From Appendix A, Table A. Results of descriptive statistics were presented. The statistics showed that some variables were log normally distributed while some are not log normally distributed. The researcher first carried out tests for unit root using Augmented Dickey-Fuller test (ADF) and Phillips-Perron (PP) so that they determine whether the variables under consideration are stationary or not. The test results were reported in Table 3.

Table 3: Unit Root Test Results

Variables	Augmented Dickey Fuller(k)				Phillips Perron(k)			
	Constant		Constant and Trend		Constant		Constant and Trend	
	Levels	1 st D	Levels	1 st D	Levels	1 st D	Levels	1 st D
GDP per capita MW	-1.390	-6.102**	-4.344**	-6.079**	-1.769	-9.308**	-3.955**	-12.01**
GDP per capita SA	-4.231**	-2.628	-0.728	-3.618**	-3.373**	-2.623	-0.895	-3.581**
Imports of MW from SA	-3.891**	-6.073**	-5.031**	-5.968**	-3.904**	-20.63**	-6.549**	-21.39**
Exports of MW to SA	-3.578**	-6.11***	-3.514	-6.085**	-3.540**	-9.732**	-3.317	-13.69**
Consumer Price Index of MW	-0.820	-3.112**	-1.809	-3.518**	-0.702	-3.002**	-1.099	-3.03***
Consumer Price Index of SA	-4.574**	-3.187**	-1.618	-4.167**	-4.753**	-3.187**	-1.6348	-4.060**
Bilateral Exchange Rate	0.339	-4.459**	-2.409	-4.497**	0.352	-4.334**	-2.393	-4.380**
Foreign Reserves	-3.034**	-6.439**	-4.154**	-6.349**	-3.002**	-8.276**	-4.154**	-7.344**

Note: *, ** and *** denotes significance at 1%, 5% and 10% respectively. The lag length (k) selection in ADF test is based on Mackinnon (1996) and in PP test it is based on Newey-West using Bartlett kernel.

Source: Authors calculations

Based on the ADF test statistic, it was found that at the 5 percent level of significance, five variables had unit root at in levels and three variables at first difference. Having a mixture of both I(0) and I(1) variables implied that the ARDL bounds testing approach was applicable in this study. This was so because none of the variables were integrated of a higher order of stationary than I(1).

The optimum lags were selected using the SBC, HQC and AIC which suggested an optimum lag selection of 3 for both models. Since all observations were annual and the number of observations was limited, 3 was the maximum order of lags used in our ARDL models. Table 4A and Table 4B described the export and import lag selection results.

Table 4A: Lag Selection and Serial Correlation test

Export Supply Model						
Lag	AIC	SIC	HQC	BG-LM	BG-Prob(Fstat)	
1	1.328596	2.054420	1.537607	1.106763	0.3271	
2	1.231328	2.005541*	1.454273	0.844263	0.4753	
3	1.194789*	2.017391	1.431669*	0.761421	0.5622	
4	1.247193	2.118183	1.498007	3.368288	0.1332	

* indicates lag order selected by the criterion

Source: Authors Calculation

Table 4B: Lag Selection and Serial Correlation test

Import Demand Model						
Lag	AIC	SIC	HQC	BG-LM	BG-Prob(Fstat)	
1	-0.406878	0.222170	-0.225735	0.426810	0.5283	
2	-0.339652	0.337784	-0.144575	1.433942	0.2880	
3	-0.694158*	0.031667*	-0.485147*	1.869072	0.2132	
4	-0.627321	0.146892	-0.404376	1.889871	0.2171	

* indicates lag order selected by the criterion

Source: Authors Calculation

Coming up with a rigorously tested result, an exploration of various combinations of lags on the independent variables of the ARDL model in each stage was done. Furthermore the dropping out all insignificant stationary regressor was done to obtain the best specification using the Akaike Information Criteria. A combination of ARDL (1,2,1,0,2) was chosen for the export supply model. Using the Breusch Godfrey LM test we found no serial correlation at all lags as the LM statistics were insignificant, which meant that we accept the null of no serial correlation.

With further tests on the export model by adding and reducing the lags on variables, a combination of ARDL (0,3,2,0,2) gave us the lowest AIC and HQC. The import demand model test of the various combinations of lags was done for the independent

variables of the ARDL model using the AIC. The ARDL (1,1,0,1,1,2) combination was chosen for this model. Breach Godfrey LM tests found no serial correlation for all 4 lags. This meant that the null hypothesis of no serial correlation was accepted. Various combinations thereafter were still conducted on all the variables in the import model, to give it more stability and fit. A combination of ARDL (0,2,1,1,0,2) was finally selected to be giving the lowest AIC and HQC.

A dummy variable was included in both models to take into account the bilateral trade agreement between Malawi and South Africa. The dummy is believed to play an influential role in the growth of Malawian exports to South Africa. This dummy variable was given a value ‘one’ for the period 1991 to 2012 and value ‘zero’ elsewhere. Further test of stability and correct model specification were conducted using the Ramsey RESET test and Auto Regressive Conditional Heteroscedasticity (ARCH) test. Table 5 showed the results of the stability tests.

Table 5: Model Diagnostic Tests

	Ramsey's RESET Test		Engel's ARCH Test	
	F_2 (p)	F_3 (p)	χ_1^2 (p)	χ_4^2 (p)
Export Supply Model	1.4014(0.317)	1.068 (0.441)	0.105(0.749)	0.362(0.833)
Import Demand Model	2.677(0.122)	2.697(0.112)	0.397(0.534)	0.069(0.991)

Note: F_2 (p) and F_3 (p) are the test statistics for investigating the appropriateness of quadratic and cubic models, respectively. Similarly, χ_1^2 (p) and χ_4^2 (p) are the test statistics for ARCH(1) and ARCH(4) effects, respectively. (p) denotes the corresponding probability values under the respective null hypotheses of correct specification, no conditional heteroscedasticity. * * indicates that the appropriate null hypothesis may be rejected at 5% significance level.

Source: Authors Calculation.

The Ramsey RESET test provided insignificant statistics at the 5% significance level for the two regression models. This suggested that there were no signs of incorrect functional form. On the other hand ARCH test results also suggested that there was no

signs of conditional heteroscedasticity in both models since the results were also insignificant at 5% level. The acceptance of the null hypothesis of correct specification and no conditional heteroscedasticity in both models meant that the models had to be estimated using the ordinary least squares (OLS) method.

5.2 Regression Analysis

The results of the export supply model are reported in panel A of the Table 6 below while those of the import demand model are reported in panel B.

Table 6: Estimation Results for Both Models

Panel A: Export supply model				Panel B: Import demand model			
Variable	coefficient	t-stat	Prob.	Variable	coefficient	t-stat	Prob.
C	36.37034	1.851760	0.1012	C	13.32107	3.298575	0.0071
DUMMY1	0.480262	1.260905	0.2429	DUMMY1	-0.355146	-1.254182	0.2358
D(LNGDPSA)	8.559513	1.259165	0.2435	D(LNGDPMW)	-0.675137	-1.049374	0.3165
D(LNGDPSA(-1))	0.364325	0.094846	0.9268	D(LNGDPMW(-1))	-0.034522	-0.047180	0.9632
D(LNGDPSA(-2))	-10.93455	-2.669052	0.0284**	D(LNGDPMW(-2))	-0.859404	-1.748959	0.1081
D(LNGDPSA(-3))	-5.875502	-1.523321	0.1662	D(LNCPISA)	-2.678017	-2.053561	0.0646**
D(LNCPIMW)	-1.653703	-0.987370	0.3524	D(LNCPISA(-1))	-2.690283	-1.351165	0.2038
D(LNCPIMW(-1))	-1.750516	-1.628675	0.1420	D(LNCPIMW)	0.310971	0.313803	0.7595
D(LNCPIMW(-2))	-0.463471	-0.361713	0.7269	D(LNCPIMW(-1))	-1.306344	-1.054488	0.3143
D(LNCPISA)	-3.946142	-0.812369	0.4401	D(LNFRS)	0.150401	1.245198	0.2389
D(LNEXCH)	1.005440	1.677412	0.1320	D(LNEXCH)	-0.278150	-0.349686	0.7332
D(LNEXCH(-1))	-1.510537	-1.667083	0.1341	D(LNEXCH(-1))	-0.849328	-1.049435	0.3165
D(LNEXCH(-2))	-0.298369	-0.483010	0.6420	D(LNEXCH(-2))	-1.473481	-1.776019	0.1034
D(LNEXCH(-3))	0.778611	1.524256	0.1660	LNIMPO(-1)	-1.416686	-3.891787	0.0025
D(LNEXCH(-4))	0.525937	1.299559	0.2299	LNGDPMW(-1)	-2.360092	-2.733045	0.0195
LNEXPO(-1)	-0.921834	-3.540990	0.0076	LNCPISA(-1)	1.226590	1.909048	0.0827
LNGDPSA(-1)	-8.061961	-1.891711	0.0952	LNCPIMW(-1)	1.306283	2.364169	0.0375
LNCPIMW(-1)	-3.628178	-2.367004	0.0455	LNFRS(-1)	0.012249	0.087235	0.9321
LNCPISA(-1)	12.04791	2.025642	0.0774	LNEXCH(-1)	-1.000872	-2.086225	0.0610
LNEXCH(-1)	3.667040	2.163157	0.0625				

R-squared = 0.882740	F statistic = 3.169698	R-squared = 0.852236	F statistic = 3.524601
Adjusted R = 0.604246	Prob.(F-stat) = 0.049630	Adjusted R = 0.610439	Prob.(F-stat) = 0.018778

Note: ** denotes statistical significance before any normalization procedures, at 5% significance level or lower
Source: Authors Calculation

In table 6, Panel A the short run regression for exports showed that GDP per cap of SA was the only significant variable at 5 percent level in the second period with a value of 0.0284 probability level. The rest of the variables proved to be insignificant in all periods of short run adjustment. The long run regression showed all variables to be significant at the 5 percent level in the first period of adjustment. The t-stat of long run export regression was -3.540990. This value is used in support of the cointegration relationship establishment of variables in the long run for the export model. The dummy variable probability in the export supply model was insignificant. This showed that the dummy introduced in the model to capture the period of bilateral agreement was not fruitful.

The export supply model explained 60 percent of the variability of values of exports and the model had a significant probability of 0.049630. In Panel B, the short run regression for imports confirmed that CPI of SA was the only significant variable at 5 percent level in the current period with a value of 0.0646 probability level. The rest of the variables were insignificant in all periods of short run adjustment. Long run regression revealed all variables to be significant at the 5 percent level in the first period of adjustment. The t-stat for long run import regression was -3.891787. This value was used in support of the cointegration relationship establishment of variables in the long run for the import model.

The dummy variable probability in the import demand model was insignificant. This showed that the dummy introduced in the model to capture the period of bilateral

agreement was not fruitful. The import demand model explained 61 percent of the variability of values of exports and the model had a significant probability of 0.018778.

5.3 Cointegration Analysis

Since our export and import models were adequately estimated, the researcher proceed by employing the ARDL bounds test on the variables to test the null hypothesis that lagged levels of the variables involved in the error correction equations of both export and import models are jointly equal to zero. This test was based on F-statistic which its non-standard and critical values were presented by Pesaran, et al. (2001:34) and are also supplied in Appendix B. The researcher's models assumed unconstrained intercept and no linear trend in the error correction term. The results for the cointegration test were presented in Table 7.

Table 7: Cointegration Test Results

Model	Null Hypothesis	F-Statistic	5% Critical Values		10% Critical Values	
			CV_L	CV_U	CV_L	CV_U
Export supply	$\alpha_1 = \alpha_2 = \alpha_3 =$ $\alpha_4 = \alpha_5 = 0$	4.769	2.86	4.01	2.45	3.52
Import demand	$\alpha'_1 = \alpha'_2 = \alpha'_3 =$ $\alpha'_4 = \alpha'_5 = \alpha'_6 =$ 0	3.002	2.62	3.79	2.26	3.35

Note: CV_L and CV_U are the lower bound and upper bound critical values provided by Pesaran et al. (2001).

Source: Authors calculation.

The export model calculated F-statistic value of (4.769) in Table 7, exceeded the upper bound at the 5% significance level. We concluded that there was evidence of a long-run relationship between the independent variables (GDP of SA, CPI of MW,

CPI of SA, and Bilateral Exchange Rate) and exports. Further supporting evidence for cointegration was obtained by using the t-stat in Estimation Results for both models (Table 6, Panel A). The t-stat value of (-3.541) from Table 6, Panel A, was closer to the upper bound at 5% significance level in the t-stat values provided by Pesaran et al.(2001: 36) which are also included in Appendix B. This observation reinforced the researcher's conclusion that there was a long-run relationship in the exports supply model and rejection of the null hypothesis of no cointegration.

The calculated F-statistic value for the import model was (3.002) in Table 7. This value fell in between the lower and the upper bound at 5% and 10% significance levels. The observation rendered the researchers import model result inconclusive. But the researcher's optimism for a possible cointegration in this model was supported by the fact that this inconclusive finding had a calculated F-statistic value very close to the upper bound of the 10% significance level in Table 7. The researcher used supporting evidence from the Estimated Results for both models (Table 6, Panel B). From Table 6, Panel B, our t-stat value was (-3.892) this value was above the upper bound of the t-stat table values at 10% significance level provided by Pesaran et al. (2001:36) and also in Appendix B.

This observation although slightly weak still encouraged the researcher to conclude that there was a long-run relationship between imports and (GDP of MW, CPI of SA, CPI of MW, Foreign Reserves and Bilateral Exchange Rate). The researcher exhausted all knowledge of integration of variables using both values from Table 7 for lower and upper bound significance and also the t-stat values in Table 6, Panel B.

Hence this resulted in the researcher concluding in rejection of the null hypothesis of no cointegration in the import demand model.

5.3.1 Short run effects

Table 6, panel A, showed that in the export supply model GDP of SA was significant in the second period of adjustment with a negative coefficient of -10.934 at the 5% significance level. This meant that a one percent absolute increase in foreign income will leads to a 10.93 percentage decrease in Malawi's exports to SA in that period. The researchers priori expectation were that foreign income will provide a positive impact on domestic exports. The result from Table 6, Panel A revealed that Malawi as an exporter could not meet most of South Africa's import needs. As the SA economy grew in the short run, it will seek its products from other industrialised countries hence reducing Malawi's export supply.

From Table 6, Panel B, the import model had CPI of SA significant in the current period with a negative coefficient of -2.678. A one percent absolute increase in foreign prices resulted in a 2.68 percent decrease in imports by Malawi in the current period. This finding was in line with the priori expectations set by the researcher for the import model. A high price of foreign goods meant more cost, so local market players reacted by reducing the amount of foreign goods bought in that certain period. The researcher in an attempt to see the credibility of these two results of exports and imports in order to avoid spurious results proceeded with causality tests.

This also helped in analyzing the researcher's second objective of determining the direction of causality among test variables in a dynamic framework. Table 8, presented the joint short run effects for both models.

Table 8: Joint Short Run Effects

Panel A: Exports supply model		
Effect	Null Hypothesis	F-Statistic (p)
GDP of SA	$\phi_1 = \phi_2 = \phi_3 = \phi_4 = 0$	2.3601(0.1400)
CPI of MW	$\beta_1 = \beta_2 = \beta_3 = 0$	2.0096(0.1912)
CPI of SA	$\sigma_1 = 0$	0.6599(0.4401)
Real Exchange Rate	$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = 0$	1.8442(0.2104)
Panel B: Import demand model		
GDP of MW	$\alpha_1 = \alpha_2 = \alpha_3 = 0$	2.5246(0.1114)
CPI of SA	$\delta_1 = \delta_2 = 0$	2.3884(0.1376)
CPI of MW	$\varphi_1 = \varphi_2 = 0$	0.5602(0.5865)
Foreign Reserves	$\eta_1 = 0$	1.5505(0.2389)
Real Exchange Rate	$\omega_1 = \omega_2 = \omega_3 = 0$	2.0545(0.1646)

Note: (p) denotes the probability of accepting the corresponding null hypothesis of joint insignificance. ** denotes statistical significance at 5% or lower.

Source: Authors calculations.

From Table 8, Panel A and Panel B, the outcome of joint short run effects showed that there is no causality among test variables both in exports supply and imports demand models. On the contrary findings from Table 6 (Estimation of Results for both models) showed that in Panel A of Table 6, GDP of SA was significant and had a negative coefficient to explain short run changes in the export supply model. In Panel B of Table 6, CPI of SA was significant and had a negative coefficient to explain short run changes in the import demand model. Hence basing on the results of Table 8 of joint short run effects which showed no significance of joint variables in both

panels, the outcomes that were significant from Table 6 in both Panel A and Panel B were concluded by the researcher to have been spurious.

5.3.2 Error correction term

The researcher then further incorporated the error correction term into the export supply model and import demand model to test the short run adjustments further. The short run coefficient estimates obtained from the ECM version of the ARDL model are presented in Table 9.

Table 9: Short Run Error Correction Elasticity Estimates

Panel A: Export supply model				Panel B: Import demand model			
Variable	coefficient	t-stat	Prob.	Variable	coefficient	t-stat	Prob.
C	0.073767	0.072663	0.9434	C	-0.317361	-0.862103	0.4043
DUMMY1	0.097018	0.237366	0.8167	DUMMY1	0.266601	1.197677	0.2524
D(LNGDPSA)	-0.970128	-0.092427	0.9280	D(LNGDPMW)	-1.736933	-2.963474	0.0110
D(LNGDPSA(-1))	6.381607	1.145831	0.2762	D(LNGDPMW(-1))	-1.015802	-1.237143	0.2379
D(LNGDPSA(-2))	-7.091598	-1.312095	0.2162	D(LNGDPMW(-2))	0.922254	2.761746	0.0162
D(LNGDPSA(-3))	3.103802	0.633856	0.5391	D(LNCPISA)	-0.728437	-0.428813	0.6751
D(LNCPIMW)	1.255524	0.705496	0.4952	D(LNCPISA(-1))	2.778924	1.439579	0.1736
D(LNCPIMW(-1))	-2.237239	-1.362578	0.2003	D(LNCPIMW)	1.106815	1.006357	0.3326
D(LNCPIMW(-2))	1.553101	1.009070	0.3346	D(LNCPIMW(-1))	0.373176	0.278621	0.7849
D(LNCPISA)	-2.646100	-0.465657	0.6505	D(LNFRS)	0.004684	0.041595	0.9675
D(LNEXCH)	-0.472207	-0.580811	0.5731	D(LNEXCH)	-1.662503	-2.027178	0.0637
D(LNEXCH(-1))	-0.145265	-0.167008	0.8704	D(LNEXCH(-1))	-1.240542	-1.332575	0.2056
D(LNEXCH(-2))	-0.599129	-0.812346	0.4338	D(LNEXCH(-2))	1.382040	2.572567	0.0232
D(LNEXCH(-3))	0.298843	0.419876	0.6827	ECT(-1)	0.356614	1.729081	0.1075
D(LNEXCH(-4))	-0.550322	-1.156614	0.2719				
ECT(-1)	0.259210	0.518086	0.6147				
R-squared = 0.536236				R-squared = 0.705790			
F statistic = 0.847930				F statistic = 2.398935			
Adjusted R = -0.096170				Adjusted R = 0.411580			
Prob.(F-stat) = 0.624886				Prob.(F-stat) = 0.063			

Note: ** denotes statistical significance at 5% significance level or lower

Source: Authors Calculation.

The error correction term (ECT) in Table 9 indicated the speed of adjustment to restore equilibrium in the dynamic model⁷. In Table 9 the results showed an unexpected signs of the ECT which were none significant in both models. Table 9, Panel A, ECT coefficient was 0.259 and was non significant for the export supply model. Panel B, ECT coefficient was 0.3566 and was non significant for the import demand model. This implied that deviations from export growth in the export supply model and import decline in the import demand model were not corrected in the short run. Cumulative stability test in Appendix A displayed results of stability for both models of the error correction model at 5 percent level of significance. These findings prompted the researcher to “not reject” the null hypothesis that there no causality among test variables in a dynamic framework.

5.3.3 Long run effects

The establishment of the long-run cointegration relationship among the test variables in Table 7 for the export supply and import demand models, allowed the researcher to proceed with the determination of the long-run parameter sensitivity of the various independent variables. Table 10 gives the normalised long run outcomes.

Table 10: Normalised Long Run Effects

Variables	Exports model		Imports model	
	Normalisation Coefficient	Wald test stat $\chi^2_{(1)}$ (Prob)	Normalisation Coefficient	Wald test stat $\chi^2_{(1)}$ (Prob)
GDP per cap of Malawi	-	-	-1.666	11.917(0.005**)
GDP per cap of South Africa	-8.756	2.929(0.125)	-	-

⁷ The ECT shows how quickly variables converge to equilibrium and should posses a statistically significant coefficient with a negative probability.

Consumer Price index of MW	-3.936	4.880(0.058**)	0.922	7.626(0.018**)
Consumer Price Index of SA	13.069	3.323(0.106)	0.866	5.017(0.047**)
Bilateral exchange rate	3.978	4.327(0.071**)	-0.707	6.096(0.003**)
Foreign reserves	-	-	8.646	0.008(0.932)

Note: χ_1^2 is the wald test statistics under the null hypotheses of normalised long run effect. ** denotes statistical significance at 5% or lower.

Source: Authors calculation.

Table 10 results revealed that the effect of GDP per cap of Malawi had a negative significant coefficient of -1.666 on import demand. This meant that a one percent increase in domestic income will reduce imports from SA by 1.67 percent in the long run. According to Adler (1970) different elasticities of income reflect the degree to which exports have been adapted to the local tastes of the importing country, where higher income elasticity indicates greater adaption. In this case a slightly low elasticity shows how less attractive Malawian exports are in South Africa. Priori expectations centred towards the short run prove that imports are crucial to the developmental needs of the local economy.

But policy makers should consider a long run domestic economy fix like infrastructure and export industry establishment to reduce high import demand in their quest to tackle the long run trade deficit. The conclusion on income is that on imports we “reject” the null hypothesis that import demand functions are not influenced by income. Exports on the other hand we “fail to reject” the null hypothesis that export supply functions are not influenced by income.

Moving on to the prices results showed that CPI of MW’s has a negative significant effect on exports, with a coefficient of -3.936. An absolute one percent increase in the

domestic price resulted in a 3.94 percent decrease in Malawian exports to SA. This finding supported the researcher's priori expectation and it proved that a plan by policy makers to increasing prices of domestically produced goods exported to SA to gain high export returns will result in a negative impact on Malawi's exports. A better approach will be to improve the quality and efficiency of locally produced goods by supporting local industry development through investment in the long term. This in turn will result in competitive goods being produced locally which will compete successfully on the international market in the long run.

The CPI of MW's impact on imports showed a 0.922 positive coefficient and was significant, supporting priori expectations. Meaning a one percent increase in domestic prices of locally produced goods increases the Malawi's imports from SA by 0.92 percent. Since Malawi's need for industrial products and food items can easily be provided by South African firms at a cheaper transportation cost than from other sources, rising domestic prices reduces demand for locally produced goods. On the other hand the CPI of SA's impact on imports gives a coefficient 0.866, which is positive and significant. A one percent increase in foreign prices will cause a 0.87 increase in Malawi's imports. Although not conforming to priori expectations, the significance of this result means that even with a rise in the cost of imports the domestic economy will continue to absorb these imports greatly due to the decline in manufacturing capacity utilisation and lack of competitive domestically produced substitutes in the short run.

But in the long run this problem can be counter acted by putting in place growth and industrialisation strategies. In conclusion on prices we "reject" the suggested null

hypothesis from our objectives that export supply and import demand functions cannot be influenced by price elasticities. With regards to exchange rate, we saw a positive and significant coefficient of 3.978 in case of exports. This implied that a one percent increase in the nominal exchange rate results in a 3.98 percent increase in exports to SA. Owing to the fact that it was against the expectations, but the significance of the coefficient according to Mangani (2011) meant that we contradict theoretical proposition that a higher external value of the kwacha makes foreign goods price attractive to Malawians and makes Malawian products unattractive to foreigners.

On the import side, exchange rate had a negative and significant coefficient of -0.707 and the implication was that an absolute one percent increase in nominal exchange rate decrease Malawi's imports by 0.71 percent. Elasticity of exchange rate was close to unity in the import model than the export model. Consequently a one on one import demand response to nominal exchange rate was not supported in Table 6, Panel B, short run results for bilateral exchange rate. This suggests that policy makers in Malawi should consider exchange rate policies that influence imported inflation as a long term solution to the high import demand problem. Inclusion of Foreign reserves was none influential in the import demand model.

The overall findings on income, price and exchange rate prompted the researcher to "reject" the null hypothesis of no causality among test variable in the static framework. The Marshall-Lerner (ML) condition, states that currency devaluations can be valuable if the sum of long run price elasticities of exports and imports demand exceeds unity in absolute value provided that the trade balance is zero (Markusen et

al. 1995). In the Malawi – South Africa scenario our trade balance in this case is equal to the current account balance between the two nations. From table 8 our trade flow price elasticities for Malawi are -3.936 (exports) and 0.922 (imports). The sum (-3.014) is evidently less than 1. From a policy point, this could be an indicator to the ineffectiveness of the kwacha devaluation as a tool to address problems of the bilateral trade deficits.

5.4 Chapter Summary

The regression analysis on the trade flows revealed that the determining factors of Malawi – South Africa trade flows are only effective in the long run. The results show that Malawi's export supplies in the long run were effectively altered by domestic prices and bilateral exchange rate. Likewise, the import demands in the long run were successfully altered by domestic income, domestic prices, foreign prices, and bilateral exchange rate. The dummy variable incorporated to determine the impact of the bilateral trade agreement proved to be ineffective. The sum of price elasticities involved between the two nations are less than one, thus highlighting that the Marshall – Lerner condition does not exist between Malawi and South Africa.

CHAPTER SIX

CONCLUSION

6.0 Study Summary

The main aim of this study was to examine the main determining factors of bilateral trade flows between Malawi and South Africa and how these trade flows respond in the short run and the long run to specific changes in relative prices and income for the period 1980 to 2012. Separate export and import models were estimated.

The study found that there was no causality and speed of adjustment in the short run for both models. Meanwhile the study concludes that domestic prices and bilateral exchange rate are the main determining factors for exports between Malawi and South Africa. Subsequently domestic income, domestic prices, foreign prices and bilateral exchange rate are the main determining factors of imports between Malawi and South Africa. However, the inclusion of the dummy variable to capture the bilateral trade agreement influence in both models was not effective.

Furthermore the study revealed that the sum of the estimated price elasticities of export and import demand for Malawi and South Africa were less than unity. This indicates that the Marshall - Lerner (ML) condition does not hold when it comes to Malawi's trade with South Africa. Hence it can be concluded that in the long run a

devalued Malawian kwacha will not be effective in altering the exports supply and imports demand to reduce trade deficits.

6.1 Policy Implications

Findings in the study indicate that policy makers in Malawi can use domestic prices as an instrument of increasing exports to South Africa. This can be done by focusing on policies that control money supply as money supply is directly linked to Consumer Price Index of Malawi. Further exchange rate policy can also be used to reduce imports and promote export enhancement in the long run. This is conducted by proper adjustment of the bilateral exchange rates given that relative domestic price movements do not offset the bilateral exchange rate realignments.

The growth in domestic income has been found to have a positive influence on imports hence increase trade deficits. This is because with growth in domestic income, Malawi consumption shifts to favor imported goods from South Africa. Simultaneously low foreign prices influence imports by making foreign goods more cheap and attractive. So policy makers in Malawi can initiate enhanced production facilities aligned to the National Export Strategy (NES) to help local firms improve quality of local production to match foreign goods. The Malawian economy is agriculture based, as indicated in the NES (2012) a huge potential lies in the agriculture sector to earn more foreign income and help reduce trade deficits.

This can be done by firstly preventing the importation of consumer goods which can be produced and found locally and secondly by enhancing processing and exporting of such commodities. The Malawi Government should open more agriculture research

and technical institutes to increase the market share at local and international level. An incentive policy should be explored to enhance exports of agriculture products.

6.2 Limitations of the Study and Areas for Future Research

Due to unavailability of data the study was unable to incorporate wholesale price index as a measure of relative price changes in both countries. The wholesale price index gives a better view of country prices of traded goods as it incorporates a larger basket of commodities at factory level. Future research can look at incorporating quarterly data to capture the seasonal effects of Malawi's seasonal changes in primary exports such as tobacco and tea. Also further research can focus on the impacts of bilateral trade deficits on the local manufacturing sector or local industries. Another can be the impact of the SADC free trade area on Malawi – South Africa trade flows.

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LIST OF APPENDICES

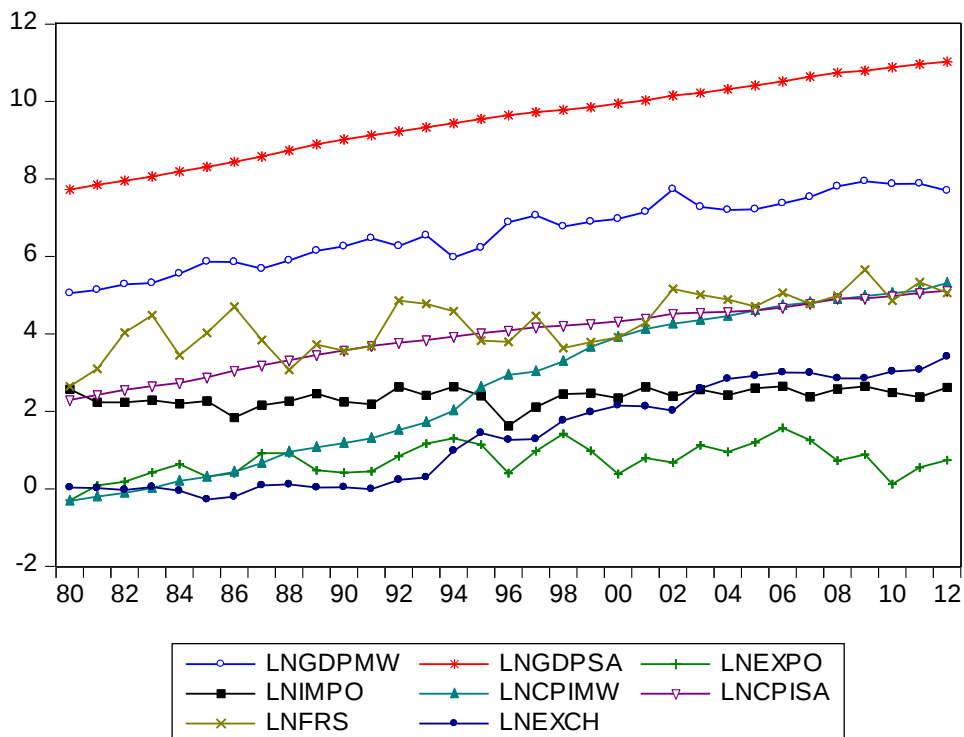
Appendix 1: Descriptive statistics and model regression analysis tables

Table A: Descriptive Statistics of variables

	LNGDPMW	LNGDPSA	LNEXPO	LNIMPO	LNCPIMW	LNCPIISA	LNFRS	LNEXCH
Mean	6.629616	9.518938	0.732257	2.373268	2.635230	3.925051	4.294630	1.359898
Median	6.772474	9.645284	0.742376	2.402703	2.942859	4.090610	4.457993	1.286474
Maximum	7.942767	11.02903	1.569524	2.646860	5.314732	5.115660	5.653930	3.412137
Minimum	5.052800	7.729647	-0.295306	1.628869	-0.314711	2.291621	2.645821	-0.274437
Std. Dev.	0.882155	0.999470	0.426746	0.231919	1.937279	0.836468	0.728716	1.292842
Skewness	-0.164403	-0.220983	-0.172794	-1.197440	-0.112902	-0.435330	-0.283197	0.139126
Kurtosis	1.857360	1.887439	2.590282	4.834889	1.470385	2.039535	2.280240	1.384786
Jarque-Bera	1.943891	1.970549	0.395037	12.51562	3.287226	2.310746	1.153429	3.693718
Probability	0.378346	0.373337	0.820765	0.001915	0.193280	0.314940	0.561741	0.157732
Observations	33	33	33	33	33	33	33	44.87664

Source: National Statistical office, World Bank statistical data bank, Reserve Bank of Malawi and South African Reserve Bank.

Table B: Trend of variables



Source: Authors Calculations.

Export supply model results:

Ramsey RESET Test

Equation: UNTITLED

Specification: D(LNEXPO) C DUMMY1 D(LNGDPSA) D(LNGDPSA(-1))
D(LNGDPSA(-2)) D(LNGDPSA(-3)) D(LNCPIMW) D(LNCPIMW(-1))
D(LNCPIMW(-2)) D(LNCPISA) D(LNEXCH) D(LNEXCH(-1))
D(LNEXCH(-2)) D(LNEXCH(-3)) D(LNEXCH(-4)) LNEXPO(-1)
LNGDPSA(-1) LNCPIMW(-1) LNCPISA(-1) LNEXCH(-1)

Omitted Variables: Powers of fitted values from 2 to 3

	Value	Df	Probability
F-statistic	1.401421	(2, 6)	0.3167
Likelihood ratio	10.73282	2	0.0047

Ramsey RESET Test

Equation: UNTITLED

Specification: D(LNEXPO) C DUMMY1 D(LNGDPSA) D(LNGDPSA(-1))
D(LNGDPSA(-2)) D(LNGDPSA(-3)) D(LNCPIMW) D(LNCPIMW(-1))
D(LNCPIMW(-2)) D(LNCPISA) D(LNEXCH) D(LNEXCH(-1))
D(LNEXCH(-2)) D(LNEXCH(-3)) D(LNEXCH(-4)) LNEXPO(-1)
LNGDPSA(-1) LNCPIMW(-1) LNCPISA(-1) LNEXCH(-1)

Omitted Variables: Powers of fitted values from 2 to 4

	Value	Df	Probability
F-statistic	1.068200	(3, 5)	0.4410
Likelihood ratio	13.86720	3	0.0031

Heteroskedasticity Test: ARCH

F-statistic	0.105021	Prob. F(1,25)	0.7486
Obs*R-squared	0.112948	Prob. Chi-Square(1)	0.7368

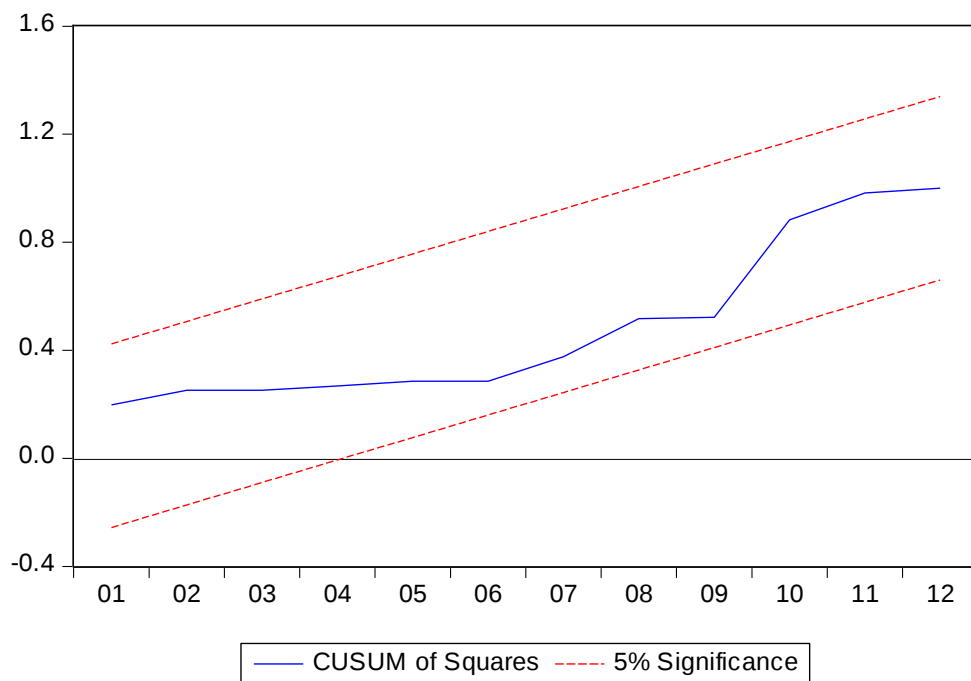
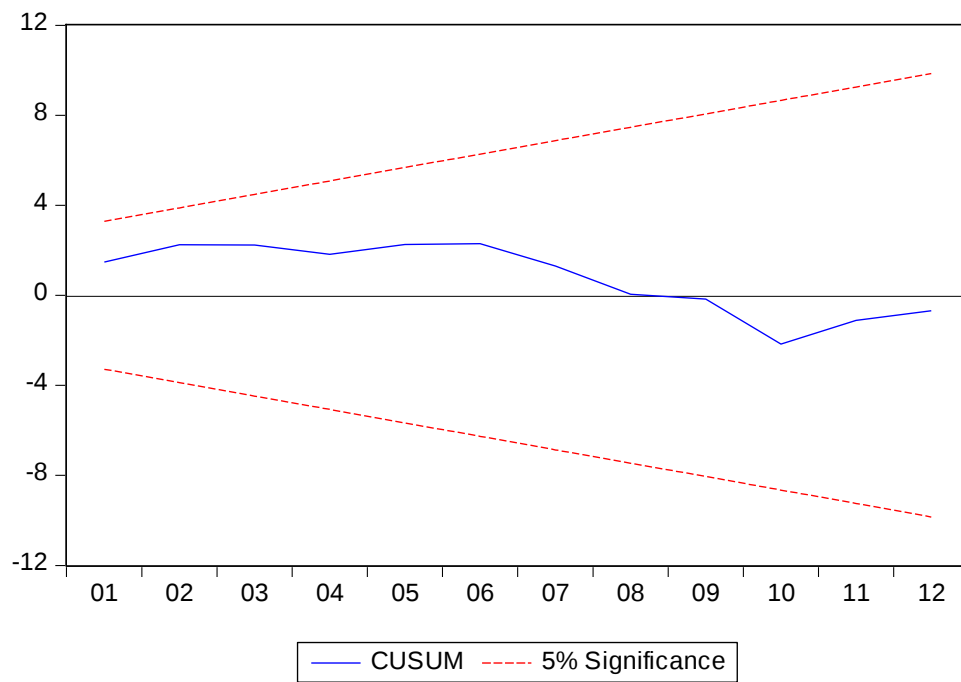
Heteroskedasticity Test: ARCH

F-statistic	0.361989	Prob. F(4,19)	0.8325
Obs*R-squared	1.699482	Prob. Chi-Square(4)	0.7908

Wald Test:

Equation: Untitled

Test Statistic	Value	Df	Probability
F-statistic	4.769118	(5, 8)	0.0257
Chi-square	23.84559	5	0.0002



Import demand model results:

Ramsey RESET Test

Equation: UNTITLED

Specification: D(LNIMPO) C DUMMY1 D(LNGDPMW) D(LNGDPMW(-1))
D(LNGDPMW(-2)) D(LNCPISA) D(LNCPISA(-1)) D(LNCPIMW)
D(LNCPIMW(-1)) D(LNFRS) D(LNEXCH) D(LNEXCH(-1)) D(LNEXCH(-2))
LNIMPO(-1) LNGDPMW(-1) LNCPISA(-1) LNCPIMW(-1) LNFRS(-1)
LNEXCH(-1)

Omitted Variables: Powers of fitted values from 2 to 3

	Value	Df	Probability
F-statistic	2.676390	(2, 9)	0.1224
Likelihood ratio	14.00157	2	0.0009

Ramsey RESET Test

Equation: UNTITLED

Specification: D(LNIMPO) C DUMMY1 D(LNGDPMW) D(LNGDPMW(-1))
D(LNGDPMW(-2)) D(LNCPISA) D(LNCPISA(-1)) D(LNCPIMW)
D(LNCPIMW(-1)) D(LNFRS) D(LNEXCH) D(LNEXCH(-1)) D(LNEXCH(-2))
LNIMPO(-1) LNGDPMW(-1) LNCPISA(-1) LNCPIMW(-1) LNFRS(-1)
LNEXCH(-1)

Omitted Variables: Powers of fitted values from 2 to 4

	Value	Df	Probability
F-statistic	2.697462	(3, 8)	0.1164
Likelihood ratio	20.96714	3	0.0001

Heteroskedasticity Test: ARCH

F-statistic	0.396638	Prob. F(1,27)	0.5341
Obs*R-squared	0.419851	Prob. Chi-Square(1)	0.5170

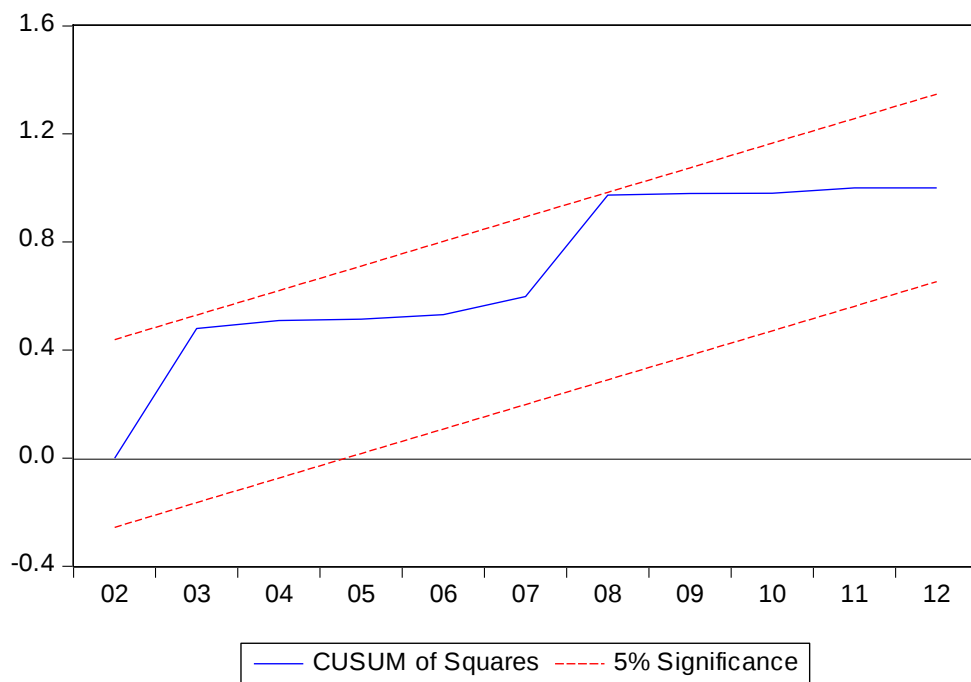
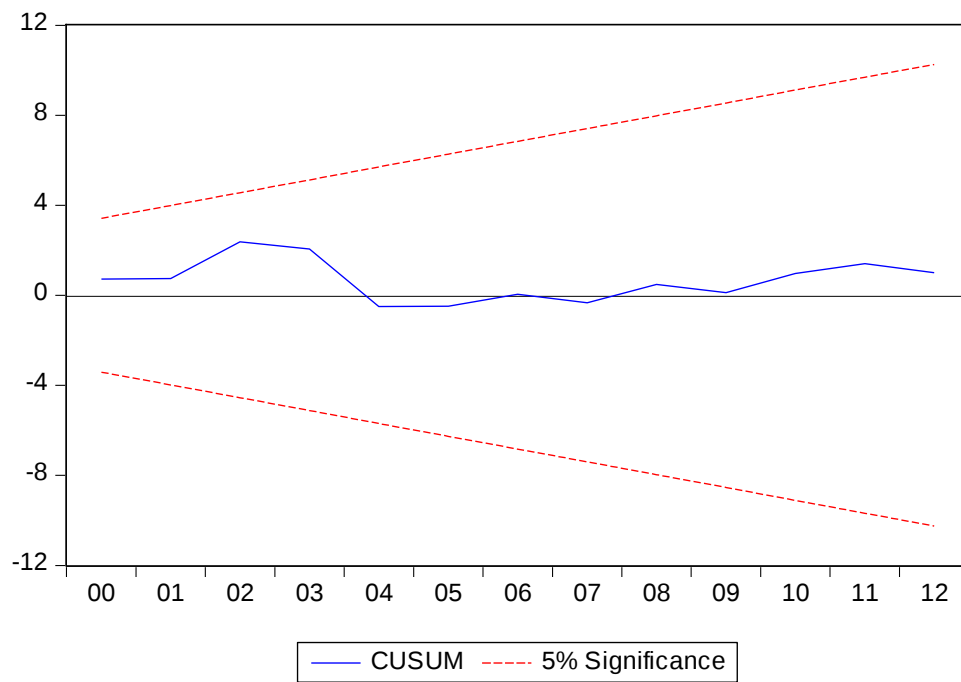
Heteroskedasticity Test: ARCH

F-statistic	0.068507	Prob. F(4,21)	0.9908
Obs*R-squared	0.334901	Prob. Chi-Square(4)	0.9875

Wald Test:

Equation: Untitled

Test Statistic	Value	Df	Probability
F-statistic	3.002440	(6, 11)	0.0545
Chi-square	18.01464	6	0.0062



Appendix 2: Cointegration tables and Trade Competitiveness Tree

For the F-statistic in both models the researcher used Table C1.iii.

Table C1.iii: Case III: unrestricted intercept and no trend

	0.100		0.050		0.025		0.010		mean		variance	
k	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$
0	6.58	6.58	8.21	8.21	9.80	9.80	11.79	11.79	3.05	3.05	7.07	7.07
1	4.04	4.78	4.94	5.73	5.77	6.68	6.84	7.84	2.03	2.52	2.28	2.89
2	3.17	4.14	3.79	4.85	4.41	5.52	5.15	6.36	1.69	2.35	1.23	1.77
3	2.72	3.77	3.23	4.35	3.69	4.89	4.29	5.61	1.51	2.26	0.82	1.27
4	2.45	3.52	2.86	4.01	3.25	4.49	3.74	5.06	1.41	2.21	0.60	0.98
5	2.26	3.35	2.62	3.79	2.96	4.18	3.41	4.68	1.34	2.17	0.48	0.79
6	2.12	3.23	2.45	3.61	2.75	3.99	3.15	4.43	1.29	2.14	0.39	0.66
7	2.03	3.13	2.32	3.50	2.60	3.84	2.96	4.26	1.26	2.13	0.33	0.58
8	1.95	3.06	2.22	3.39	2.48	3.70	2.79	4.10	1.23	2.12	0.29	0.51
9	1.88	2.99	2.14	3.30	2.37	3.60	2.65	3.97	1.21	2.10	0.25	0.45
10	1.83	2.94	2.06	3.24	2.28	3.50	2.54	3.86	1.19	2.09	0.23	0.41

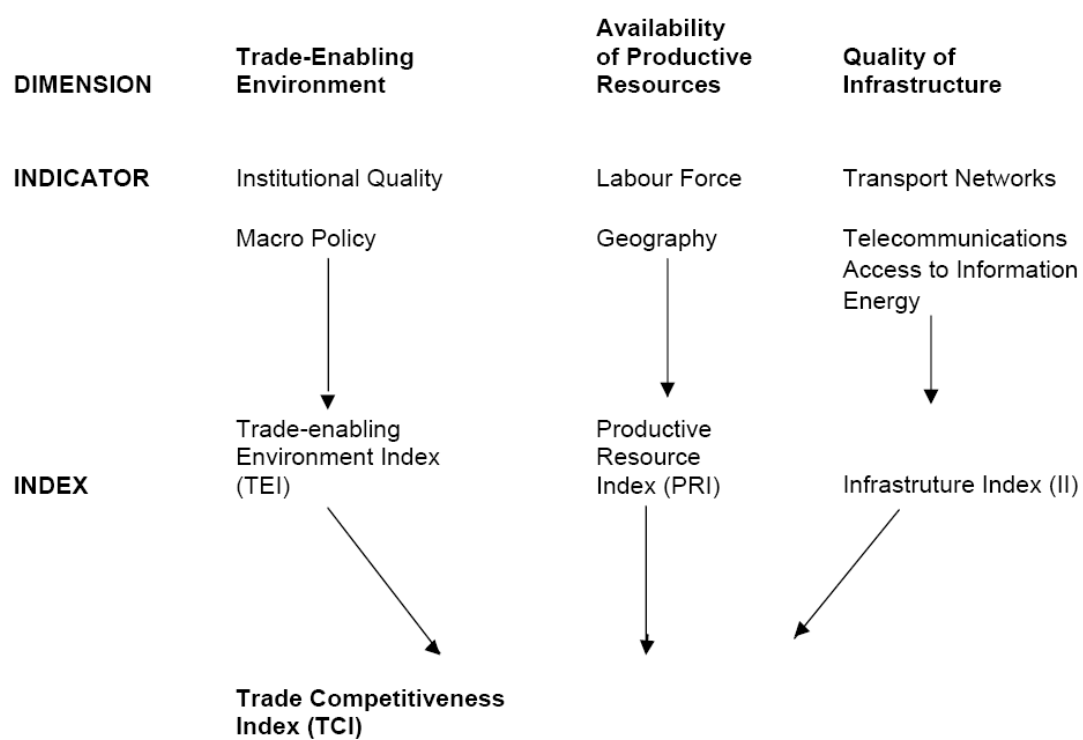
For the t-statistic in both models the researcher used Table C2.iii.

Table C2.iii: Case III: unrestricted intercept and no trend

	0.100		0.050		0.025		0.010		mean		variance	
k	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$	$I(0)$	$I(1)$
0	-2.57	-2.57	-2.86	-2.86	-3.13	-3.13	-3.43	-3.43	-1.53	-1.53	0.71	0.71
1	-2.57	-2.91	-2.86	-3.22	-3.13	-3.50	-3.42	-3.82	-1.53	-1.80	0.71	0.81
2	-2.57	-3.21	-2.86	-3.53	-3.13	-3.80	-3.43	-4.10	-1.53	-2.04	0.72	0.86
3	-2.57	-3.46	-2.86	-3.78	-3.13	-4.05	-3.43	-4.37	-1.53	-2.26	0.72	0.89
4	-2.57	-3.66	-2.86	-3.99	-3.13	-4.26	-3.43	-4.60	-1.53	-2.47	0.72	0.91
5	-2.57	-3.86	-2.87	-4.19	-3.13	-4.46	-3.43	-4.79	-1.53	-2.65	0.72	0.92
6	-2.57	-4.04	-2.87	-4.38	-3.13	-4.66	-3.43	-4.99	-1.52	-2.83	0.72	0.93
7	-2.57	-4.23	-2.86	-4.57	-3.13	-4.85	-3.43	-5.19	-1.52	-3.00	0.72	0.94
8	-2.57	-4.40	-2.87	-4.72	-3.13	-5.02	-3.43	-5.37	-1.52	-3.16	0.72	0.96
9	-2.57	-4.56	-2.86	-4.88	-3.13	-5.18	-3.42	-5.54	-1.52	-3.31	0.72	0.96
10	-2.57	-4.69	-2.86	-5.03	-3.12	-5.34	-3.43	-5.68	-1.52	-3.46	0.72	0.96

Source: Pesaran and Shin (2001), page 34 and 36.

Elements of the Trade Competitiveness Index



Source: Economic Commission for Africa – ECA.