



**NORTH-WEST UNIVERSITY
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**A COMPARATIVE ANALYSIS OF THE DETERMINANTS OF SOUTH AFRICA'S
EXPORT PERFORMANCE IN SELECTED SADC COUNTRIES**

BY

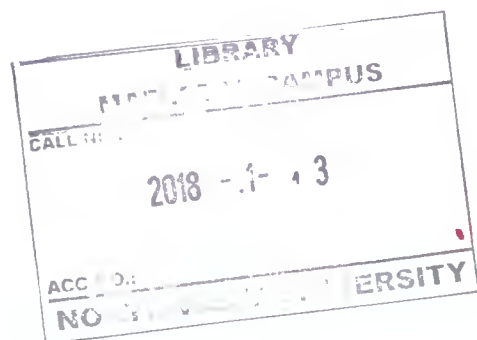
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**Dissertation Submitted in partial fulfilment of the requirements for the
award of the degree MCOM in ECONOMICS in the faculty of commerce and
administration at the North West University, Mafikeng Campus.**

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DECLARATION

I, the undersigned, hereby declare that this dissertation “A comparative analysis of the determinants of South Africa’s export performance in selected SADC countries” is my own original work and that it has not been presented at any other university for any other or similar degree awarded.

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DEDICATION

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ACRONYMS

AR- Autoregressive

AEO – African Economic Outlook

ASGISA - Accelerated Shared Growth Initiative of South Africa

ECOWAS - Economic Community of West African States

DRC – Demographic Republic of Congo

ER – Exchange Rate

FEM – Fixed Effect Model

FDI – Foreign Direct Investment

FMOLS – Fully Modified Ordinary Least Squares

GDP – Gross Domestic Product

GMM – Generalised Method of Moments

HO – Heckscher Ohlin

Ho – Null Hypothesis

H₁ – Alternative Hypothesis

IPAP - Industrial policy action plan

IPS – Im, Pesaran and Shin

LLC – Levin Lin and Chu

NTT – New Trade Theory

IDC – Industrial Development Corporation

OLS – Ordinary Least Squares

REM – Random Effect Model

SA – South Africa

SADC- Southern African Development Community

WTO – World Trade Organisation

COMESA - Common Market for Eastern & Southern Africa

EAC - East African Community

GMM - Generalised Method of Moments

2SLS - Two-Stage Least Squares

VEC - Vector Error Correction

PMG - Pooled Mean Group

SACU – Southern African Custom Union

DOLS - Dynamic Ordinary Least Squares

BRICT – Brazil, Russia, India, China, Turkey

NDP – National Development Plan

ABSTRACT

In the international trade market, exports are known as one of the fundamental key players and are regarded as the driving instrument for every prosperous economy, hence, the National Development plan of 2030 had made exports the main concern by stating that exports must increase by 6% in 2030. Therefore, It is crucial to identify the determinants of export performance since South Africa and SADC economies rely on exports. The primary objective of the study is investigated as a comparative analysis of the determinants of export performance in South Africa's and selected SADC countries. The study consist of a balanced panel of 161 observations consisting of seven countries covering the period from 1992-2014. The study applied the panel data techniques and incorporated the famous gravity model. In addition, the study applied the newly FMOLS estimation approach.

The results of the study depict that South Africa's GDP, SADC GDP, distance, exchange rate, foreign direct investment, openness of trade and land-locked variables in the model are found to be significant and have an effect on exports performance. However, FDI resulted to be negative and statistically insignificant. Therefore, since distance is empirically found not to have an impact on other SADC countries to import in the study, the transport costs of a specified mode of transport or communication may be considered to replace the distance variable.

This study recommends that in order to enhance the export performance in South Africa and selected SADC countries, policy makers should embark on attracting other countries outside the SADC region to accelerate trading by diversifying their exports, since, openness of trade is significant to these economies. Moreover, maintaining an effective exchange rate, while, giving export firms the opportunity of accessing the foreign exchange to obtain the items needed for the production process which will encourage exports through the competitive market.

Key words: Export performance, SADC, Economic growth

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In the international trade market, exports are known as one of the fundamental key players and are regarded as the driving instrument for every prosperous economy, hence, the National Development plan of 2030 had made exports the main concern by stating that exports must increase by 6% in 2030. The growth of exports may minimize the unemployment rate, trade balance and improve the standard of living (Lee and Habte-Giorgis, 2004). Henceforward, the need to better understand and analyse the achievement or failure of firms that distribute and trade domestically produced goods overtime in other countries.

Trade between developed and developing countries has increased substantially resulting in the significance of export performance. Moreover, Kusi (2002) suggests that through the adoption of export-led growth in South Africa in the 1990's, the country has had a significant impact on the acceleration of exports through the help of globalization. However, South Africa must ensure to redirect their policies from resource endowments and export –led growth but instead focuses on diversifying their exports to other sectors (Petersson, 2005).

The global financial crisis which affected developed and developing countries in 2007 to 2009 made the firms in those economies to resort to increasing the international trade to recover from the crisis. However, in most developing economies the firms are dependent on the bilateral trade market, for this reason, the countries must ensure that they remain competitive to achieve and sustain higher economic growth (Matanda and Freeman, 2009). Conversely, recently the South African GDP growth decreased from 1.5% in 2014 to 1.3% in 2015 and unfortunately, it is forecasted to weaken to 0.7% in 2016 (AEO 2016). This resulted in the lack of investors due to the poor performance of the business and consumer confidence, minimum commodity prices abroad, low commodity demand from China and irregular capital flows.

The SADC countries are categorized by different stages of economic development and structures that are heterogeneous and as a result, depend mostly on two sectors namely resource endowments and agriculture. The main destinations found for South Africa exports are namely China, United States, Japan, Botswana, Namibia, India, Germany, United Kingdom, Mozambique and Netherlands (UN Comtrade, 2014).

According to the HS (Harmonized System), classification of the 1992 revision the composition of South Africa's top exports are diamonds, gold, platinum, coal briquettes and iron ore to the rest of the world. However, SADC leading exports consist of wheat, maize, sugar, food preparation, soya-bean oil and sunflower oil (DAFF 2013). Moreover, Keane *et al.* (2010) discovered that a large portion of imports from the SADC region was to South Africa, hence, in their findings, they show that South Africa in the early 2000s had sourced 59.0 percent of intra- SADC trade.

A large portion of South Africa exports depends on the manufacturing sector. Rangasamy (2009) indicated that the dependence on manufacturing exports must be substituted with something else to avoid the risk posed to South Africa and some of the SADC countries that are dependent on the exports. This may make them easily susceptible to the external market flows within trade. If this situation is not managed effectively then it is highly anticipated that a catastrophe will occur.

The study aims to use the gravity model which can help in outlining the determinants of export performance between South Africa and other SADC countries. There have been studies that have examined the determinants of export performance in various economies by Edward and Garlick (2008), Fugazza, (2004), Cerra and Saxena (2002) and Edwards and Alves, (2006). However, there are few studies (Mjeed and Ahmad, 2006, Naudé, 2000 and Marquez-Ramos, 2007) that primarily focus on determinants of export performance hence, it is important to study the determinants of export performance of South Africa and other selected SADC countries based on the gravity model and FMOLS approach. This study will add to the existing literature review by exploring the flow of determinants of export performance in South Africa and other selected SADC countries.

1.2 PROBLEM STATEMENT

Trade with the SADC region bestows South Africa with extensive trade opportunities that make it easier to infiltrate the market which consists of 15 economies. However, the importance of investigating the determinants of export performance enables domestically economies to fend for themselves and possibly make them less volatile to any external shocks of bilateral trade. Likewise, South Africa and other SADC economies are mostly dependent on exports for a sustainable economy growth. Furthermore, their internal and external factors of determinants of export performance are found both in developed and developing countries

that ought to be considered since they comprise mainly of supply conditions such as access to technology, the location elements, exchange rates and the competition among the firms.

There are clear economic differences between developed and developing countries that lead to a different behaviour among them in the determinants of bilateral trade flows. Thirlwall (2000) state that globally, countries result in not creating trade goods and services but rather resort to trade diversion. Therefore, many developing countries are found to have critical economic vulnerabilities, such as inflation rates, enormous deficits, high unemployment rate, poverty, lack of competitiveness and higher income inequality. Henceforward, developing economies are characterised by higher levels of trade protection than developed countries which result in a number of them remaining dependent on foreign aid and pursuing the creation of favourable trade treaties.

The need for tariffs to be eradicated all together is imperative among African countries and the global continents. This is because, this will result in exports being fully exploited without any barriers. Moreover, there is a need to minimise the internal duties that will further harmonise trade regulations by introducing and implementing more trade agreements, specifically the recent one which is the Tripartite Free Trade Area (TFTA), which involves the SADC countries, EAC and COMESA. This agreement will enable those who are part of it to share the same Gross Domestic Product based on the 54 countries with over 600 million of citizens. However, the trade agreement will possibly be implemented in 2017 irrespective of the fact that the informal links may make it possible for trade flows to increase because the make out 12% in total of the flows and with African continent having major reserves of gas, oil and iron ore surely will be lucrative for the neighbouring countries to exploit these reserves and benefit from them.

The correlation of the international trade between South Africa and other SADC countries is relatively sturdy and growing at a slower rate than estimated. It is startling to find that the economic growth in South Africa has declined to 1, 4 % thus failing to meet its mere proposed result of 2% in the last quarter, (International monetary fund, 2015). This is alarming since it indicates that the market access and economies of scale of the regional integration have been growing at a slower rate than expected to boost development and growth in the country.

South Africa has been known for its quality of exports internationally and has made progress in previous years regarding the export performance. However, there is a concern regarding the goods that have been exported that result to shortages due to the minimum resources in the country which are, based on the manufacturing sector. As a result the people in the country are faced with the consequences then ultimately resorting to importing the goods. Van der Walt (2007) argues that this may be avoided if the South African economy ensures that it is up to date with the current international trends that change from time to time in the trade market. In addition, there are external barriers inhibiting exports to the SADC region that manufacturers are faced with such as knowledge of new technological products, qualified personnel, transport costs and shipping arrangements. Therefore, more investment from government and investors is essential in ironing out these challenges.

Greater competition is necessary to drive the efficiencies required for our firms to compete more effectively globally and embrace export opportunities. Such export growth is essential for sustained and faster future economic growth and job creation in South Africa. It is therefore in our interest encourage economic growth. This could be achieved if there is support by the private sector and government. The evolution of current account balances and growth of products has been through the promotion of either export-led growth or import substitution strategy.

South Africa and SADC countries rely on exports for a sustainable economic growth, hence, the significance of identifying the determinants of export performance. The export performance of economies is dependent on the external factors such as openness of trade and exchange rate. Moreover, the competitiveness of global trade hinge on export pricing. As the pricing of commodities, is reflected through the exchange rate. Therefore, there must be government policies in place to manage the volume of exports. These policies can help to increase or sustain the export performance.

1.3 OBJECTIVES OF THE STUDY

The primary objective of the study is to explore the link between various determinants of export performance in South Africa with a comparison to selected SADC countries for the period of 1992 to 2014.

- Identify the fundamental determinant factors of export performance in South Africa and other selected SADC countries.

- Link the determinants of export performance of South Africa with other selected SADC countries using gravity model theory in conjunction with the appropriate panel data model.
- To articulate relevant policies that can accelerate trade flows and benefit all SADC countries.

1.4 RESEARCH QUESTIONS

The study attempts to give answers to the following questions:

- Can the correlation of GDP and export performance be proven to have a significant impact on trade?
- Are external factors such as exchange rate, gross domestic product, foreign direct investment and trade openness are the main determinants affecting export performance?
- Does the gravity model prove to be significant in South Africa and other selected SADC countries?

1.5 HYPOTHESES

The study tests the following hypotheses:

H0: There is no significant relationship between the fundamental determinants and export performance in South Africa and other selected SADC countries.

H1: There is a significant relationship between the fundamental determinants and export performance in South Africa and other selected SADC countries.

1.6 SIGNIFICANCE OF THE STUDY

The study explores the growth of export performance covering the period of 1992-2014 based on the fundamental determinants. Developing countries are found to be dependent on exports since they contribute to better living standards and resulting in improved economic conditions. There is therefore, the need to outlining the determinants of exports since instability of exports may impact negatively on the growth of the economy. South Africa is still a developing country which has proven to be the leading economy found in the SADC

region, in view of the fact that it has better regulated financial institutions, its trading policies are liberal, and it is also technologically advanced and has skilled labour.

The integration between countries and evolution of liberalization has proven to be a key factor in the acceleration of total exports (Anderson, 2004). Furthermore, all the developing countries participating in the integration between them, including the SADC region in terms of achieving economies of scale through diversifying the exports and enhancing competitiveness in the global market will enable these economies to withstand the fluctuating commodity prices and pave a way to improve the export performance.

The findings obtained in the study will give policy makers more insight on the various determinants of export performance that may have a positive or negative effect on goods or services. Studying how effective the gravity model is towards the South African trade will add on the existing literature on this topic. The results of this paper can enable policy makers to come up with innovative policies that will promote exports. And finally, the findings will give researchers and exporting firms more insight on the trading system that supports the acceleration of export performance.

1.7 STRUCTURE OF THE STUDY

The study is organized into six chapters as follows: Chapter 1 outlines the introduction. Chapter 2 provides an overview of the export performance of South Africa and other SADC countries. Chapter 3 presents the theoretical literature and empirical literature concerning the export performance and the gravity model. Chapter 4 presents the methodology which outlines the introduction, model specification and procedure tests. Chapter 5 outlines the empirical results and interpretation of the tests that will be conducted. Chapter 6 consists of the conclusion and policy recommendations.

CHAPTER TWO

AN OVERVIEW OF THE EXPORT PERFORMANCE OF SOUTH AFRICA AND OTHER SADC COUNTRIES

2.1 INTRODUCTION

Exports are important to the economy as they are regarded to be the one sector that may generate growth promptly. South Africa is known for its comparative advantage in primary and manufacturing commodities which are dependent on the natural resources, as a result, have accelerated export growth. However, the pattern of protection found in exports and imports commodities have hindered the progress of non-commodity manufacturing products which are vital in the competitive global market of trade.

The mining sector remains a core part of the South African economy, responsible for around 9% of GDP and 38% of exports. It remains critical that the country maximises the opportunities provided by the linkages and multipliers that exist between mining and manufacturing in order to extract full value from South Africa's enormous resource endowment.

It is imperative for every country to expand its exports, but their challenges that come with this are the volatility of the exchange rate, increasing debt deficit, lack of infrastructure, political crises found in countries such as Kenya and Zimbabwe, transport costs and the energy supply must all be taken into consideration since they all have a negative effect on the progress of expanding exports.

Export performance helps the countries to classify the progress of the existing exports or improve on them and possibly introduce new products that will be demanded in the market. The South African economy consists of a broad export basket and the study attempts to focus on aggregate volume of exports for compressive results. The macroeconomic policies and price incentives in the country vary for every export sector. South African exports are dependent on primary and manufacturing commodities. However, the study only focuses on aggregate volume of exports.

2.2 Comparative analysis

The economic structures within the SADC region are different due to the population sizes, capital flows, access to foreign markets and other external factors, hence, the need to give an analysis of the economies individually since they are heterogeneous.

2.2.1 South Africa

The South African country is known to have the biggest economy in the SADC region. The economy is made out of raw commodity exports and value-added goods, such as motor vehicles manufacturing sector include chemicals, food, steel, iron, platinum and transport equipment. However, the country has found itself battling to increase its GDP which has been declining on a yearly basis; for instance in 2014 GDP was 1.5% which resulted in a decrease of 0.2% making it be 1.3% in 2015 and reaching a devastating 0.7% in 2016 (AEO, 2016). Thus, the lack of investment, low commodity prices which resulted in the low demand for commodities in China, political instability, electricity shortages and ongoing irregular capital flows have hampered the growth of the economy. Moreover, the pattern of trade in South Africa has enabled it to reach and make ties with international countries such as China, the United States, Japan, and other SADC region countries Botswana and Namibia (UN Comtrade, 2014). The country may have a sound demand of imports from SADC countries; however, this is not enough to sustain export performance, hence, the need to put in place effective policies which will retain as well as attract the investments which can decrease the unemployment rate through the formation of jobs. The country should also promote other electricity sources such as solar systems and nuclear energy to avoid further shortages of electricity which negatively affect the production of mining and manufacturing.

2.2.2 Angola

Angola's economy is the 54th biggest economy in the world. It has a diversified composition of exports such as diamonds, crude petroleum, gas, fish, wildlife, agricultural products, sea and marine. However, the main sectors that drive the economy are oil and fishing. The country like most developing countries is faced with issues such as regional economic imbalances, poverty and income inequality. The low crude oil prices have resulted in the decrease of GDP by 0.5%, currently it is at 3.3% in 2016 while in 2015 it was 3.8% (AEC, 2016). According to OEC (2014), the main destinations for exports in Angola were China (\$27.7B), United States (\$5.1B), India (\$5.07B) and South Africa (\$2.03B). It's, major

import partners are China, South Korea, Portugal, the United States and South Africa. Moreover, the country remains highly volatile to external shocks hence, the need for diversification by means of implementing the mitigation of oil crisis strategy where other substitutes of oil must be produced to secure and increase revenue. This can be achieved through attracting foreign direct investment, improving infrastructure and decreasing the supply of imports to ensure that export growth is maintained and foreign currency earnings are generated.

2.2.3 Zambia

The Zambian economy is centred on minerals such as copper, as well as wildlife, timber and natural vegetation. However, for a decade the country has been negatively affected by the worst economic crisis resulting in the reduced investment budget due to, the decline of copper prices from lack of demand from China, shortage of electricity supply and the manner of which the state is governed. This resulted in the economy to be one of the poorest countries in the SADC region. The adoption of diversification policies has been introduced with the aim of minimising poverty and increasing exports to ensure a sustained economy. Mudenda (2007) states that the foreign exchange earner in Zambia is copper products namely copper rods and wires where they accounted for 72% in 2000 of total export earnings and 65% in 2005. Furthermore, recently the agriculture output has declined drastically where by the maize output was a low 22% which resulted in the GDP of 3.7% in 2015 while it was 5.0% in 2014 (AEO, 2016). In 2014, the country major export partners were Switzerland, China, DRC, South Africa, Singapore and Australia with copper, inorganic chemicals, metals and precious stones being the most demanded exports (UN Comtrade, 2014). Thus, the introduction of export promotion strategy governed by the state and private sector to ensure the increase of export performance is needed to promote economic growth.

2.2.4 Malawi

The Malawian economy for over three decades has been faced with a slower export growth rate since it mostly imports more goods relative to its exports. This has worsened the state of the economy which is dependent on Tobacco, sugar, tea, cotton, groundnuts, coffee, fish, industrial machinery, spices and wildlife as main exports. The economy needs to change the export basket and make it versatile to suit the demand of international trade globally. The main export partners are Belgium, Mozambique, South Africa, Zimbabwe and China (UN

Comtrade, 2014). Therefore, the country must explore ways on how to improve its production of minerals and level of education. The country should also initiate policies that will accelerate the agriculture sector (dependent on weather conditions) as it can increase the export revenue earnings by, controlling its external shocks such as inflation. Increasing the access to seaports by improving the Shire-Zambezi waterway and diversify its production can also lead to the improved economy (Mapemba, 2006). Moreover, the narrow export base of the country resulted in GDP of 5.7% in 2014 while it declined to 2.9% in 2015. This was a consequence of the foreign exchange demand which decreased the local currency and the rapidly growing budget deficit, which was approximately at 6.0% of GDP (AEO, 2016).

2.2.5 Mozambique

Mozambique has been one of the few of the SADC countries to have a GDP growth of over 7 % in the last decade. In addition, the economic growth was 6.3% in 2015 and is expected to increase in 2016 to 6.5% (AEO, 2016). This was because of the poor government expenditure, political instability and a decrease of FDI and export earnings. The country's export structure consists of prawns and other sea-food, coal, gems, beaches, fauna, flora, gas, wood, precious stones, marble, heavy sands, oil, mineral fuels and Aluminium. Moreover, the major export destinations are Netherlands, South Africa, Singapore, India and United Kingdom (UN Comtrade, 2014). However, the enormous budget deficit accumulated over the years has affected the economy negatively irrespective of the decline of 5.4% in 2015 (AEO, 2016). The country must strive to increase their exports through producing quality exports and minimising the demand for imports even though they're more diversified and consist of capital goods (Ubbise, 2006).

2.2.6 Mauritius

Mauritius has been regarded as one of the African countries to be ranked 46th out of 140 countries and earning the title of one of the finest performing economy (World economic forum, 2016). The economy is known for its sugar cane, beaches, sea, flora, fauna, apparel (knit and non-knit), other marine resources and electrical Machinery. The total exports destinations are France, United Kingdom, United Arab Emirates, the United States and South Africa (UN Comtrade, 2014). The GDP of 3.6% in 2014 increased to 3.7% in 2015 and may possibly rise to 3.8% in 2016 resulting from the demand of exports from the SADC region (AEO, 2016). The Mauritius economy is faced with inflationary pressures but remains

competitive in the trade market through its innovative approach that enriches urban development by focusing on 5 techno-parks and 8 smart cities and implementing policies that focus on tax incentives which will come from the private investors and improve infrastructure.

2.2.6 Tanzania

Tanzania is still a developing country which relies on mining (Diamonds, Gold, Iron), agricultural Processing (cotton, sugar, beer, cashew nuts, cigarettes, sisal twine), wildlife, salt, cement and communication sectors for economic prosperity. The principal export destinations are India, South Africa, China, Kenya and Congo (UN Comtrade, 2014). Moreover, economic growth was 7% in 2014 and with a deficit of 30.2% of GDP in 2014/15 (AEO, 2016). However, the challenges found to pose a threat to the performance of exports and the economy are telecommunications, lack of land ownership, unemployment, poor infrastructure, counterfeit goods which result in unfair competition, lack of education and poor performance of firms (Rutasitara, 2006). There is the urgency that the country must improve its research structure and sustain political sustainability to possibly draw investments which are vital in the growth of the economy.

2.2.7 Namibia

The Namibian economy is classified to be small but has benefited substantially through the promotion of trade liberalization. However, the low commodity prices had a pessimistic impact on economic growth which declined to 4.4% in 2015 from 6.4% in 2014 (AEO, 2016). The total exports in the country are diamonds, copper, uranium, gold, silver, lead, tin, lithium, cadmium, tungsten, zinc, salt, hydropower and fish. Through the regional integration the country has shown strong relations between South Africa and the rest of the world (TIPS, 2006). Furthermore, the top export trading partners are Botswana, South Africa, Switzerland, Korea-South and Angola, while main import trading partners are South Africa, Korea-South, Bahamas, Germany and Congo (UN Comtrade, 2014). The Namibian economy has economic shortfalls that affect its export performance such as inadequate international reserves, high unemployment and the frail South African economy which is compromising the SACU reserves. However, with sound macroeconomic management, access to the cold Benguela ocean, political stability and exploitation of other mines in the country, the country will possibly result in an increase the total exports in 2017.

Table: 2.1 Composition of SADC

SADC countries	Independence/liberation year	Export commodities	Trade reforms and agreements
Angola	11 November 1975	Oil and fishing are the main sectors diamonds, gas, fish, wildlife, agricultural products, sea and marine sources	The country is part of the SADC. They are still negotiations on Free Trade Area (FTA).
Botswana	30 September 1966	Diamonds, copper, nickel, wildlife potash, livestock processing and textiles.	European Community through the COTONOU Agreement. Furthermore, Botswana is also a member of the Southern Africa Customs Union (SACU), the SACU-USA Free Trade Area (FTA) negotiations. Hence, SACU is negotiating the FTA arrangements with the European Free Trade Agreement (EFTA), MERCOSUR, India and China. Lastly, it's part of the southern African global competitiveness hub.
Democratic republic of Congo	30 June, 1960	Gold, diamond, base metals, coal, oil and gas, wildlife, water, uranium, coffee, sugar, rubber, cotton, fish, wood, banana, cocoa, tobacco, electric energy and copper	The country is member of the SADC
Lesotho	4 October, 1966	Diamonds, wildlife, mohair, wool and water	The country benefits from AGOA and forms part of the members of SADC and SACU
Mauritius	12 March 1968	Sugar cane, beaches, sea, flora, fauna and other marine resources	Gains from COMESA, AGOA and SADC FTA. Lastly the country is part of the SADC region.
Malawi	July 6, 1964	Tobacco, sugar, tea, cotton, groundnuts, coffee, fish and wildlife	The country is part of the SADC; Common Market for Eastern and Southern Africa (COMESA) and It has various trade agreements specifically with South Africa, Zimbabwe, Botswana, Mozambique and Canada respectively.
Mozambique	June 25, 1975	Prawns and other sea food,	The country is part of SADC along with

		coal, gems, beaches, fauna, flora, gas, wood, precious stones, marble, heavy sands.	the SADC Trade Protocol and Benefits from the Cotonou but has been replaced with Economic Partnership Agreement (EPA). AGOA and Everything But Arms(EBA)
Namibia	21 March 1990	Diamonds, copper, uranium, gold, silver, lead, tin, lithium, cadmium, tungsten, zinc, salt, hydropower and fish	Forms part of the members of SADC and SACU and benefits from AGOA.
Seychelles	29 June 1976	Fish (mostly tuna), cinnamon, copra	Gains from COMESA, AGOA and SADC FTA. Moreover, Forms part of the members of SADC
Tanzania	9 December 1961	Cotton, coffee, cloves, cashew nuts, tea, tobacco, minerals, wildlife	The country is a member of SADC and participates in the following agreements: The General Agreement of Trade in Services (GATS), Trade-related Intellectual Property Rights (TRIPs) and Trade-related Investment Measures (TRIMs).
Zambia	24 October 1964	Minerals, wildlife, timber and natural vegetation, water	The country is a member of SADC. Also gains from COMESA, AGOA and SADC FTA.
Zimbabwe	18 April 1980	Mining (coal, gold, platinum, copper, nickel, tin, clay, numerous metallic and non-metallic ores), steel, wood products, cement, chemicals, fertilizer, clothing and footwear, foodstuffs and beverages.	Forms part of the members of SADC, COMESA and SACU.
Swaziland	19 September 1964	Agricultural production includes sugarcane, cotton, corn, tobacco, rice, citrus, pineapples, sorghum, peanuts, cattle, goats and sheep.	Furthermore, benefits from AGOA. Forms part of the members of SADC and SACU. Southern Africa (COMESA), ACP group of countries and a de-facto member of the EU-SA Trade, Development and Cooperation Agreement (TDCA).
South Africa	27 April 1994	Raw commodity exports and	The country is involved with the EU-South

		value-added goods, such as motor vehicles manufacturing sector include chemicals, food, transport equipment, and iron, platinum and steel.	Africa Trade and Development Co-operation Agreement, European Free Trade Association(EFTA).Furthermore, benefits from AGOA and forms part of the members of SADC and SACU
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Table: 2.1 - This is a summary of the year in which the SADC countries became liberalised; identifies the major commodities being exported in their economies and the agreements that are in place today.

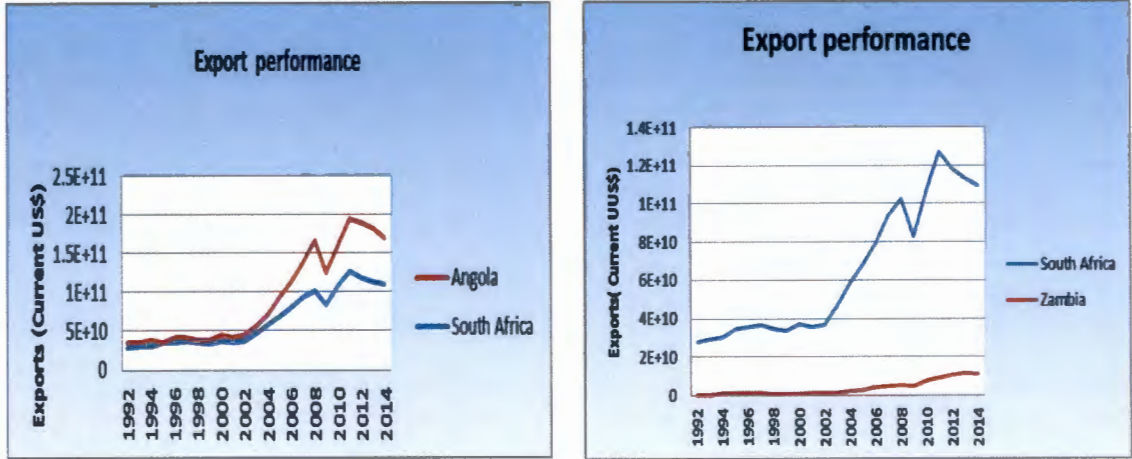
2.3 South African export performance

The subdued low levels of demand of exports over the years has affected the export performance, hence, the necessity to focus on global trade through ensuring that the local businesses identify and take on opportunities that arise in the markets. The global growth forecasted may improve South Africa’s export performance along with the weak Rand which increases the demand for exports. However, South Africa and other African countries rely on the United States for an effective and flexible protectionist trade policy to increase world trade flows.

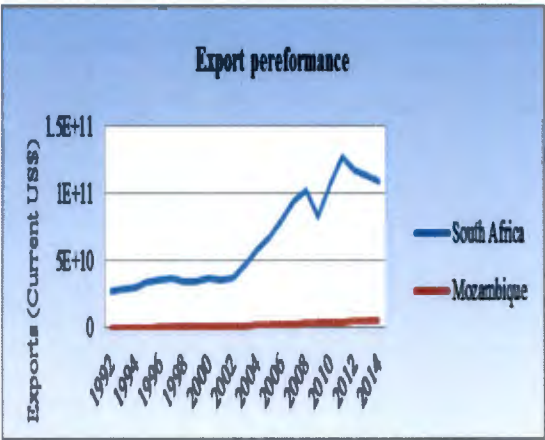
Figure 2.1 South Africa export performance trend from 1992-2014

Angola

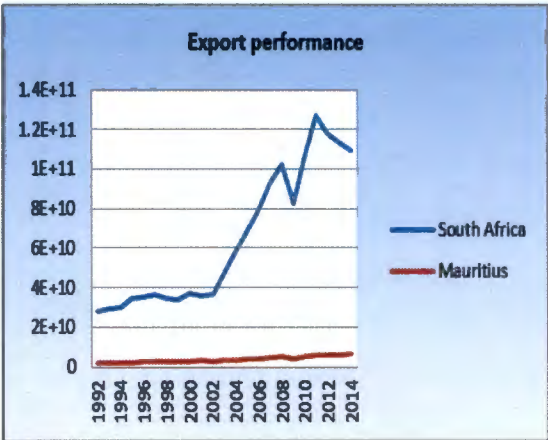
Zambia



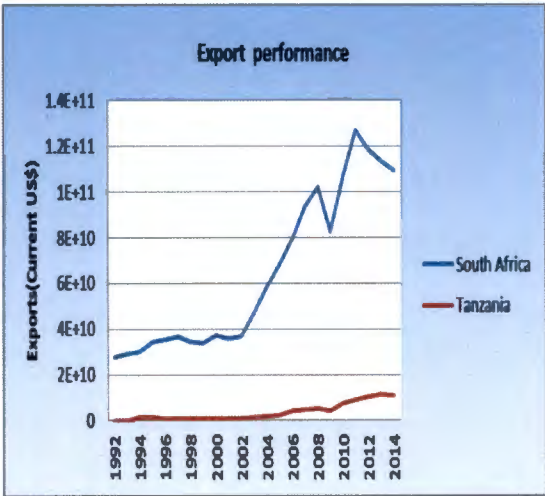
Mozambique



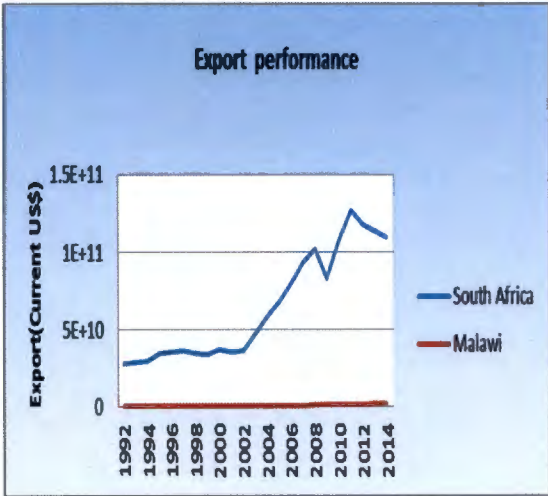
Mauritius



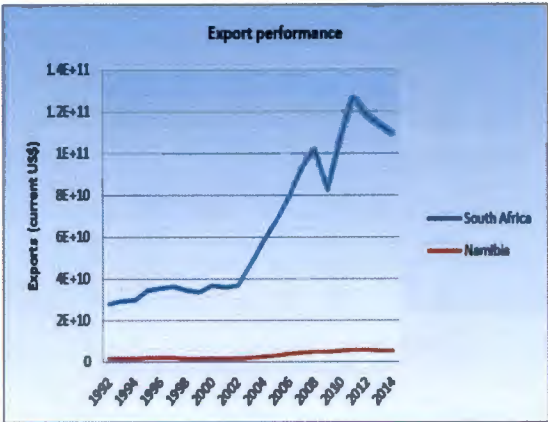
Tanzania



Malawi



Namibia



Source WTI (2014)

These trends above emphasise on the export performance of South Africa and other SADC countries. The South African trend has been increasing steadily due the finiteness of natural

resources. However, exports weakened from 2009, which were the after effects of the financial crisis that affected all economies globally. The contribution of the manufacturing sector, which along with mining was hardest hit by labour instability and infrastructure bottlenecks, has also decreased in 2009. If the stabilising influence of food and liquor production is ruled out, the picture is much worse.

Based on the graph, it is detected that from 2012 to 2014 the exports began to lose momentum and as a result, this has become a concern since it shows that the trade growth is slugging behind hence there is an on-going increase of unemployment in South Africa, Angola, Zambia, Malawi, Mozambique, Mauritius, Tanzania and Namibia.

Table: 2.2 Composition of South African exports in 2014

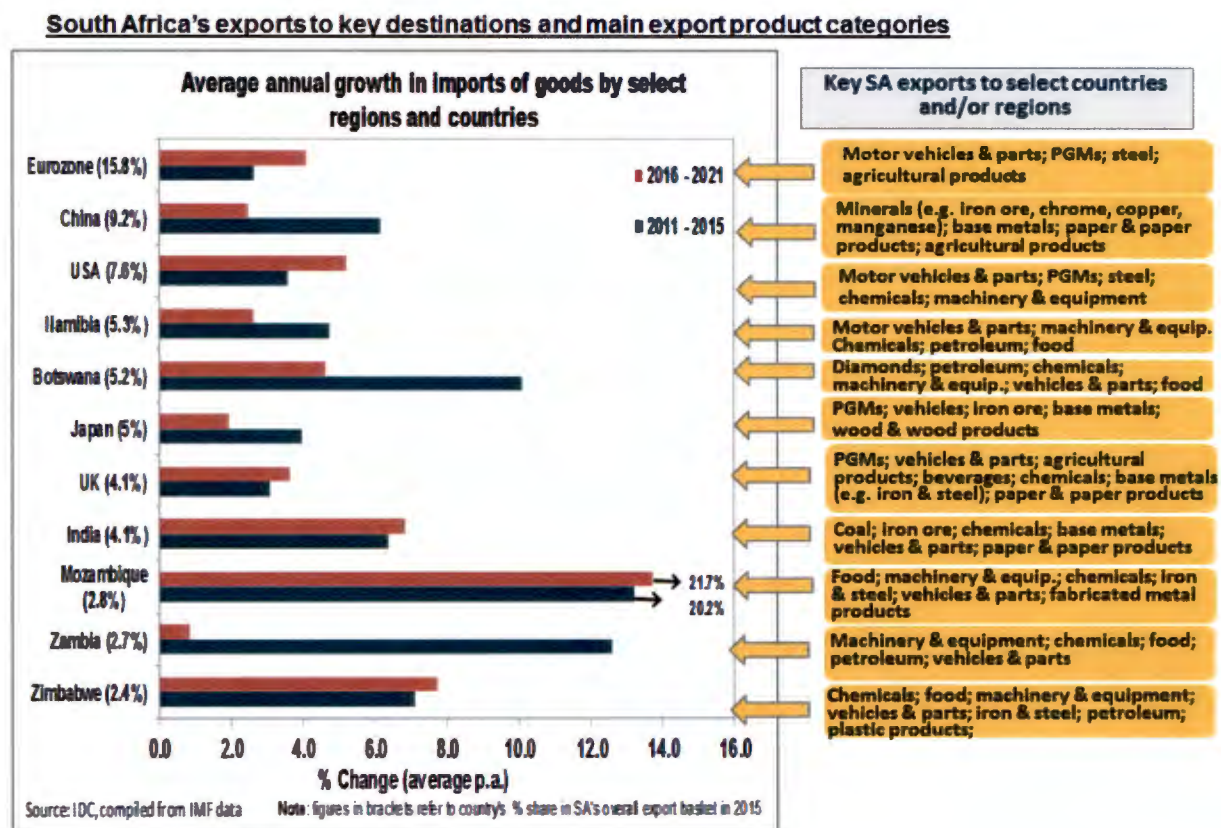
Top 10 Export Partners	Export Volume (\$)	Top 10 Export Goods (by HS Code)	Export Volume (\$)
China	\$8,680,021,942	71 (Precious Stones & Metals)	\$14,055,116,147
United States	\$6,420,025,627	26 (Ores)	\$11,695,458,727
Japan	\$4,869,325,871	27 (Oil & Mineral Fuels)	\$9,536,316,440
Botswana	\$4,774,961,315	87 (Motor Vehicles & Parts)	\$8,800,498,681
Namibia	\$4,529,160,727	72 (Iron & Steel)	\$6,956,073,048
Germany	\$4,236,185,162	84 (Industrial Machinery)	\$6,636,205,302
India	\$3,769,815,070	08 (Fruit & Nuts)	\$2,823,251,574
United Kingdom	\$3,458,918,635	85 (Electrical Machinery)	\$2,489,376,470
Mozambique	\$3,001,627,305	76 (Aluminum)	\$1,905,551,440
Netherlands	\$2,995,893,001	39 (Plastics)	\$1,585,148,074

UN Comtrade (2014)

Having access to Sub-Saharan Africa markets, South Africa plays a leading role in the region in terms of mineral wealth, industrial productivity, electricity output, and infrastructure. However, trade has increased barely with 1% of the economic growth since the 1990's thus; the expected economic growth of 5% has proven to be hard for South Africa to achieve it and as a result hindering the growth of exports. However, the exports have been growing at a slower rate than anticipated which has affected the economy growth. The exports have also

diversified from mining to manufacturing since 40% of manufactured exports were sold to Africa which indicates that more diversification is likely to be expected in South Africa in the future.

Table: 2.3 Composition of South African exports in 2015



South African exports have grown overtime and have broadened when it comes to trading partners and benefitting significantly from the European Free Trade Association (EFTA) and African Growth and Opportunity Act (AGOA). Moreover, South Africa's distributed about 37% of it's exports to Africa. According to IDC (2016) "the export basket to countries elsewhere in Africa totalled R289 billion in 2015 and was dominated by machinery and equipment (such as mining and agricultural machinery) with a 15.2% share in the basket; chemicals and chemical products (12.7%); processed food (10.2%); motor vehicles, parts and accessories (9.5%); petroleum and petroleum products (7.7%); fabricated metal products (4.8%); basic iron and steel (4.6%); and primary agricultural products (4.2%)."

2.4 Trade policies in South Africa

There have been various policies in South Africa that have contributed to the growth of trade. The kind of policies in a country must ensure that competitiveness is promoted. The global commodity price trends have affected the exports and imports hence, the policies are critical in protecting the flow of aggregate exports and imports from any external shocks. However, the South African policies that are in place indicate that the export policy favours the manufactured commodities relative to the manufactured products, which can be an indication of capital intensity that may be bias in regard to the trade policy.

The direction of the South African trade policy is based on greater protection versus free trade. Based on the first direction of greater protection, it is believed that emerging industries in the market can be allowed to grow and later sustain their industries through the opportunities that may be in the market for trade. Therefore, the government must play a key role in ensuring that these infant industries are protected and are able to grow till they do not need the protection. The second direction is free trade which ensures that the market is competitive through the reduction or extinction of tariffs between countries. The reduction of tariffs accelerates comparative advantage of products between trading countries by improving the export growth and ensuring optimum use of resources. The production choices and value added strategies are guided by the progress of technology found from the global countries.

2.4.1 Types of policies that enhance export performance

2.4.1.1 Industrial policy action plan (IPAP)

The three-year rolling industrial policy action plan (IPAP) aims to set out transversal and sector-specific programmes along with action plans that will retain, expand and diversify the industrial base of South Africa. The IPAP aims at improving structural change within the economy through focusing on value adding in the production sectors like the export-orientated sectors and are labour intensified through manufacturing.

The plan supports the need for manufactured exports through the regional integration of African countries, since, there has been a decline of exports to traditional trading partners. However, with African countries investing in better infrastructure and exploring all their natural resources will ultimately improve exports in the regional industrial integration.

Another policy is the New Growth Path (NGP) which aims at focusing on the production led growth trajectory.

2.4.1.2 Accelerated Shared Growth Initiative of South Africa (ASGISA)

The ASGISA policy aims to alleviate poverty and accelerate employment in the economy for a higher growth rate and sustained economic development. The certain shortfall to this policy may be the lack of very strong infrastructure investment drive and an overall increase in the investment to GDP ratio of more than 6 percentage points.

Binding constraints of the economy

Volatility and level of the currency - The Rand remains somewhat volatile, though the degree of volatility has been reduced. In spite of major improvements in the administration of fiscal and monetary policy, currency volatility deters investors in tradable goods and services outside of the commodity sector. At present, the relative volatility is accompanied by a currency that is overvalued in the sense that economic resources are diverted into narrow areas of investment, thus laying an unsteady foundation for the future.

The cost, efficiency and capacity of the national logistics system - Backlogs in infrastructure and investment, and in some cases market structures that do not encourage competition, make the price of moving goods and conveying services over distance higher than it should be of classified as having a production inland and is far from certain industrial markets that trade with the country.

Shortage of suitably skilled labour and spatial patterns on the cost of labour - The apartheid era has contributed to the lack of skills because of the unjust education system that was in place. There is a huge gap of skilled workers that is needed in the market and can contribute positively to the growth. Most poor skilled labour has been found to live far from their homes and as a result, the price of labour increases.

Barriers to entry, limits to competition and limited new investment opportunities - The sectors such as iron and steel, paper and chemicals and inputs such as telecommunications and energy still remain concentrated in the economy. Moreover, in most cases, the market structure may lead to negative influences that may show the potential of downstream production or service industry development. The main two solutions can be to have sound industrial policies and competition law. Moreover, the lack of a very strong infrastructure

investment drive and an overall increase in the investment to GDP ratio of more than 6 percentage points must be addressed.

2.4.1.3 Growth, employment and redistribution (GEAR)

A further step in the gradual relaxation of exchange controls is the maintenance of monetary policies consistent with continued inflation reduction and exchange rate management to stabilise the real effective exchange rate at a competitive level. Other initiatives include consolidation of trade and industrial policy reforms, incorporating a further lowering of tariffs to compensate for the real depreciation, the introduction of tax incentives for a fixed period to stimulate investment, a campaign to boost small and medium firm development, a strengthening of competition policy and the development of industrial cluster support programmes, amongst other initiatives.

2.5 Challenges that affect the export performance

2.5.1 Exchange rate volatility

The measure of capturing the uncertainty that may be faced by exporters through the unpredictable exchange rate fluctuations can be classified as exchange rate volatility. There has been a debate about the manner the exchange rate volatility has fluctuated over the years. The exchange rate volatility has fluctuated throughout the world since the financial crisis in 2008. It is a known belief that the more the exchange rate fluctuates, the more likely the risks associated with trade and which result in minimum trade growth.

The South African exchange rate trend since the apartheid era has shown a significant depreciation against the US dollar worse than the Rupee depreciation. This depreciation was particularly obvious in 2001, with a nominal Rand-US dollar exchange rate of 12.13 from a rate of 3.54 in 1994. This rapid rate of depreciation was probably triggered by the fact that the inflation rate in South Africa was higher than those of its major partners of trade. Also, the rand was found to be greatly volatile during the crisis periods in 1998 and 2001 (Ricci, 2006). Unfortunately, from 2002 to 2004 the opposite trend did transpire, all because of the rand appreciation against the US dollar, but this was followed by another substantial depreciation in 2008, ensuing as the global financial and economic crisis intensified.

The rand consequently continued its downward trend reaching R11.1 to the US dollar at end January 2014, 20% lower than end 2012 and 66% below the peak in 2011. Despite this

dramatic fall, the effect has been muted with importers and retailers absorbing much of the pressure and food and fuel prices increasing more slowly than could have been expected. Moreover, exports might begin to benefit in 2014 if the exchange rate stabilises around current levels, replacing past volatility with the more stable environment firms prefer. Without such modification, the current account deficit is likely to widen.

2.5.2 Trade deficit

The growing debt deficit has been a major challenge for developing countries since their foreign reserves rely on the performance of their exports. Most developing countries are categorized by minimum economic growth that can be blamed on the low export growth because these exports are growing at a slower rate than anticipated due to various reasons that are external. Moreover, the current account of the balance of payments is possibly facing a permanent deficit.

The constant rise of the current account may be minimized through the increase of export receipts. In 2014 the current account deficit was estimated to be 5.4% and decreased to 4% in 2015. The current account deficit may be controlled through the increase of domestic savings which can be achieved by means of structural reforms and fiscal consolidation.

The SADC countries are classified to be small relative to the rest of the world, and are therefore not significant markets for exports, neither are they sources of imports. The second issue is that there are substantial barriers to trade between SA and other SADC countries. For instance, SA has undertaken to liberalise its trade regime more quickly towards other SADC countries than they liberalise towards SA. Geographic barriers to trade also exist to some extent. South Africa is growing faster than other SADC countries due to its economic performance. This can be identified when the country obtained a positive trade surplus in 1999 and 2000. The exports from South Africa to the region are still almost five times as much as imports. Exports to the region make up almost 10% of South Africa's total exports, while imports from the region account for only 2% of total imports.

The financial crisis that affected the world hit hard the developing countries including South Africa whereby since 2007 the number of firms in exporting has decreased impacting on the export growth negatively, due to the slower number of commodities being exported by large and small exporters. The depreciation of the exchange rate has been through the increasing inflation rate and interest rates and as a result the cash balances in the economy have been

inclined to huge net debt in 2015/16 of R1.804 trillion. However, the budget deficit is forecast to rise in the medium term due to a 46.2% in 2017/18 of the net debt of the share of GDP.

According to the NDP (2016): “Over the past year the rand has depreciated by 30 per cent against the US dollar. Some agile industries have taken advantage of the weaker currency to boost exports, and depreciation has cushioned the blow of lower commodity prices. But the current account deficit has remained stubbornly wide even as growth has slowed, reflecting continued reliance on foreign savings to finance domestic investment. If inflation accelerates, the competitive advantage of currency weakness will be quickly eroded”

The South African rand is one of the most traded emerging market currencies; however, it has exhibited excessive volatility since the last quarter of 2014 and the economy is on the brink of recession and as a result, there is a risk of widening the existing debt deficit. The current account deficit of % results from the strong foreign capital flows, lack of domestic savings and the slow export performance. While, other countries in the SADC region such as Mauritius are faced with an increasing budget deficit of 4.4% of the GDP in 2015 unlike in 2014 where it was 3.2% (AEO, 2014)

The current market has certain standards that are compared to the world and with the crisis in South Africa of current-account deficit which is growing annually; it is a challenge since it limits the ability to attract investors into the economy. With the hope of flourishing export performance and until the challenges are rectified, the country will be faced with an on-going deficit.

2.5.3 Infrastructure backlogs

The SADC countries need to invest profoundly in their infrastructure and transport to attract investment and enhance their competitive advantage. Moreover, looking at the geographical side based on most SADC countries, they are landlocked and are classified to have poor transport infrastructure including the roads and railway, hence, getting products to and from markets can be difficult. As SADC economies grow resulting from the liberalised trade regimes, their infrastructure has developed over the years. However, some countries such as Zimbabwe and Tanzania are finding it difficult to catch up with other countries.

Exporters have classified kinds of barriers that hinder their performance in the trade market. They include the lack of a national website (portal), high transport costs, high banking

charges, port congestion, customs delays, and the highly costly imported inputs that are needed for export purposes (Owusu-Frimpong and Mmieh, 2007). Moreover, the other SADC countries such as South Africa, Malawi, Namibia and Zimbabwe and have been and are still faced with lower electricity supply which affect the firms. As a result their unable to produce the demanded exports, hence, the slow economic growth.

2.5.4 Tariff barriers

The integration between countries is crucial for the survival of most countries to remain competitive in the international trade market. Therefore, the promotion of a favourable trade market can be beneficial for SADC countries to sustain economic growth. However, there have been barriers concerning the area of trade facilitation whereby exporters find themselves experiencing higher cost because of high tariffs. Furthermore, the enormous paper work involved and required in the imports and exports business is delaying the progress of trade, along with regulations involved when crossing the border and the customs are issues that are faced constantly by the exporters. The African continent will need to relax its border procedures for efficiency and ensure that the customs procedures do not take longer than in other countries. The border delays have been overlooked, and as result, they have in the past has amounted to US\$48million per year that the SADC firms and consumers had to pay in the 1990's (WTO 1998:13).

South Africa began an ambitious set of tariff and trade policy reforms in the mid-1990s. This included substantive multilateral liberalization through the WTO; the elimination of quotas, GEIS and most import surcharges; the replacement of most formula, specific and mixed tariffs with ad valorem duties; and new bilateral agreements including Development Co-operation Agreement, European Free Trade Association(EFTA) and Free Trade Area with EU and SADC. Hence, with the FTA in place South Africa will be able to integrate with other countries globally (Robles, 2008). The tariff structure has also been simplified through a substantial reduction in the number of tariff lines and some reduction in the number of rates levied.

A challenge that is faced by exporters in South Africa is that the economy is open to countries that want the country's resources. However, some of these countries still protect their markets from South African manufactured products; this may result in hindering the manufacturing sector. Once the trade barriers are non-existent the developing countries are more likely to

experience an increase of jobs; larger domestic savings; cheaper inputs of products and accelerate the regional integration of trade between countries.

2.6 Export-led growth and Import substitution strategy

The manner in which the economy is open will affect its export growth. Alexander and Warwick (2007) mention that for developing, countries export-led growth has been found to be more beneficial to the export growth which in turn can possibly accelerate economic growth. Export-led growth can be considered as partnership found between developed and developing countries including multinational corporations that help in promoting it. Sustaining free trade amongst countries was the fundamental key point that would embark on creating a market place that was accessible globally. Furthermore, countries are urged through export-led growth not to only rely on traditional trade, but to have a global production zone where the multinational corporations can export their goods competitively to developed countries and gain profits in the market.

The export-led growth strategy has proven to be effective in most developing countries because as an outward strategy, it has increased the total of the Gross Domestic Product (GDP) and stimulated industrialization unlike in the countries that rely on the import substitution strategy. However, like any other strategy, it also has its shortfalls concerning trade, like the export displacement where many countries switch to export-led growth strategy and start to export more of their domestic products in the market but later find that the exports that are produced in a certain developing country are the same, as a result the market becomes crowded with similar exports.

Import substitution favours infant industries through protectionism. The strategy believes in allowing infant industries to develop till they can perform competitively in the international market. This can be achieved through substituting the domestic production of goods previously imported with domestic sources of production and supply for a wider range of sophisticated manufactured items. The strategy is rational because the developing countries may have been unable to produce manufactured products due to the trade barriers associated with developing countries, but over time the countries had no choice but to produce these imported products themselves (Carbaugh, 2008). Unfortunately, with the strategy's inability to increase economies of scale and make industries to be competitive, it has been faced out by

most countries including South Africa. Furthermore, the developing countries that still promote import substitution are faced with import restrictions that are large (Awokuse, 2008).

2.7 Employment

Developing countries are faced with the lack of labour intensity which poses as one of the challenges affecting the aggregate exports. The Labour force participation rate measures the proportion of a country's working-age population working or actively looking for work. The lowest percentage of women participating in the work-force is in Mauritius; Lesotho; South Africa and Namibia as both have a relatively low percentage of the working-age population, male and female, working or looking for work. The highest percentage of labour force participation for both female and male is found in Tanzania with 86% and 93% respectively.

South Africa must accelerate export growth with the aim to propel economic growth and job creation. However, the National Development Plan of 2030 aims at achieving an unemployment rate of 14% by 2020 is highly not feasible since unemployment is rapidly growing and remains high at 25.3% and 52.5% for the population and youth respectively in 2015 (AEO, 2016). Therefore, South Africa has been classified as one of the countries with the highest Gini Coefficient of 0.69 resulting from the widening unemployment rate which continues to impact the income inequality. Furthermore, the government's newly launched employment tax incentive that is aimed at youth from 18 and 29 is aimed at addressing this challenge by ensuring that the private sector takes part by employing more of the youth and giving them subsidised salaries. The potential of the exports is falling short and this affected by the level of skills that the country accounts for. It is imperative to embark on ways to invest further in the existing education system with the aim of increasing the level of skills.

The export sector can contribute extensively to poverty reduction and employment growth. However, in South Africa the low skilled labour is underutilized, thus making the unemployment rate to keep on mounting instead of decreasing, despite the fact that South Africa's exports are capital intense goods that are sophisticated and require skilled labour.

The more trade is intensively liberalised the likely it is for creation of jobs and increasing the income of households. However, growth has not been strong enough to lower South Africa's high unemployment rate since the liberation. For instance, GDP per capita grew at an average of 1.2% per year since 1994 along with the unemployment rate at 26.6%. Rodrik, (2006) has indicated that high unemployment correlated with the low growth and may be the

consequence of the divestment and slow progress of the non-mineral sector ever since in the 1990s, consequently making South Africa to be less competitive and not exploring the possible growth opportunities.

2.8 Export diversification

There have been debates over decades on whether countries should specialize or diversify their production to accelerate economic development. Export diversification can be classified into two segments which are vertical and horizontal diversification. According to Agosin (2007), vertical diversification is the move from one sector to another in such a case is when there is a shift from primary commodities to manufacturing goods, while horizontal diversification looks at expanding the production of the export basket based on the same broad category of goods that are diversified.

Rodrik (2005) suggests that countries could resort to free trade when they have a comparative advantage in order to compete with the global market. Therefore, countries must ensure that they look at world demand of goods despite specialising in manufacturing, mineral or agricultural sector. They also should ensure that they produce the goods that are demanded globally for effective gains in the market of international trade. However, every country exports what they have and in most developing countries their economies are known to be rich in primary commodities hence, they are dependent on the primary sector. This has certain shortcomings where these countries find themselves to be vulnerable to the ever-changing price fluctuations, the terms that come with trade and commodity prices. The reality is that the income elasticity of the primary commodities, when it comes to demand, is relatively low than in other sectors and can lead to falling export revenues.

Export diversification gives way for export-led growth through ensuring that countries expand their export basket. Dollar and Kraay (2001) find that successful growth strategies are achieved through the openness of trade in the international market and that once export growth is obtained then economic growth may be sustained.

There are various benefits of export diversification that can assist the export growth in developing countries. First, is a diversified bundle of export products that provides a hedge towards price variations and shocks in certain product markets (Bertinelliet *et al.*, 2006; Levchenko & di Giovanni, 2006). Secondly, according to Hausmann, Hwang and Rodrik (2007), the type of product that is exported it is prone to affect the potential of structural

change and sustain economic growth. Lastly, there more a country exports sophisticated products the likely it is for economies to improve economic development.

2.8.1 Fallout of commodities needs to diversify

Countries that have focused on one product for exporting have found themselves obtaining a slower growth rate than countries that have diversified their export basket into an export mix that is aligned with the needs of the global trade market. It has been proven over the years that it is not easy for developing countries to diversify their natural based products into the market and as a result, they lag behind in the market. The dependence of natural based products comes from the level of growth based on income, poor governance and the structure that it used for the export commodities.

The inability or reluctance of governments to address structural constraints is delaying the adjustments needed to improve productivity which is critical in the promotion of exports, competitiveness and growth. South African has experienced weak external demand from traditional partners which has affected the exports negatively, more especially the manufactured goods. It is known that Africa is one of the important export destinations. However, South Africa has found itself faced with related commodity prices and being vulnerable to the manner which the Chinese demand may shift.

Zanamwe, (2005) finds that the progress of export diversification in developing countries mostly in the African continent have been slow due to the lack of information, lack of facilities to move the goods, the various customs procedures that are diverse, communication technology regarding trade and insufficient infrastructures. South Africa needs to improve the structural transformation in the economy since it negatively impacts on the exports per capita.

The emphasis on export diversification is significant to the economy of South Africa; however, it comes with certain changes that affect the household inequality that may be caused by the lack of investment in education to improve the skills of the people so that they can gain entry into the labour force in sectors like the non-traditional sectors that have gained during diversification. While, aggregate export growth is expected to remain subdued, the strong export performance by beverages and autos is forecasted to remain the same or increase at a later stage once there is a weaker exchange rate and contribute to growth in both developed and developing African countries.

Table: 2.3 Diversification and competitiveness (2010-14)

	Diversification index					Annual export growth (%)	Competitiveness Indicator	
							2010-14(%)	
	2010	2011	2012	2013	2014	2010-14	Sectoral effect	Global competitiveness effect
Angola	1.1	1.1	1.1	1.1	1.1	5.0	0.6	0.4
Botswana	4.7	1.8	2.0	1.7	1.8	29.4	-1.7	37.3
Congo, Dem. Rep.	5.2	5.1	3.8	4.2	4.3	7.8	-5.0	8.8
Lesotho	9.7	6.3	7.4	7.8	5.4	6.3	3.6	-0.4
Madagascar	32.7	12.6	22.1	18.8	12.9	29.4	5.1	20.3
Malawi	3.0	4.3	3.4	3.2	2.7	0.1	-2.9	-1.0
Mauritius	24.3	22.4	19.6	19.0	22.0	6.4	-0.3	2.7
Mozambique	3.9	6.0	8.6	9.3	10.4	19.3	-0.5	15.9
Namibia	14.6	12.0	8.9	15.1	8.9	8.6	-1.4	7.9
Seychelles	3.8	2.7	3.3	2.9	3.0	9.8	3.3	2.6
South Africa	42.5	37.7	34.9	33.3	40.1	1.9	0.8	-2.9
Swaziland	15.8	14.1	11.3	9.3	10.0	4.3	-2.5	2.8
Tanzania	21.1	16.3	11.0	18.9	18.5	17.1	5.5	7.5
Zambia	2.1	2.1	2.5	2.4	2.7	0.0	-4.1	0.2
Zimbabwe	11.2	9.6	8.5	6.8	5.5	15.8	-3.3	15.1
Africa	5.2	5.7	5.1	5.7	6.5	2.9	0.7	-1.7

Sources: AfDB Statistics Department; *COMTRADE Database* (Harmonized System 2002) - UN Statistics Division.

To ensure rapid export performance greater economic stability must be sustained through export diversification which will in turn accelerate exports than in the case of export specialization. South Africa has a relatively diversified basket of exports like few SADC countries.

However, when comparing the annual export growth of 1.5% which is ranked 12th amongst SADC region, this is an indication of the poor performance of exports and high unemployment rate. Averages in developing countries of exports it indicates that the export basket is less diversified based on two categories namely growing economies like Brazil and China and developed trading partners like USA and Germany.

Table: 2.4 South Africa's export basket share

	2009	2010	2011	2012	2013	2014
Agricultural products	6678820196	9931543382	11101706275	10498624928	11137231593	11373565496
Food	5466599057	8230264894	9012215222	8742281289	9293835695	9455053269
Fuels & mining product	21761638642	32156452268	41504623349	36196611118	36469758432	31666661188
Fuels	6022680275	8842043315	11333922176	11296190912	10108165171	9507444464
Manufactures	25216236169	39773253351	44204451159	42741197875	40244649536	42292460919
Iron & steel	5116155852	7996850162	7926660853	6699468835	6204257692	6795604219
Chemicals	4100199135	6112607883	7229038321	7349228963	6857222686	7042382438
Pharmaceuticals	193723207	411450974	488677341	456672832	457707937	447337155
Machinery & transport equipment	10786593075	16296161336	18970103908	19088343753	17873221481	18692522142
Office & telecom equipment	719475332	1045808046	1144009490	1227155380	1219380667	1512144097
Electronic data processing & office equipment	215805688	367849910	408773334	468003697	402861561	428751448
Telecommunications equipment	353024647	478100009	573067679	709940681	776926607	992959284
Circuits & electronic components	150644997	199858127	162168477	49211002	39592499	90433365
Transport equipment	5876018590	8856504112	9891342619	10084963017	9468450705	10182242577
Automotive products	5086669614	7800332619	8492454651	8630832882	8000792942	8694323952
Textile	225599379	415197221	447501736	426334440	424224781	407305311
Clothing	100411840	424887046	490740355	477785694	502917360	496331799

Source: WTO

The export share basket in South Africa has transformed from the 1990's till today from mining to manufactured products through diversification. Moreover, the table above indicates

that the fuel sector has declined a bit from the oil crisis in 2014 that affected all developing countries late.

2.9 Conclusion

This chapter has outlined the overview of the export performance. A comparative analysis of the selected SADC countries was outlined and resulted in various findings which focused on the growth of the economies, their challenges in the trade market which affect the export performance and their strategies in place to maximize exports. The composition of SADC countries was explained in detail through the Independence/liberation year, type of export commodities and trade reforms and agreements.

The international trade market can be competitive hence; economies are encouraged to diversify their exports and enhance the production of quality products. The significant trade policies in place that govern and enhance the South African export performance which are aligned with industrialization specifically are the Accelerated Shared Growth Initiative of South Africa (ASGISA) which aims to alleviate poverty and accelerate employment in the economy for a higher growth rate and sustain economic development; the Industrial Policy Action Plan (IPAP) which is a three-year rolling aiming at setting out transversal and sector-specific programmes along with action plans that will retain, expand and diversify the industrial base of South Africa; Growth, Employment and Redistribution (GEAR) that will aim to relax the exchange controls, the maintenance of monetary policies consistent with continued inflation reduction and exchange rate management to stabilise the real effective exchange rate at a competitive level; a consolidation of trade and industrial policy reforms were discussed.

Lastly, the discussion of challenges of export performance such as debt deficit, infrastructure backlogs, tariff barriers and exchange rate, were outlined to have a better understanding of the factors which affect and contribute to the progress of exports. Along, with employment, export diversification and export-led growth and import substitution strategy.

CHAPTER THREE

LITERATURE REVIEW

3.1 INTRODUCTION

This chapter aims to review the theoretical framework and empirical studies underpinning the international trade that affect the determinants of export performance in South Africa and other selected SADC countries. Furthermore, the theoretical review focuses on various international trade theories that are relevant to the study and have been developed over the years. They include the absolute advantage theory, comparative advantage theory, Heckscher-Ohlin model, new trade theory, product life cycle and the gravity model that can help in better understanding the bilateral trade in terms of export performance. The empirical studies focus on the determinants of exports from developed and developing countries based on the gravity model.

3.2 THEORETICAL FRAMEWORK

There are various theories in international trade which help to determine and understand the outcome of trade between countries and their pattern. The study explores a variety of old and new theories that are made out of international trade to better understand the determinants of export performance mentioned in the study.

3.2.1 Absolute advantage theory

In modern economics, Smith (1776) was the first to come up with the model of international trade that he believed would promote free trade. However, in a realistic world, free trade is hardly practised but if it was to be promoted, more countries that trade with each other will benefit and the growth of the economy will increase or be constant.

Absolute advantage is when a country uses its minor resources acquired at lower prices because it has the advantage of having these resources, which ultimately enables the country to produce larger quantities of the goods or services than other neighbouring countries. Once a country has an absolute advantage in international trade, it should maintain it by specialising in the goods and services. In addition, when it comes to trade Smith focuses mainly on three (3) factors of production namely capital, labour and land as well as transport costs.

Smith did not just end there, he further came up with a principle that he believed will explain the impact that foreign trade has on domestic economies and how it can, in the long run, affect the economic development in the country which is called the vent-for-surplus principle. Moreover, Smith focused on the overall economic development because an increase in labour will ultimately lead to the increase in the productivity, based on the increase in total resources and will lead to economic growth of a country.

The theory of absolute advantage by Smith paved the way in international trade due to its main focus on absolute productivity and economic development that ultimately lead to better living standards for citizens.

3.2.1.1 Criticisms of the Absolute advantage theory:

The Absolute advantage theory did not apply the econometric applications because externalities, rent-seeking and public goods were not put into consideration or account (West, 1990). Richardson (1975) outlined that Smith's theory is just unrealistic and unstable because once labour is restricted based on the extent of the market, it will in due course limit labour and as a result, free competition will not be practised and the economy will be ruled by monopoly power. Ricardo (1817) outlined that Smith focused on economic development and unfortunately exempted the comparative costs that have an impact on how the resources are allocated in an economy.

3.2.2 Comparative advantage theory

The theory was established by Ricardo (1817) in his book titled: Principles of political economy. David's theory is from the absolute advantage theory because he saw other ways that he could modify Adam Smith's theory; and he did precisely that by taking comparative costs into consideration in trade.

The comparative advantage is when a country produces goods and services at a lower cost than other countries and ensuring that it specialises in that product by having a comparative advantage. However, the theory does not include transport costs which in the modern trade play a significant part in the mobility of commodities.

Furthermore, the theory expands the free trade argument thus making it possible for resources to be fully utilised and ultimately maximising productivity. Taking full advantage of consumption and production is what drives this theory as the differences that are found to be

a comparative advantage will ultimately lead to trade. The comparative advantage of SADC countries can be found in the SACU market where they depend on intermediate and primary goods. Countries in general, including the SADC countries, must look further into ways of making their goods more efficient to increase their gains.

The shortfalls of this theory are that the only main focus is on two goods or services based on two countries. Furthermore, only two-factor endowments are considered namely labour and resources; unlike in the absolute advantage where it includes three factors of production and the learning theory is not considered.

3.2.3 Heckscher-Ohlin theory

As mentioned by Todaro (2000), the factor endowment theory was established by Heckscher (1919) and Ohlin (1933). It is believed that the theory will close the gap that was found in the comparative theory, whereby there is different productivity of labour, yet the level of the different productivity is not explained at all. Besides, the countries did not know which products would give them an advantage in the trading market. Once a country produces more of the resource that they specialise in, the resource would be the one that will be exported mostly, therefore making it possible for the expansion of export potential in that country. Furthermore, the Heckscher-Ohlin (1933) theory focuses on the two countries that are domestic and foreign, taking into account the two factors of production unlike with the comparative advantage (where it includes only one factor production) and the two goods that they produce. However the goods are found to be not reachable in other countries, but are easily accessible in various sectors in those countries.

With regard to the relationship of the pattern of trade and the factors of production, there are other three theories apart from the Heckscher-Ohlin theory that have been discovered, namely Factor-price equalisation; Stolper-Samuelson and Rybczynski theorem.

The Heckscher-Ohlin theory of trade clearly indicates that once countries specialises in certain products, they must export them based on the kind of factor endowments that they have in the country and with fewer production costs (Heckscher, 1919). Furthermore, the theory is considered to be a modern theory as a trade that better explains the trading patterns that can be found between countries by looking at the supply side of the economy. The actuality that this theory does not include or take into account barriers to trade tariffs that are found in international trade which are factors that affect trade and lastly transport costs are

considered to be shortcomings to the theory. Moreover, it just shows how unreliable it is, because in the real world countries including South Africa and SADC countries are faced with the above issues that are affecting the economies.

3.2.4 New trade theory

This theory focuses on the firms that have high fixed costs as once the firms focus on increasing productivity well, the larger the economies of scale and leaning effects are high because, in order to maximise production, labours must come up with innovative ways of doing things. Krugman and Obstfeld (2005) mention that this modern theory indicates that trade can be favourable to countries due to the increase of the market size. Since this theory depends on the economics of scale, it is likely to attract new firms into the market and take advantage of internal trade.

However, what make the theory unique is not only the focus economies of scale but also that it takes into account the product differentiation and imperfect markets. Krugman (1979) saw a gap in the international trade theories that there were few studies that were done on the increasing returns. He developed a model of trade which clearly outlined the increase of economies of scale and changed the world of trade significantly.

Helpman (1981) analysed the traditional international theories that have been effective over the years but saw that there was a need for economies of scale and product differentiation in the theories of international trade. Furthermore, Helpman proved that there is a correlation between income per capita and the intra-industry trade.

3.2.5 Product life cycle theory

The theory was established by Vernon (1966) who believed that once firms start exporting their goods and services, they are most likely to have a foreign direct investment because the products being exported will be moving forward with the product life.

The Product life cycle theory is categorized in three stages that make up the theory namely, the new product stage, the maturity stage and the standardized product stage. The cycle puts more emphasis on introducing a new product and exporting it to neighbouring countries then foreign production is established, making the product well known around parts of the world, ultimately making the product to be more competitive in the export market and finally import competition starts existing in the market of the country. However, the current international

trade is globalised and an increasing number of countries are integrated, making the theory weightless as the manner at which the exports and imports flow affects the theory.

The theory explains the international investment and focuses on only the costs that affect production when it comes to technology. The theory focuses on the firms that produce mostly mass production of the goods and services. Every product has a stage of maturity and in this theory; some products do not fall into the stage maturity.

3.3 The Gravity Model

The gravity model is crucial in analysing any comparative study of bilateral trade. This model was used in international trade by Tinbergen (1962) and Poyhonen (1963). Linnemann (1966) developed the theoretical framework and believed that the model took into account transport costs and economies of scale. This model has over the years been more informative and reliable than other theories when it comes to explaining the flows of bilateral trade between countries. The gravity model has over the years been tested along with international trade theories that focused on the firm's size, technology and differentiated goods by the source country, thus enabling the model to be reliable. The model will help in analysing the true distance and economies sizes of trade between South Africa and other selected SADC countries. The further the distance between the country and another, the less likely the chances of them exporting to that particular country as one dummy variable will be estimated in the model is landlocked.

The gravity model was derived using linear expenditure system that was employed to solve the weak theoretical foundations found in the gravity model in the 80's, their function assumed a weakly separable utility function (Oguledo & Macphee, 1994).

Bergstrand (1985, 1989) analysed the gravity model by focusing on the microeconomics elements such as increasing scale returns. Furthermore, the author evaluated the gravity model through a model of trade focusing on differentiated products in countries and monopolistic competition. He was one of the few to show that the general equilibrium under the assumption of the impact that price has on trade and the maximum profit.

Deardorff (1998) showed that the gravity model is applicable to the Heckscher-Ohlin theory in international trade. Moreover, the gravity model indicated that the traditional factor proportions model was based on homogenous products that result from perfect competition.

Egger (2000) indicated that the gravity model equation can be improved to account for individual effects found. Moreover, he focused on two estimations and explaining them. These are the fixed effect model and random effect model that must be used to determine any correlations that may exist from the data.

3.5 Empirical literature

The use of the gravity model has shown reliable empirical results over-time into understanding the bilateral trade and helped researchers discover the potential of exports in countries. For an example, Buch, Kleinert and Toubal (2004), Márquez-Ramos, Martínez-Zarzoso, (2001) and Suárez-Burguet (2007), believed that the sign and size of the distance are correlated to bilateral trade in terms of trading partners that are far traded less instead of those who are closer.

3.5.1 Global studies (Non-African)

Determinants of export performance have been discussed in countless studies for decades to understand better the trading patterns in cross-countries. Their findings differ from various countries and specific periods like in a study by Rahman (2009) who explored Australia's global trade potential for the period of 1972-2006. The study applied generalized gravity models along with panel techniques and consisted of 57 trading partners. The variables used were openness, GDP per capita, a differential of GDP per capita and two dummy variables RTA membership and language. The coefficients found to have an effect on Australia's trade potential were GDP per capita, common language, openness and RTA membership. However, distance was found to have a negative impact on Australia and its trading partners along with differential of GDP per capita.

Greene (2013) applied the gravity model approach to understand the export potential for the U.S. advanced technology goods to India from the period of 1990-2011. The results in the study indicated that distance is negative and significant. Furthermore, trade freedom, per capita and importer's physical land area are found to be significant and proved to have an effect on export potential of the United States. A contrast study was by Rahman (2010) for Bangladesh's exports found distance to be negative but insignificant.

Sharma (2003) examined the demand for Indian exports from 1970 and 1998, using a two-stage least squares (2SLS) based on two equations, export demand and export supply.

Furthermore, determinant variables used included the real effective exchange rate, world income, foreign direct investment, the relative price of exports and export demand measured as total volume index. The results of the study determined that the negative relationship between real effective exchange rate and export demand is in correlation with theory as exports fall once the export prices are high. Simultaneously, the demand for Indian exports increases when the export price falls as the result of the application of the Indian rupee. Lastly, world income was found to be insignificant to export demand.

Another study that had similar results was by Bernard and Jensen (2004) who analysed the US export boom from 1987-1992. They incorporated variables like exchange rate, foreign income and labour productivity. Their results showed that exchange rates are critical in determining the increase of exports based on the manufacturing export booms.

Salomon and Shaver (2005) confirmed from their study of interrelationship and determinants of Spanish manufacturing firms for the period of 1990 to 1997. They concluded that firms determine the exports domestic sales.

Fang *et al.* (2006) conducted a study on the export promotion through exchange rate changes on exports from 1979 and 2003. The author used the Engle (2002) dynamic conditional correlation bivariate GARCH-M model. Their findings showed that for eight Asian countries namely Japan, Thailand, Republic of Korea, Singapore, Chinese Taipei, Philippines, Indonesia and Malaysia are found to have weak export growth overtime due to the depreciation of exports.

Haseeb *et al.* (2015) investigated the trade relationship between Malaysia and the OIC economies. The authors used the panel cointegration approach and the Fully Modified ordinary least squares (FMOLS) model for the period of 1995-2012. The results of the study showed that GDP, per capita, the real exchange rate and foreign direct investment (FDI) were significant in the model.

3.5.2 African Studies including S.A. and SADC

There have been comprehensive studies in African and other SADC countries that have analysed the determinants of export performance like Edwards and Alves (2005) who conducted a study of the determinants of export performance in South Africa focusing on export supply for the period of 1980 to 1999. The authors used panel data set and dynamic fixed effect model along with Generalized Method of Moments (GMM) difference system.

The study showed that gross capital formation to exports was positive along with the production capacity that had a positive and significant impact on export supply. The results concluded that exports are likely to be responsive to the policies that can lead to the expansion of export supply. Furthermore, their results showed that South Africa was a price taker when it comes to exports because the exports are volatile to the exchange rate.

A similar study with contrasting results was in Uganda by (Agash, 2006). Both studies had similar variables and they focused on a specific period (1987-2006). However, Agash used quarterly data that is more reliable than annual data. This could explain why the researchers got contradicting results based on their studies. Agash (2006) employed the vector error correction (VEC) model in his study. The results showed that the variables he used were export growth as his dependent variable and followed by the gross domestic product, foreign direct investment, real exchange rate, foreign price level and terms of trade as explanatory variables. The export growth rate was found to be positive and significant on three variables namely; terms of trade, real exchange rate and gross domestic product while foreign direct investment was insignificant. Moreover, the foreign price level was found to be negative and insignificant when it came to affecting export growth.

The study by Mold and Prizzon (2008) examined the determinants of export performance for the period of 1987 and 2006. The econometric methodology of panel data was used that covers forty-eight countries in Africa. Their empirical findings show that the exports volumes will be affected undesirably due to the unit price of exports; real exchange rates and taxes on trade although foreign direct investment inflows of percentage and income per capita will be seen to be significant which is consistent with theory. Bloch and Tang (2004) support that trade is accelerated through income per capita growth through producing commodities at a lower cost.

Babatunde (2009) estimated the impact of trade liberalization on Sub-Saharan African export performance for the period of 1980 and 2005. He used panel data to estimate the results and found out that indeed real exchange rate does affect export performance and that trade liberalization does affect export performance.

Jungwanich (2007) examined the patterns and determinants of exports for the nine East and South-east Asian countries for the period 1990-2006. The time-series and GSM approach was applied for the parts and components of total exports. The study showed that the supply-side factors and real exchange rate are significant in export performance.

Mulualem (2006) assessed the determinants of manufacturing performance in Ethiopia from 1970 and 2004. In the study, he used the ordinary least squares estimation method that indicated that the manufacturing exports in Ethiopia with variables like foreign income, GDP ratio and total factor productivity are positive and significant but the real exchange rate was found to be insignificant to exports.

Sichei *et al.* (2008) sought to understand the South African's exports of motor vehicles, parts and accessories for 71 cross-sections. The gravity model technique was applied for the period of 1994 to 2004. The results of the study used variables such as government effectiveness, distance, importer income, the regulatory quality, use of right-hand drive vehicles and level of import tariffs were all significant in the study proving that they affect the bilateral trade flows for motor vehicles, parts and accessories. The study indicates that there is potential for exports through solving the gravity model deterministically irrespective of the problems that exporters may experience in order to fully exploit the export destinations.

A study with similar results was by Marquez-Ramos (2007) who analysed two countries specifically South Africa and Ghana for the year 2000. The gravity equation was used and OLS method for the results obtained for the 167 importer countries. The results proved that trade relationships in South Africa depend on social factors, distance and technological innovation. Moreover, in Ghana, their exports growth depends on the likelihood of economic freedom from their trading partners. The variables found positive were importers income irrespective of various tariffs across nations and the insignificant variables were intra-Economic Community of West African States (ECOWAS) and transport costs reductions.

Eita and Jordaan (2011) investigated South Africa's wood exports potential by applying the gravity model. The study was from 1997 and 2004 using the panel data technique. The results on the industry of woods determined that the positive and statistical significance of importer GDP and South Africa's population on the exports of wood and wood products. The relationship of GDP, population and exports of woods were found to be negative and significant. South Africa being a member of SADC has helped it, in the growth of exports because the study further showed that the exports of wood gradually increased over-time, thus combating some macroeconomic issues like poverty.

The analysis of export performance and determinants in Ethiopia as by Menji (2010) was for the period of 1981 and 2004. The study used the co-integration analysis and the findings were that the overall export performance was insignificant based on the exchange rates, terms of

trade and foreign direct investment. The use of co-integration analysis does not take into account the differences of countries like the panel data technique that will be used in the study to determine the export performance.

Clarke (2005) established that with using the enterprise level data for a maximum of eight countries like Mozambique, Tanzania, and Zambia to mention a few. He concluded that with trade and customs regulations they may hinder firms to export.

Makochekanwa (2012) conducted a study on the impact of regional trade agreements on trade in Agrifood products based on Eastern & Southern Africa. The study was from 2005 and 2010 also using panel methodology. Their study relied on gravity model and trade related indices to reach the conclusion that was based on the three regional economic communities known as SADC, Common Market for Eastern & Southern Africa (COMESA) and East African Community (EAC) GDP being positive & distance being negative which is consistent theoretically. It clearly shows that once there is a joint of GDP between partners, bilateral trade expands. The gravity model has been a relevant model in trade due to the fact that it results from the existing theories of international trade that have been used for decades focusing on technological differences and an increase of firms. Furthermore, an emphasis on the model has made it easier for researchers to estimate trade constraints. The studies that have been mentioned above, none of them have analysed the determinants of export performance in South Africa since the SADC region was established until today by using the gravity model.

3.5.3 Comparison of export performance in developed and developing countries

The determinants of bilateral trade have been outlined over the years; however, the determinants vary between developing and developed countries. These countries consist of economic differences that either accelerate or hinder the trade flows. In developing countries, the economic differences that can be found to hinder trade flows are the volatile real exchange rate; high unemployment; inequality; tariffs and the increasing debt. Furthermore, foreign aid is still needed in most developing countries for ensuring sustainable development, which makes the countries be dependent on developed countries for the financial assistant.

The international trade market is a continuously changing and countries, whether developed or developing, must adapt to change in order to remain competitive and have a stake in the market that is found to have revolved over the years to be more technologically based as trade

performance is not focusing only on comparative advantage to understand the competitive international trade flows (Mytelka, 2000).

In the international trade for developing countries, more countries have become net importers of manufactured goods because it is not all countries that can easily convert the volume of exports to the income growth. Tang (2006) analyses the major contributions to growth of trade in differentiated goods. His findings were that income growth and technological factors are the major contributors to the growth of trade in differentiated goods, and that the impact of information technology is higher for exports of differentiated goods from developing countries to the United States. Moreover, the manufacturing value added of developed countries does not exceed the manufacturing exports.

The possibility of international trade having an impact on gross domestic product (GDP) has paved the way for export-led growth. Once countries focus on exporting more products, this guarantees surplus of revenue and ensures a sustainable development. Marin (1992) stated that a country's economy can be affected by its export performance based on technology and other positive externalities such as foreign direct investment (FDI).

3.5.4 Summary of the empirical literature studies:

In this study various empirical studies have been assessed and all have different results based on various methodologies applied. For instance, the relationship between real exchange rate and export performance can either be positive or negative. To prove this statement Babatunde (2009), Bernard and Jensen (2004), Greene (2013), Jungwanich (2007) and Agasha (2006) found a positive significant relationship between the real exchange rate and export performance. Conversely, in studies by Menji (2010), Mulualem (2006) and Sarun (2006) show a negative relationship between the real exchange rate and export performance. Overall the findings indicate a level of inconsistency regarding export performance. However, South Africa regards exchange rate to be significant since depreciation or appreciation of the rand can have an effect on both the overall growth of exports and export performance, hence; the study explored this variable in the study.

On the contrary, based on the empirical studies by Sharma (2003), Mold and Prizzon (2008) and Lensink, Haseeb *et al.*, (2015) and Morrissey (2006) it has been shown that foreign direct investment (FDI) is positively significant to export performance which corresponds with the theoretical literature. However, in studies by Agasha, (2006), Menji, (2010), and Mulualem,

(2006) it has been indicated that their results don't support that foreign direct investment affects export performance. South Africa is a developing country and relies on foreign direct investment to sustain economic growth; hence, the country has been ranked the third largest recipient in Africa and provider of FDI. In the study the significance of using foreign direct investment will show the effect it has on export performance.

The empirical studies that have applied the gravity model and have the expected negative sign of distance are by Sichei *et al.* (2008), Rahman (2009), Eita and Jordaan (2011) and Makochekanwa (2012), while Rahman (2010) found the distance variable to be negative but insignificant. Moreover, the empirical literature indicates that the determinants of export performance vary from country to country and as a result the studies done by various researches may conclude in different findings, hence, in the study the gravity model was applied to investigate if weather the distance between South Africa and selected SADC countries affects trade of exports.

It has been proven empirically that the gravity model does explain the bilateral trade flows however; there is a need for more studies in international flows that will close the gap in explaining the trade patterns found in South Africa in comparison to other selected SADC countries. Moreover, the literature only outlines a minority of studies on determinants of exports that have used panel data methodology and has several advantages. This paper intends on analyzing the determinants of export performance in South Africa with a comparison to other selected SADC countries, using annual data, along with the panel data methodology incorporated with the gravity model based on understanding the determinants of exports and outlining the potential of exports. This study will help in adding more insight on the bilateral trade based on determinants of export performance and will help the government and researchers make informed decisions in regard to trade based on relevant policies that will accelerate income growth, sustain development, attract investors and outline the potential of exports.

3.6 Conclusion

This chapter outlined the theoretical literature that focused on international trade which focused on comparative advantage theory, Heckscher-Ohlin theory, new trade theory, product life cycle theory, Gravity model and Absolute advantage theory and their criticisms that are relatively liked on export performance. Furthermore, a comparison of the export performance in developed and developing countries was discussed. The study showed a comparison study

between developed and developing countries. The empirical literature outlined the relationship of international trade based on export performance from various authors who used either individual or cross sectional countries were they applied different econometric tests ranging from various periods and conclusions. Finally, from the abovementioned a summary of the empirical literature studies was discussed.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 INTRODUCTION

In order to examine the determinants of export performance of South Africa and other selected SADC countries, this study applies the gravity model using panel data techniques. When examining cross-sectional countries, it is critical to use panel data because it minimises the collinearity of the observations of the variables. Panel data models also allow sufficient variability and more degree of freedom and hence, more efficiency. Moreover, the model accounts for heterogeneity of cross-sections and therefore yields more robust results. The gravity model method established by Tinbergen (1962) as discussed in the previous chapter is examined and incorporated. The model specifications along with data analysis discussion of the variables and a review of estimation techniques are explained.

Section 1 outlines the Introduction; Section 2 focuses on the model specification; Section 3 outlines the data analysis Section 4 will focus on the estimation techniques and procedure and Section 5 focuses on the conclusion.

4.2 MODEL SPECIFICATION

The technique of panel data is adopted in the study which is relevant in analysing the effects of two or more countries, along with the gravity model that will assist to determine the export performance of South Africa and other selected SADC countries. Cameron and Trivedi (2009), long panel data is used in the study because the number of the countries is seven (7) which exceeds the time period which is twenty two (23) periods making a total of 161 observations.

4.2.1 The gravity model

The gravity model will be integrated into the study to identify the economic sizes and distance between South Africa and other selected SADC countries. Isaac Newton established the law of gravity which helped pave the way for researchers to estimate and explaining bilateral trade flows focusing on demand and supply factors that include Gross domestic product (GDP) and population. Furthermore, the model takes into account the preferences factors in trade such as borders amongst countries and preferential trade agreements. Tinbergen (1962) is the first person to use panel data. Sohn (2001) found that the gravity model was not used for decades due to the weak theoretical foundations that were found in the model, but that changed from the 1980's whereby more researchers proved the importance of using the model in terms of bilateral trade and distance amongst countries.

The gravity model is useful in determining the international trade patterns that happen over time based on the time or distance of the countries; moreover, the effectiveness of the various trade agreements and world trade agreement (WTO) can be evaluated with it. Baldwin and Taglioni (2007) mention that in econometrics the basic gravity model can be written as:

$$X_{ij} = G \left(\frac{M_i^{\beta_1} M_j^{\beta_2}}{D_{ij}^{\beta_3}} \right) u_{ij} \dots \dots \dots (1)$$

where:

X_{ij} = Exports volumes of trade from *exporters_i* to *importing_j* country; $M_i^{\beta_1} M_j^{\beta_2}$ the gross domestic product for the countries; $D_{ij}^{\beta_3}$ the distance of the two *countries_{ij}* in kilometres and u_{ij} is the error term and it must equal one.

The gravity model has a traditional way of calculating it and is as follows:

$$\ln(X_{ij}) = \beta_0 + \beta_1 \ln(M_i) + \beta_2 \ln(M_j) - \beta_3 \ln(D_{ij}) + u_{ij} \dots \dots \dots (2)$$

In this formula, G is the β_0 and their logs on both sides of the equation irrespective of the problems that this formula faces. The distance variable theoretically is expected to be negative because of geographical determinants and transport costs. The positive signs of β_1 and β_2 specify the GDP whereby when countries export more of their goods and services it will lead to importing countries demanding more of the goods and services.

The gravity model is best suited for the study because it takes account of the trade patterns between countries based on the sizes furthermore, outlining the spatiality and the history of trade costs encountered by the countries. Moreover, the study has included one dummy variable namely landlocked that indicate whether countries that are within land export more or less to their exporting countries. The studies by Greene (2013), Mosikari and Eita (2016) and Martinesz, *et al.* (2012) were applied in the study as the specified model which is the gravity model. This paper is different from the above studies because it applies a new data period and comprises of other variables. In regard to the specified studies mentioned above the model in the study was modified and estimated in logs as:

$$\ln X_{ij} = \alpha_{ij} + \beta_1 \ln(Er_{ij}) + \beta_2 \ln(Gdp_i) + \beta_3 \ln(Gdp_j) + \beta_4 \ln(Fdi_{ij}) + \beta_5 \ln(Open_{ij}) - \beta_6 \ln(D_{ij}) + \beta_7 (Landlock) + u_{ij} \dots \dots \dots (3)$$

where:

$\ln X_{ij}$ = Exports of goods and services from country (South Africa) *i* to *j* (other (7) selected SADC countries).

α_{ij} = Fixed effects

Gdp_i and Gdp_j = The gross domestic product of the exporter and importer

Fdi_{ij} = Foreign direct investment of the exporter and importer

$Open_{ij}$ = Trade openness of the exporter and importer

D_{ij} = The geographical distance of the exporter and importer

In the study, the land-locked dummy variable in the equation is expected to be positive and will take the value of one or zero. Moreover, when countries are closer to sea they mainly trade more than countries that are inland.

4.2.2 Variables incorporated in the study are as follows:

4.2.2.1 Exports – The variable plays an important part in terms of income for countries and includes all the goods and services that are produced in all sectors within the country. Moreover, exports are dependent on the price ratios of trade and the exchange rate basically

for the growth of exports to accelerate well; the exchange rate is interlinked to the exports. And lastly, the variable is regarded as the dependent variable in the study.

4.2.2.2 Exchange rates - For trade to commence the value of one currency against another must be considered; hence, exchange rates are vital instruments in the determinants of export performance mainly due to the fact that for expansion of exports they depend on how the exchange rate fluctuates. The expected theoretical sign for exchange rate would be negative. When the rand depreciates the importing countries tend to purchase or demand more exports from South Africa unlike when the Rand appreciates, where fewer exports are demanded. Maeadiaga *et al.* (2012) identifies the importance to diversify the exports because the real exchange rate has fluctuations in the market of international trade and they could easily affect trade negatively and have an effect on the export performance. The exchange rate can have either a positive or negative sign.

The studies of Aljebrin (2012), state that when the currency depreciates exports will be demanded because of the low prices. As a result, that was favourable for Saudi Arabia. This can be supported by Greene (2013), that the exchange rate does have an impact on the exports in terms of trade by having a positive coefficient in the gravity model. However, in the study exchange rate was used and took the differences between price levels into account. Contrast is Kanda and Jordaan (2011) who found the coefficient of the exchange rate to be positive and significant for the period of 1994-2008. A higher exchange rate makes it hard for exports to be demanded as a consequence a decline in exports growth is possible.

4.2.2.3 Gross domestic product - The variable serves as an indicator to forecast the growth in the total goods and services that have been produced in the country for that year. Moreover, the gross domestic product of export growth varies from country to country. Once there is a substantial production of exports, it will lead to significant expansion of the total goods and services that will automatically attract investment.

Eita and Jordaan (2007) applied the gravity model which determined that Gross domestic product of the importer and exporter has an impact on the exports of metal products. Their findings prove that the exporting GDP will increase when there is an increase of the importers GDP. When the importing country's GDP is found to be high, this will indicate that the country is able to purchase the goods and services thus increasing the demand side.

4.2.2.4 Foreign direct investment - also known as FDI, in developing countries financial assistance and subsidies are critical in assisting these countries to perform competitively in the harshest market of international trade. Hence, foreign direct investment is identified as one of the independent variables in the model used in this study because foreign direct investment is indeed correlated with the performance of exports and can prove to have a positive impact on the countries once sufficient foreign investment is maintained.

In previous papers, Xuan and Xing (2006) supported that in Vietnam for the period of 1990-2004 that FDI showed a positive and significant relationship. The result indicated that FDI plays a part in the development of exports. A study Abidin *et al.* (2015) had similar results where the FDI was positive for the export and importing country for the period of 1995-2012. For most developing countries like South Africa and other SADC countries, it has been proven that indeed they are all dependant on financial assistance for trade in exports

4.2.2.5 Trade openness - It measures the bilateral flows of international trade that can either be restricted or open and as a result may have an effect on the economic growth. In South Africa and SADC countries, the trade openness is non-restricted making it easier for the countries to export their commodities freely and import them from other countries. The aim of increasing economic growth is through the development of communication, transport and more importantly infrastructure. Dlamini *et al.* (2016) used the gravity model and in their finding trade openness was negative for the importer and exporter country. This implied that the Swaziland sugar exports are most prone to decrease due to the trade barriers.

4.2.2.6 Distance - The variable will further be elaborated in the gravity model because it is critical to the fact that it outlines the distance of flows of trade (Disdier & Head, 2008). The further the distance of SADC countries that trade amongst each other the less the likelihood for exports to be transported to other countries and in addition, the one variable namely landlocked will be the dummy variable. The expected sign for the distance variable is negative due to geographical determinants, current high cross-country transport costs is still a severe constraint to promoting economic integration. Therefore, the provision of infrastructure to facilitate trade beyond South Africa's borders – transnational infrastructure – has become a necessity for regional growth.

4.2.2.7 Dummy land-lock –This dummy variable will show that countries that are within land are most likely to export less in the global trading market. This could be due to the fact that most SADC countries are inland and far from shores or ports that are found in coastal

neighbouring countries that are close to the sea and as a result trade more than those inland countries. As a result, the expected sign for the variable is positive and statistically significant. Greene (2013) used the landlocked dummy variable in his study and it meets the expected sign and theory. The dummy variable will take the value of 0 for countries that are within land and 1 for landlocked countries.

Table: 4.1 Expected possible signs of the explanatory variables:

Variables	Expected sign
Exchange rate	Positive (+)
Gross domestic product (GDP)	Positive (+)
Foreign direct investment (FDI)	Positive (+)
Trade openness	Positive (+)
Distance	Negative (-)
Land-lock dummy	Positive (+)

Source: Author (2016)

4.3 DATA SOURCES

This study employed annual panel data for seven selected SADC countries covering the period 1992-2014. This period is significant because it was when the Southern African Development Coordination Conference (SADCC) was transformed to SADC and afterwards South Africa in 1994 was one of the countries being selected to be part of the region. The data consist of seven (7) countries namely Angola, Zambia, Malawi, Mozambique, Mauritius, Tanzania and Namibia. Followed by:

Table: 4.2 Data sources

Variables	Definition	Source
LEXP	Specific flows of exports to destination	Department of trade industry (DTI)
LER	Exchange rate (LCU per US\$, period average)	Quantec - Time series
LGDP	GDP-US dollars (Billions)- Current Prices	World Development Indicators (WTI)
LFDI	Foreign direct investment, net inflows (% of GDP)	World Development Indicators (WTI)
LOPEN	Openness((exports + imports) /GDP in the total trade as a percentage of GDP)	World Development Indicators (WTI) Authors own calculation
LD	Distance in kilometres	http://www.indo.com/distance

In addition to the existing variable in the study, the land-lock dummy variable is included because countries that are landlocked tend to trade less in the global market because their lack of access to sea shores. It is important to note that missing data of exports for Namibia from 1996-1999 and 2001-2008 was calculated using the growth formula to maintain a trend. The formula is as follows:

$$\Delta y = y_t - y_{t-1} \dots \dots \dots (4)$$

4.4 Estimation techniques and procedure

4.4.1 Fully modified ordinary least square (FMOLS)

The study conducted the unit root test for stationarity and adopted the fully modified ordinary least squares (FMOLS) which is one of the methodologies that are found in panel cointegration estimators and have proven to be effective in the analysing of panel cointegration regressions. However, in order to find out if there is a long run relationship between variables, the study applies the Fully modified ordinary least squares. Through the FMOLS model, serial correlation is identified including cross-sectional heterogeneity and

endogeneity (normality test) for none time-invariant variables. Pool model assumes a constant intercept and slopes irrespective of the time period and group and will include the time-invariant variables excluded in the FMOLS model. Then the diagnostic tests will be estimated from the pool model.

The following cointegration regression can be estimated as:

$$y_{it} = \alpha + \beta x_{it} + u_{it} \dots \dots \dots (12)$$

where:

α = Individual fixed effect

x_{it} = *Is the explanatory variable that is nonstationary*

u_{it} = *Is the disturbance term*

Kao and Chiang (2000) indicate that the two estimators (FM and DOLS) are normally distributed and with zero means. Baltagi (2008) defined the equation as:

$$\widehat{\beta}_{iv} = \left[\sum_{i=1}^N \sum_{t=1}^T (x_{it} - \bar{x}_i)(Z_{it} - \bar{Z}_i) \right]^{-1} \left[\sum_{i=1}^N \sum_{t=1}^T (y_{it} - \bar{y}_i)(Z_{it} - \bar{Z}_i) \right] \dots \dots \dots (13)$$

Endogeneity and serial correlation found in the OLS estimator are fixed through the FM estimators. In panel cointegration, the FM estimator is found to be effective to determine the long-run relationship within a model.

Lastly, the Fully modified ordinary least squares (FMOLS) method helped to determine the degree of impact of long-run estimates of the determinants of export performance including exchange rates, Gross domestic product, foreign direct investment, openness to trade and to ensure that the panel cointegration regressions and to observe if they meet the theoretical expectations or not.

4.4.2 Stationarity tests

To test for the existence of stationarity in the panel data model the unit root test was estimated in the study, based on the two types Levin-Lin-Chu (2002), and Im, Pearson and

Shin (2003). The test has been previously supported by Breitung (2000); Breitung and Das (2005); and Fisher-type choi (2001). When there is a Common root it means that the tests estimated, we assume a common autoregressive (AR) that exists for all series or across countries. However, an alternative hypothesis may be different resulting in the version that is used. It is crucial to estimate stationarity for the model to determine if the variables used are the best fit and to determine if there are any relationships among the variables in order to avoid spurious results. Moreover, the tests do not include distance and the dummy variable landlocked since they are regarded as time unresponsive and are fixed. The unit root tests applied in the study are Levin-Lin-Chu (2002), and Im, Pearson and Shin (2003) which all have a common unit root. The two tests place emphasis on testing for a null hypothesis of a unit root. Panel data can be balanced or not but either way, the data must be tested with common unit root process.

4.4.2.1 Levin-Lin-Chu

The individual unit root tests have been proven to have attained minimum power with regard to the other hypothesises that have high persistent deviations from the equilibrium. Levin-Lin-Chu (2002) maintains that the null hypothesis of each individual time series will have a unit root in opposition to the alternative of every time series that is stationary.

The hypothesis can be written as follows:

$$H_0 = \text{Panels have unit root, } H_1 = \text{Panels are stationary}$$

Moreover, the unit root test will be tested in the panel and can be written as:

$$\Delta Y_{it} = \delta_{it-1} + \sum_{L=1}^{\hat{p}^i} \theta_{iL} \Delta y_{it-L} + \sigma_{mi} d_{mt} + \varepsilon_{it} \qquad m = 1,2,3..... (5)$$

where:

$$d_{mt} = \text{vector of deterministic variables}$$

$$\sigma_{mi} = \text{vector coefficients of the model } m = 1,2,3$$

The test minimises the likelihood of spurious regression results. Furthermore, when the null hypothesis is rejected we can assume the model is stationary. The test has certain limitations that include the assumption that a cross-sections may or not have a unit root are off-putting.

Lastly, the test shows that once there is an existence of cross-sectional correlation, it would be impossible for the test to depend on the independence assumption across cross-sections.

4.4.2.2 Im, Pearson and Shin Test

Im, Pearson and Shin (2003) test is considered not restricted as other stationary tests because it accounts for heterogeneous coefficients and emphasises on a testing procedure focusing on averaging individual unit root test statistics. The null hypothesis can be specified as:

$$H_0 = \rho_i = 0 \forall_i$$

Moreover there is an alternative hypothesis that allows but not all individuals to have unit roots as:

$$H_0: \rho_i = 0 \text{ for all } i$$

$$H_0: \rho_i < 0 \text{ for at one } i$$

The average of the individual ADF is the IPS t-bar statistic and can be specified as:

$$\bar{t} = \frac{1}{n} \sum_{i=1}^n t_{\rho_i} \dots \dots \dots (6)$$

where t_{ρ_i} is the individual t-statistic to test $H_0: \rho_i = 0 \text{ for all } i$.

Finally the IPS Statistic for testing unit root is:

$$t_{IPS} = \frac{\sqrt{n} \left(\bar{t} - \frac{1}{n} \sum_{i=1}^n E[t_{iT} | \rho_i = 0] \right)}{var[t_{iT} | \rho_i = 0]} \Rightarrow N(0,1) \dots \dots \dots (7)$$

The different values of T and ρ_i 's are simultaneous to the values of $E[t_{iT} | \rho_i = 0]$ and $var[t_{iT} | \rho_i = 0]$ found in IPS. $T \rightarrow \infty$ followed by $n \rightarrow \infty$ Consecutively.

In regard to the two unit root tests mentioned above when the variables in the study are not found to be stationary in levels but stationary at order I(1), then the cointegration test ought to be estimated along with the Fully modified ordinary least square (FMOLS) since it looks at the long-run estimates.

4.4.3 Panel Cointegration test

When variables are cointegrated this implies that there is a long-run relationship between the variables. The cointegration tests may be applied when series are found to be stationary at order I (1). Numerous estimators of cointegration have been proposed such as the Pooled Mean Group (PMG), Ordinary least square (OLS), Fully modified ordinary least squares (FMOLS) and Dynamic ordinary least squares (DOLS). The usual panel data techniques like the random effect model based on the data in the model were found to be inappropriate since they require the number of cross-sections to be greater than the number of variables for between estimator for estimate RE innovation variance, hence the study adopted the Fully modified ordinary least squares (FMOLS) which account for endogeneity (normality test), serial correlation and cross-sectional heterogeneity.

4.4.3.1 Pedroni test

The Pedroni test (2000, 2004) may be used to take into account for heterogeneity in the panel data cointegration. Also, the model makes it possible to estimate time trends and individual fixed effects that are found in the regressions. In panels, the Engle-granger cointegration tests were introduced by Pedroni (1999, 2004). However, the test is unable to estimate the long-run relationship and it is known that the vectors within cointegration of individuals cannot be found to be identical in panels. There are seven statistics that are found in the Pedroni test. According to Phillips and Ouliaris (1990), the long-run relationship in the test may be estimated as:

$$\bar{Z}_p = \sum_{i=1}^N \frac{\sum_{t=1}^T (\hat{e}_{it-1} \Delta \hat{e}_{it} - \hat{\lambda}_i)}{(\sum_{t=1}^T \hat{e}_{it-1}^2 \hat{\lambda})} \dots \dots \dots (11)$$

where:

$\hat{e}_{it}$ = the null for no cointegration.

$\hat{\lambda}_i = \frac{1}{2} (\hat{\sigma}_i^2 - \hat{s}_i^2)$ which is the individual long run.

The Monte Carlo simulations have helped Pedroni to tabulate the seven statistics of the finite sample distribution. The Within dimension with the null hypothesis of $\rho_i = \rho < 1$ for all i is the first four statistics, while the other three are known as Between dimension with the null

hypothesis of $\rho_i < 1$ for all i . The null hypothesis is rejected of no cointegration when the statistical tests are found to be smaller than the critical value that has been tabulated.

4.4.4. Diagnostic tests

The study must perform various diagnostic tests to ensure that the model does not produce biased results. The normality and Wald test were the two diagnostic tests performed from the augmented gravity model since it includes time-invariant variables.

4.4.4.1 Normality test

The significance of this test in the study is to estimate the goodness of fit based on the kurtosis and skewness and to identify whether the variables are normally distributed. Jarque-Bera may be estimated as follows:

$$JB = \frac{N}{6} \left(S^2 + \frac{(K-3)^2}{4} \right) \dots \dots \dots (8)$$

The Jarque-Bera formula indicates that S is the skewness and K as kurtosis.

4.4.4.2 Wald test

The test serves as a parametric statistical test which makes it possible to estimate the link found between variables in a statistical model. Wald (1999) will enable the study to estimate the sample to determine the true value of the parameter and makes use of the unrestricted estimators $\hat{\theta}$. the equation may be estimated as follows:

$$w = h'(\hat{\theta}) \left\{ \widehat{var} [h(\hat{\theta})] \right\}^{-1} h(\hat{\theta}) \dots \dots \dots (9)$$

where:

$\widehat{var} [h(\hat{\theta})]$ = estimator of the variance. Also, the $h(\hat{\theta})$ can be estimated as:

$$\widehat{var} [h(\hat{\theta})] = \left(\frac{\partial h(\theta)}{\partial \theta'} \right)_{\theta=\hat{\theta}} \left[- \frac{\partial^2 Log L_T(\theta)}{\partial \theta \partial \theta'} \right]_{\theta=\hat{\theta}} \left(\frac{\partial h(\theta)}{\partial \theta'} \right)_{\theta=\hat{\theta}} \dots \dots \dots (10)$$

The chi-squared distribution on W has degrees of freedom that are found to be equal to the restrictions under H_0 . Gregory and Veal (1985) showed that the small samples that are found in the Wald test may result from the non-linear restrictions that may be applied. The test enables the study to estimate the homogeneity amongst the variables in the model.

4.5 Conclusion

There have been many previous studies that have outlined the determinants of export performance of various economies over the years. However, few studies have focused on applying the FMOLS estimator. This chapter outlined the panel data methodology which was found to be appropriate since the study dealt with cross-sectional data for the period of 1992-2014. Furthermore, the study discussed the model specification that explained the various variables in the model and their expected signs along with the gravity model. The chapter explained the data analysis followed by estimation techniques and procedure including Stationarity and cointegration tests in detail. Lastly, to verify the reliability of the model diagnostic tests were explained namely Wald and normality.

CHAPTER FIVE

EMPIRICAL ANALYSIS

5.1 Introduction

The chapter outlines the empirical results on the determinants of export performance in South Africa and selected SADC countries. The study applied the FMOLS estimation approach. Furthermore, as it is standard with estimation procedure, the panel unit root tests were conducted.

The study conducted all the econometric tests mentioned in detail from the previous chapter to determine the results that will indicate on how exports over the last twenty two years have been performing in accordance with their determinants. Furthermore, the study incorporated the gravity model to prove the reliability and significance of the model in terms of the flow and potential of exports are still today not exploited enough.

The study is based on cross-sections by focusing on other selected SADC countries to estimate the determinants of export performance, the panel regression in the study was used to determine the most effective model to be used and analysed. The dependent variable in the study is the volume of exports while the regressor variables include exchange rates; gross domestic product; trade openness; foreign direct investment; distance and land-lock dummy variable. A balanced panel of seven (7) countries analysed over a 23 year period from 1992-2014 making a total of 161 observations is analysed in the study based on the equations stipulated in the previous chapter.

The chapter is organized as follows: Section 5.1 outlines the introduction; Section 5.2 provides the results of econometric tests and methods and Section 5.3 is the conclusion of the chapter.

5.2 Results of econometric tests and methods

The study has estimated two unit root tests the IPS and LLC to test for stationarity. The variables mentioned in the study were estimated in levels or at order I (0) and are found to be non-stationary. Finally, when the variables estimated after first differencing or at order I (1) the variables were stationary.

Table: 5.1 LLC panel unit root tests

Variables		LLC		ORDER	LLC		ORDER
		LEVELS			1 ST DIFFERENCE		
		<i>LLC_{STAT}</i>	P-value			<i>LLC_{STAT}</i>	
LEX	I	-3.81096***	0.0001	I(0)	-9.82728***	0.0000	I(1)
	T & I	-3.77727***	0.0001	I(0)	-8.45824***	0.0000	
	None	1.15126	0.8752		-17.3557***	0.0000	
LER	I	-5.92239***	0.0000	I(0)	-4.96017***	0.0000	I(1)
	T & I	-2.73537**	0.0031	I(0)	-5.47276***	0.0000	
	None	5.43049	1.0000		-6.08328***	0.0000	
LSADC_GDP	I	1.39587	0.9186		-8.44583***	0.0000	I(1)
	T & I	-1.06516	0.1434		-7.01521***	0.0000	
	None	8.88027	1.0000		-6.08328***	0.0000	
LSA_GDP	I	-0.77251	0.2199		-6.60829***	0.0000	I(1)
	T & I	-1.15262	0.1245		-5.68926***	0.0000	
	None	4.16391	1.0000		-7.42556***	0.0000	
LFDI	I	-4.62016***	0.0000	I(0)	-8.00770***	0.0000	I(1)
	T & I	-4.64868***	0.0000	I(0)	-6.17950***	0.0000	
	None	1.44082	0.9252		-13.0554***	0.0000	
LOPEN	I	-1.09892	0.1359		-6.84700***	0.0000	I(1)
	T & I	-3.29262***	0.0005	I(0)	-4.20863***	0.0000	
	None	-0.42745	0.3345		-11.1152***	0.0000	

Note: ***/**/* significant at 1%, 5% & 10% level.

Source: Author's own calculations from Eviews 8.

The dependent variable being exports is statistically significant in levels for intercept at 1% level of significance with value of -3.81096 and trend and intercept with the value of -3.77727.

The exchange rate is statistically significant in levels for the intercept at 1% level of significance with values of -5.99397 and 2.73537 respectively. A 1% increase will cause the exchange rate to decrease by -5.99% of exports. A depreciation of the currency will enable importing countries to demand more of exports since prices will be cheaper.

Foreign direct investment is statistically significant in levels for intercept and trend and intercept at 1% level of significance with values of -4.62016 and -4.64868 respectively. A 1% increase will cause foreign direct investment to decrease by 4.62% of exports. The more foreign investments that countries get the easier it is for them to increase their composition of exports.

SADC GDP, South Africa's GDP and trade openness are nonstationary they indicate the existence of unit root and they had to be differenced in order to be stationary.

Table: 5.2 IPS panel unit root tests

Variables		IPS LEVELS		ORDER	IPS 1 ST DIFFERENCE		ORDER
		<i>IPS_{STAT}</i>	P-value		<i>IPS_{STAT}</i>	P-value	
LEX	I	-4.09102***	0.0000	I(0)	-12.4133***	0.0000	I(1)
	T & I	-5.21729***	0.0000	I(0)	-11.6020***	0.0000	
	None	-	-		-	-	
LER	I	-3.36572***	0.0004	I(0)	-4.36703***	0.0000	I(1)
	T & I	-1.39869**	0.0810	I(0)	-4.90607***	0.0000	
	None	-	-		-	-	
LSADC_GDP	I	4.31920	1.0000		-7.65173***	0.0000	

	T & I	-1.69920	0.0446	I(0)	-5.98699***	0.0000	I(1)
	None	-	-		-	-	
LSA_GDP	I	1.55313	0.9398		-4.31190***	0.0000	I(1)
	T & I	-0.56415	0.2863		-2.29240***	0.0109	
	None	-	-		-	-	
LFDI	I	-5.19701***	0.0000	I(0)	-10.9815***	0.0000	I(1)
	T & I	-5.22509***	0.0000	I(0)	-9.71239***	0.0000	
	None	-	-		-	-	
LOPEN	I	-1.77724*	0.0378	I(0)	-7.25515***	0.0000	I(1)
	T & I	-3.57271**	0.0002	I(0)	-5.02859***	0.0000	

Note: ***/**/* significant at 1%, 5% & 10% level.

Source: Author’s own calculations from Eviews 8.

The estimated results of both of the unit root tests (IPS and LLC) show that the variables in the study are statistically significant (stationary) at first difference. This implies that the study must estimate panel cointegration test to conduct further diagnostic panel data techniques, given that the hypothesis at first difference I (1) was rejected. Moreover, based on the abovementioned results the study progressed with estimating the Pedroni cointegration test and FMOLS long-run relationship.

5.2.1 Panel Cointegration test results

The study used the Pedroni test (2000, 2004) panel cointegration test to examine the determinants of export performance in South Africa with a comparison to selected SADC countries. The variables were found to be stationary at first difference or in order I (1). The test mentioned above is used to determine the long-run cointegration relationship since the variables that were integrated at levels in the series were found to be non-stationary. Table 2 indicates the results of the Pedroni cointegration test.

Table: 5.3 Pedroni cointegration test results

Null hypothesis: No cointegration

Alternative hypothesis: There is cointegration

Alternative hypothesis: common AR coefs. (within-dimension)					
	<u>Statistic</u>	<u>Prob.</u>	Weighted	<u>Statistic</u>	<u>Prob.</u>
Panel v-Statistic	1.610494**	0.0536	-2.127544	0.9833	
Panel rho-Statistic	1.327016	0.9077	1.189128	0.8828	
Panel PP-Statistic	-1.330637 **	0.0917	-4.268031	0.0000	
Panel ADF-Statistic	-1.311929 **	0.0948	-4.077604	0.0000	
Alternative hypothesis: individual AR coefs. (between-dimension)					
	<u>Statistic</u>	<u>Prob.</u>			
Group rho-Statistic	1.651180	0.9506			
Group PP-Statistic	-5.188198 ***	0.0000			
Group ADF-Statistic	-4.815897 ***	0.0000			

Note: ***/**/* significant at 1%, 5% & 10% level.

Source: Author's own calculations from Eviews 8

The Pedroni test indicates that for trend and intercept, those seven tests out of the eleven are significant. We fail to reject the null hypothesis and accept the alternative hypothesis. This indicates that exports are cointegrated with exchange rates, gross domestic product, foreign direct investment and trade of openness. This entail that the variables in the series are cointegrated and that there is a long-run relationship.

5.2.2 Fully modified ordinary least square (FMOLS) results

The study takes note of newly developed FMOLS model that doesn't take into account the time-invariant variables which are distance and land-lock dummy variable. Moreover, in order for the estimation of the residual based test which is found in the null of cointegration, certain methods namely Fully modified OLS proposed by Phillip and Hansen (1990) and Dynamic least square (DOLS) proposed by Saikkonen, (1991) and Stock and Watson, (1993) can produce estimators which have the probability of going to an infinity, but in this case are normally distributed because of the zero means (Baltagi, 2008).

The Pedroni cointegration test above showed that all the variables in the model, that is to say exports; gross domestic product; exchange rate, foreign direct investment and trade openness are cointegrated, hence, the long run relationship was estimated by applying the FMOLS approach.

Table: 5.4 FMOLS approach results

Dependent Variable: LEX				
Method: Panel Fully Modified Least Squares (FMOLS)				
Sample (adjusted): 1993 2014				
Periods included: 22				
Cross-sections included: 7				
Total panel (balanced) observations: 154				
Panel method: Weighted estimation				
Cointegrating equation deterministics: C				
Long-run covariance estimates (Bartlett kernel, Newey-West fixed bandwidth)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LER	-0.288786***	0.033516	-8.616290	0.0000
LGDP_SA	1.285610***	0.012826	100.2310	0.0000
LGDP_SADC	0.450311***	0.011960	37.65124	0.0000
LFDI	-0.049771	0.038624	-1.288605	0.1996
LOPEN	4.005967***	0.024362	164.4368	0.0000
R-squared	0.681112	Mean dependent var		19.04738
Adjusted R-squared	0.656410	S.D. dependent var		4.021654
S.E. of regression	2.357355	Sum squared resid		789.1116
Durbin-Watson stat	0.346762	Long-run variance		3.462178

Note: ***/**/* significant at 1%, 5% & 10% level.

Source: Author's own calculations from Eviews8.

The exchange rate is found to be negative and statically significant. The result of the coefficient doesn't meet the expected sign. A 1% decrease in the exchange rate will result to 0.28% of exports. This confirms that when the exchange rate depreciates it becomes favourable to exporting countries, due to the lower commodity prices that will result from the increasing demand of exports and possibly strengthen the economy. The findings of the results correlate with the following previous studies; Bac (2010) investigated the determinants of Vietnamese export flows using static and dynamic panel gravity approaches from 1986-2006. The authors study found exchange rate to be positive with the coefficient of 0.004 and was statistically significant. Moreover, in South Africa Jordaan and Eita (2007) examined the determinants of exports of leather products from 1997-2004 for 32 trading partners. The real exchange rate was found to be negative but insignificant. Finally, a comparable study in the U.S (Greene, 2013) had the same abovementioned results.

Gross domestic product for SA is found to be positive and statically significant. The results of the coefficient meet the expected sign. A 1% increase in Gross domestic product for SA will result in 1.28% increases in exports. This implies that when there is an increase in production

of goods and services it will result to have a positive impact on the growth of exports. Bakar *et al.* (2015) examined the export performance in Malaysia and OIC member countries from the period of 1997-2012. They used the FMOLS test and their results indicate that Malaysia GDP was positive with a coefficient of 13.28 and was found to be statistically significant. A contrast, study was by Mosikari and Eita (2015) which analysed the determinants of South Africa's exports of agriculture, forestry and fishing products to SADC from 2005 and 2014. The exporter GDP coefficient was -10.95 which was negative and insignificant.

Gross domestic product for SADC is found to be positive and statically significant. A 1% increase in Gross domestic product for SADC will result to 0.45% increases in exports. The results of the coefficient in the model meet the expected sign. This implies that the selected SADC countries will import the goods and services hence, resulting in the increase of the net exports in South Africa. The empirical studies that are in line with the results are from South Africa by Kanda and Jordaan, (2011) and Abidin *et al.*, (2014).

Foreign direct investment is found to be negative and statically insignificant. The result of the coefficient does not meet the expected sign. This indicates that FDI does not play a significant role in the determination of the exports performance. One study with similar results is by Taye, (2009) who analysed the export performance of Ethiopia for 32 trading partners for the period of 1995-2007. The author used the gravity model with the generalized two stages least squares method. The reported FDI coefficient was -0.315 and insignificant. Another, study that is consistent with the current study is by Sharma (2003), who showed that FDI was positive however, statistically insignificant.

The trade openness is made up of the sum of exports and imports, divided by GDP. Trade openness is found to be positive and statically significant. The coefficient of openness to trade meets the expected sign. A 1% increase in trade openness for SADC will result in 4.005% increases in exports. This implies that the bilateral flows between South Africa and other selected SADC countries are open and liberalised as a result of the trade agreements in place. Moreover, our findings are in line with the study by Kizilkaya *et al.* (2015) who examined the determinants of high technology product export in Brazil, Russia, India, China, Turkey (BRICT) countries from 2001-2011. Their FMOLS model approach confirmed that the coefficient of openness was 1.84 and statistically significant in their study.

5.2.3 Estimation results of the basic gravity and augmented gravity models

Next, the basic and augmented gravity model was estimated using the pooled OLS model. The table below shows the estimation results of the coefficients of the above models along with the t statistics.

Table: 5.5 Results of the basic gravity and augmented gravity models results

Variables	Basic gravity model	Augmented gravity model
SADC GDP	1.032(4.39)***	-0.327(-2.42)**
South Africa's GDP	0.164(0.32)	0.454(2.80)**
<i>Distance_{ij}</i>	2.856(11.05)	0.663(2.70)**
<i>Exchange rate_{ij}</i>		0.555(8.12)***
<i>Foreign direct investment_{ij}</i>		0.351(7.98)***
<i>Trade openness_{ij}</i>		-3.500(-9.67)***
Landlocked dummy		-3.4256(-9.70)***
Constant	-30.605(-4.54)	11.442(3.53)
R^2	0.109	0.621
Adjusted R-squared	0.092	0.603
F statistics	6.411	35.83
Number of observations	161	161

Note: ***/**/* significant at 1%, 5% & 10% level.

T-statistics are in parentheses

Source: Author's own calculations from Eviews 8.

Table: 5.5 indicates the regression results of total exports on Gross domestic product, Gross domestic product in SA, exchange rate, foreign direct investment and trade openness for the selected seven (7) SADC countries. The variables mentioned above are based on their coefficients they meet the expected results. However exchange rate, trade openness, distance and landlocked dummy their coefficients don't meet the expected signs. The basic gravity model coefficients indicate that exports of South Africa GDP is in proportion to SADC GDP, and implies an increase in proportion to distance is empirically found not to have an impact for other SADC countries to import. The augmented gravity model (pooled) does not include the individual effects of all the specified countries; hence, the pooled model may likely

produce biased results. Furthermore, all the variables are found to have an impact on determinates of export performance of South Africa and other selected SADC countries because the variables are statistically significant at 1% and 5% respectively.

5.2.4 Diagnostic tests

In order to determine the best method for estimating the results of panel regression, all the necessary diagnostic tests ought to be conducted to ensure that results are not biased. The diagnostic tests that are conducted in the study indicate the export performance of bilateral flows for South Africa and other selected SADC countries and based on the results of the regressions the right model will be used.

Table: 5.6 Normality test

Tests	Null-hypothesis	T-statistic	P-Value	Conclusion
Jarque-Bera test	Residuals are normally distributed	4.370927	0.112426	Fail to reject the null hypothesis

The diagnostic test above, results shows that the variables are significant and normally distributed. Furthermore, the null hypothesis is accepted since the P-value output is greater than 5% level of significance.

5.2.4.2 Wald test

Null hypothesis: homogeneity

Alternative hypothesis: heterogeneity

Wald Test:			
Equation: FINALPOOL			
Test Statistic	Value	Df	Probability
F-statistic	128.8671	(7, 153)	0.0000
Chi-square	902.0697	7	0.0000

There is a short-run causality running from exports to exchange rates, gross domestic product, foreign direct investment and trade openness. This test proves that from the F-statistic of 0.00 which is less than 5% indicates that all variables used in the model, possibly

have an effect on determining the export performance of South Africa and other selected SADC countries. Therefore we reject that there is homogeneity amongst South Africa and other selected SADC countries.

5.3 Conclusion

The purpose of this study was to examine the determinants of export performance of South Africa with a comparison to other selected SADC countries by using the theoretical gravity model. The study consists of a balanced panel of 161 observations consisting of seven countries examined from the period, 1992-2014. Moreover, panel unit root tests established by Levin-Lin-Chu (2002) and Im, Pearson and Shin (2003) proved that all the variables in the model are stationary at first difference. In addition, based on the stationary results the panel cointegration techniques were estimated using the Pedroni test that confirmed that the variables are cointegrated and the study progressed to estimating the FMOLS estimator.

The results from the FMOLS approach accounted for serial correlation, cross-sectional heterogeneity and endogeneity, and showed that all the variables in the model were significant and have an effect on exports performance, except for FDI which is statistically insignificant. However, the model does not take into account time-invariant variables such as distance and landlocked dummy. This resulted in estimating the pool model which considered the time-invariant variables that were excluded from the FMOLS model, followed by two diagnostic tests, namely normality and Wald test to ensure that the model does not produce biased results.

The results of the basic gravity model estimated indicate that exports of South Africa GDP are in proportion to SADC GDP and as a result, a positive effect of distance implies that irrespective of the high transport costs they do not hinder South Africa's exports. This is a surprise, since most countries are regarded to trade more with each other when their close. Furthermore, the positive effect of distance can be due to the fact that the transport mode is not specified but generalised and that South Africa and other SADC countries are located in the Southern Africa. Overall, the results indicate that export performance of South Africa and other selected SADC countries is determined by the exchange rate, economic size of both South Africa and SADC and trade openness.

CHAPTER SIX

CONCLUSIONS AND POLICY RECOMMENDATIONS

6.1 Introduction

South Africa has endured success in their exports since the economy has integrated into global trades. Similar to this, is that South Africa is known to have the biggest economy in the SADC region. The importance of exports it is an on-going concern for the economy, hence, the National Development plan of 2030 had made exports the main concern by stating that exports must increase by 6% in 2030. The primary objective of the study has been to identify the fundamental determinant factors of export performance in South Africa and other selected SADC countries. The study used panel data techniques and FMOLS approach to analyse the estimated results of export performance in South Africa and other SADC economies.

The gravity model it is regarded as a successful model to explain the bilateral trading patterns and was applied in the study. The basic variables in the gravity model are South Africa's GDP, SADC GDP and distance, then followed by exchange rate, foreign direct investment, trade openness and land-lock which are the additional variables which were used in the model to achieve a better understanding of determinants of export performance. Furthermore, the chapter presents a summary of the key findings of the previous chapter along with the overall conclusions from the study, the policy recommendations that will enhance export performance and lastly, limitations and suggestions for further research study.

6.2 Key Findings

The gravity model it is regarded as a successful model to explain the bilateral trading patterns and was applied in the study. The basic variables in the gravity model are South Africa's GDP, SADC GDP and distance, then followed by exchange rate, foreign direct investment, trade openness and land-lock which are the additional variables which were used in the model to achieve a better understanding of determinants of export performance. The findings of the study show that South Africa's GDP has a negative effect on export performance. These results are supported by Abidin et al. (2014) and Bakar et al. (2015). However, SADC GDP had a positive impact on export performance. Furthermore, the study found that the

augmented gravity model results depicted that the coefficients specify that exports of South Africa's GDP is in proportion to SADC's GDP, which implies that an increase in proportion to distance is empirically found not to have an impact for other SADC countries to import. Furthermore, the land-locked dummy variable in the study was found to be negative which discourages export performance. The paper found that exchange rate has a negative effect on export performance. This implies that when South Africa is less competitive in the trade market resulting in the negative effect of exchange rate, the fewer exports it can distribute to other selected SADC countries. Findings indicated that foreign direct investment (FDI) was negative and insignificant on export performance. This can be a result of poor performance on FDI for African countries (Michalowski, 2012). The positive effect of trade openness on export performance signifies that South Africa is able to export more to other SADC countries with the establishment of the favourable trade agreements after the evolution of trade liberalization.

Overall, all the variables mentioned in the study have a significant impact on export performance excluding FDI. However, the determinants of export performance have been identified in the study to show an imperative aspect of balance that is found between countries along with the global economy as a whole.

6.3 Policy Recommendations

The study recommends that exchange rate must be considered by policy makers on promoting export performance for South Africa and other SADC countries in order to improve the standard of living and creating jobs. Therefore, policy makers should embark on attracting other countries except those in the SADC region to accelerate trading by diversifying their exports since openness of trade is significant to these economies. Furthermore, the creation of incentives will promote the existing export opportunities available in both government and private sector (Rodrik, 2004). Secondly, the implementation of advancement of policies that can accelerate trade flows and benefit all SADC countries to ensure that South Africa GDP and SADC's GDP is improved.

Thirdly, sustaining macroeconomic management and political stability can improve the growth of export performance. Furthermore, transport systems must be improved through ensuring that landlocked countries ought to be linked to ports through the effective implementation of the Regional Infrastructure Master Plan.

6.4 Limitations and Suggestions for Further Research Study

The limitations in the study are caused by the lack of data from other SADC countries that were excluded from the analysis and the study period was also limited by availability of data for the variables in South Africa and other selected SADC countries.

The SADC region mainly produces goods and services that are found to support the export-led growth strategy which has been regarded to have a positive effect on export performance through trade liberalization, hence, the study can be re-examined to focus on the excluded SADC countries namely Seychelles, Zimbabwe, Swaziland, the Democratic Republic of Congo, Botswana, Madagascar and Lesotho through the availability of data and expanding the sample size. It would be intriguing to explore other specific sectors of exports found in these economies. Lastly, the study may be expanded in order to take into account other variables namely infrastructure, population density and inflation that can be applied in the augmented gravity model. Moreover, since distance is empirically found not to have an impact on other SADC countries to import in the study, well transport costs of a specified mode of transport or communication may be considered to replace the distance variable.

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APPENDIX

Appendix 1 – Data

Countries	LEX	LER	LGDP_SA	LGDP_SADC	LFDI	LOPEN	LDIS	DUMMYLL
_AGO - 92	18.42392431787437	2.5141696850253e-07	25.59474633765625	23.05942097163611	1.330913144393916	0.5733367593957171	7.704361167910313	0
_AGO - 93	18.58765995658192	2.660166461811309e-06	25.62341639787484	23.03700334621717	1.383163396010075	0.4677458110414275	7.704361167910313	0
_AGO - 94	19.18256735788654	5.951322905266241e-05	25.66313526015649	23.06707946213307	0.9685854128067965	0.4658723007984037	7.704361167910313	0
_AGO - 95	18.77883008243708	0.002746455037233463	25.76965430075492	22.32619970043613	2.352345648276926	0.9084857964535465	7.704361167910313	0
_AGO - 96	19.0326466918818	0.1204720100110773	25.71782594819277	22.74175760555543	1.22343098260048	0.8352951835921534	7.704361167910313	0
_AGO - 97	19.42945227124068	0.2062334443726483	25.7509942084754	22.75793438056709	1.853383769865736	0.8555607684844915	7.704361167910313	0
_AGO - 98	19.22409161394322	0.3313329947399688	25.64888775672297	22.58663683265629	2.905977378193535	0.8329208598227483	7.704361167910313	0
_AGO - 99	19.53396300709316	1.332552325484923	25.64055701727062	22.54019529098345	3.717640904574439	1.026006270836594	7.704361167910313	0
_AGO - 00	19.40471179573149	2.401574330395069	25.63857895117367	22.93479155035975	2.363099024072722	0.9264265651246499	7.704361167910313	0
_AGO - 01	20.24645474380707	3.138006781573407	25.52331177830804	22.91336102984277	3.219240440787737	0.9176342425593613	7.704361167910313	0
_AGO - 02	20.17077221506669	3.796167760463645	25.47238051061611	23.24878219240298	2.704777741107686	0.8107564091127491	7.704361167910313	0
_AGO - 03	20.37730738572942	4.325539624024712	25.88951930500778	23.37572927266315	3.266124262139625	0.8348952774845441	7.704361167910313	0
_AGO - 04	19.89387752258435	4.437240911639953	26.15521334124788	23.70087735329747	2.500372346967875	0.8082388105199947	7.704361167910313	0
_AGO - 05	20.03477895032801	4.479143609309114	26.2753451896199	24.06378259135719	-1.725978295606489	0.8740400464275421	7.704361167910313	0
_AGO - 06	19.79154137542914	4.398982960929038	26.32773981584595	24.45591043814297	-0.08640671038228434	0.7828717969260309	7.704361167910313	0
_AGO - 07	19.93144258772838	4.352934311520298	26.42509640788071	24.82506456890175	-0.9073897590881761	0.7769079731197999	7.704361167910313	0
_AGO - 08	20.29123578966288	4.331172114668666	26.38194633769368	25.15619983005852	1.09679319979541	0.8221780969666186	7.704361167910313	0

_AGO - 09	19.9233984946064	4.386120327443024	26.41340905167954	25.04729762456465	1.366402673287939	0.7434429787885789	7.704361167910313	0
_AGO - 10	19.78396623968366	4.531585219166311	26.65112209678444	25.13571149990208	-1.591915443332295	0.7194856944966337	7.704361167910313	0
_AGO - 11	19.92761894915562	4.553189813511176	26.75538516459757	25.36877149913351	-1.362061833749081	0.7300364057909098	7.704361167910313	0
_AGO - 12	19.95647243699314	4.569210885011562	26.70817393745767	25.47165285985636	-1.94269278617533	0.7031105751891682	7.704361167910313	0
_AGO - 13	20.14411819340784	4.58003984227743	26.62605762774083	25.55087532633235	-1.902111089077141	0.6681830156775873	7.704361167910313	0
_AGO - 14	20.38406884835781	4.598169909727749	26.58083606844129	25.56567969863538	0.9226040842586702	0.642966162100959	7.704361167910313	0
_ZMB - 92	20.18753184102396	0.158894083223448	25.59474633765625	21.88075118736446	0.8813843986089616	0.4057468910702829	7.60339933974067	0
_ZMB - 93	21.07769785470575	0.3734670312604821	25.62341639787484	21.90904550138015	2.361341444279431	0.4051695511021619	7.60339933974067	0
_ZMB - 94	19.2980888120881	0.5124466823402742	25.66313526015649	22.01981264798505	0.7390274460301524	0.3478075153462047	7.60339933974067	0
_ZMB - 95	20.32670040348999	0.6227886450139049	25.76965430075492	22.06012494565969	1.266353930678772	0.3763819294064762	7.60339933974067	0
_ZMB - 96	19.91923116845098	0.7920418375341599	25.71782594819277	22.00342742957578	1.448163083075655	0.3895385159131554	7.60339933974067	0
_ZMB - 97	20.48995338340655	0.8391926013417049	25.7509942084754	22.18264380875878	1.761227633504605	0.4014895520470746	7.60339933974067	0
_ZMB - 98	21.49465665243397	1.051544848207712	25.64888775672297	21.98673784331204	1.886597346151295	0.4674900321808597	7.60339933974067	0
_ZMB - 99	21.24782483020926	1.220245434093758	25.64055701727062	21.94830869386918	1.750706684362479	0.4002802117339354	7.60339933974067	0
_ZMB - 00	20.88358512174862	1.413628400848457	25.63857895117367	22.00438939802244	1.477029151822384	0.3975500814308747	7.60339933974067	0
_ZMB - 01	20.53935960201303	1.528430656399986	25.52331177830804	22.13290580360598	1.513224849193169	0.4075034193396737	7.60339933974067	0
_ZMB - 02	20.70973772122708	1.686138734531006	25.47238051061611	22.1568839730887	2.093707971741977	0.3901441818102659	7.60339933974067	0
_ZMB - 03	20.40938078811222	1.746286231022516	25.88951930500778	22.31287642710741	2.089264985027679	0.4191919576750837	7.60339933974067	0
_ZMB - 04	20.6032672894802	1.754209093856914	26.15521334124788	22.55120898849683	1.924499606475925	0.4693256025625856	7.60339933974067	0
_ZMB - 05	20.72855296243341	1.69809021605026	26.2753451896199	22.8433537781306	1.664689478428049	0.4490465060505552	7.60339933974067	0
_ZMB - 06	21.0787196517103	1.526723916026984	26.32773981584595	23.26933491684721	1.762524378529608	0.4266866889976783	7.60339933974067	0
_ZMB - 07	20.80542070843066	1.60994231820012	26.42509640788071	23.36638333982013	2.343545798501487	0.4783204713605315	7.60339933974067	0
_ZMB - 08	21.46698294077409	1.557230661568171	26.38194633769368	23.6086729937459	1.831061607431612	0.4465683501146372	7.60339933974067	0
_ZMB - 09	20.71370981829197	1.799414965165245	26.41340905167954	23.45296938993235	1.710690361208077	0.4242519098242789	7.60339933974067	0
_ZMB - 10	21.03415621021096	1.757364153429551	26.65112209678444	23.73218834091907	2.254780395317965	0.4809482978831769	7.60339933974067	0

_ZMB - 11	20.81539856216621	1.76826316915376	26.75538516459757	23.89007866079469	1.744870770352133	0.5225419531372999	7.60339933974067	0
_ZMB - 12	21.07636665560212	1.816005260870602	26.70817393745767	23.93971127200849	2.052761427074553	0.5382871443656051	7.60339933974067	0
_ZMB - 13	21.01859137529514	1.855655138155414	26.62605762774083	24.01244377698789	2.13854905503368	0.5543669051920242	7.60339933974067	0
_ZMB - 14	21.00016995055795	1.967506159994383	26.58083606844129	24.01774726750375	1.880492810175288	0.5359815418918246	7.60339933974067	0
_MWI - 92	19.85834533799996	1.526768097283648	25.59474633765625	21.31079099988209	-0.3325700659035651	0.5047797321399936	7.720017940432245	1
_MWI - 93	20.07177944781821	1.686913327368452	25.62341639787484	21.45112701758977	0.326676304190852	0.3944194852015925	7.720017940432245	1
_MWI - 94	19.78441504229278	2.275871953012322	25.66313526015649	20.89030616236108	1.136161437266232	0.6490801186868535	7.720017940432245	1
_MWI - 95	19.31357323148003	2.790167166476577	25.76965430075492	21.0579179345477	0.3391892593127053	0.5791769222089634	7.720017940432245	1
_MWI - 96	19.27034819321644	2.791684400564256	25.71782594819277	21.54789692126791	0.526244681952487	0.4363332340409936	7.720017940432245	1
_MWI - 97	19.58881278927905	2.859005782032927	25.7509942084754	21.70280888214739	0.4435918962204897	0.4378801123083339	7.720017940432245	1
_MWI - 98	19.96212098166975	3.468004681236956	25.64888775672297	21.2832159718388	0.5255796991312099	0.5357631466560692	7.720017940432245	1
_MWI - 99	19.6814392995215	3.808619277789048	25.64055701727062	21.29758445854341	1.457604160787937	0.5383394607625256	7.720017940432245	1
_MWI - 00	19.59745444253183	4.103367207627626	25.63857895117367	21.27916403061205	0.9127836452288141	0.4758529603790543	7.720017940432245	1
_MWI - 01	19.67675604347455	4.293158990385648	25.52331177830804	21.2635543773862	0.753479586979737	0.5135323793955479	7.720017940432245	1
_MWI - 02	20.01442881199215	4.352682891554216	25.47238051061611	21.97477018170713	0.1559636456967439	0.3499583023183338	7.720017940432245	1
_MWI - 03	19.27239201091743	4.589370780097931	25.88951930500778	21.88927731395172	1.1161392740791	0.4110657246685265	7.720017940432245	1
_MWI - 04	19.16412877559088	4.699548188723071	26.15521334124788	21.96924402363292	1.41130286649381	0.4151925870689878	7.720017940432245	1
_MWI - 05	19.6991035505045	4.782644528162228	26.2753451896199	22.01960620756034	1.573009959748407	0.4539249599527086	7.720017940432245	1
_MWI - 06	19.39701888073238	4.920079765468874	26.32773981584595	22.1090651200354	0.6363008878286646	0.4341171453172216	7.720017940432245	1
_MWI - 07	19.15914423325538	4.948456912570133	26.42509640788071	22.21232819161594	1.336582474332148	0.4475289890881078	7.720017940432245	1
_MWI - 08	19.46814689933402	4.952460072423567	26.38194633769368	22.39492938404458	1.541735640336789	0.4822148244476449	7.720017940432245	1
_MWI - 09	19.26944570904354	4.957002027616941	26.41340905167954	22.54638308249525	0.5842073540270405	0.4166231087744316	7.720017940432245	1
_MWI - 10	19.13893232547694	5.020497541202178	26.65112209678444	22.66339582328662	0.8729201704310354	0.4551913013672396	7.720017940432245	1
_MWI - 11	18.82453628406734	5.059523555676201	26.75538516459757	22.80320734587179	2.714510454655243	0.3973513914195311	7.720017940432245	1
_MWI - 12	18.90115492143751	5.521884628484221	26.70817393745767	22.51976205836321	-0.6246485977850555	0.5180876125805469	7.720017940432245	1

_MWI - 13	19.10105741253407	5.901012587094794	26.62605762774083	22.43144091761905	2.525782230072513	0.5781264970309342	7.720017940432245	1
_MWI - 14	18.93178296146278	6.054194734429451	26.58083606844129	22.52296262845633	2.5520913362711	0.5504253887239049	7.720017940432245	1
_MOZ - 92	20.75317767492176	1.257481580315721	25.59474633765625	21.55233095768444	0.7439527125107369	0.4995453652008751	8.200837258379849	0
_MOZ - 93	21.17230805595377	1.583963511061501	25.62341639787484	21.59657518741841	0.8485323667848039	0.467693479152622	8.200837258379849	0
_MOZ - 94	21.22279827951315	1.951407629182269	25.66313526015649	21.62369962497931	0.884749151618826	0.4932116183766551	8.200837258379849	0
_MOZ - 95	21.1309327719204	2.305015470532502	25.76965430075492	21.64821448506367	1.02406222634539	0.5314192798810692	8.200837258379849	0
_MOZ - 96	20.96754004470814	2.509091003155232	25.71782594819277	21.9828177869245	1.117569234947467	0.4299693120564334	8.200837258379849	0
_MOZ - 97	21.92345366397453	2.52920924637907	25.7509942084754	22.16482295781662	0.9256233420762105	0.3790122034958067	8.200837258379849	0
_MOZ - 98	21.51706180654347	2.555255083307669	25.64888775672297	22.3070253691158	1.679831213102192	0.344522956717883	8.200837258379849	0
_MOZ - 99	21.71242118066498	2.622863461721182	25.64055701727062	22.39145030077327	2.103944829276191	0.4033705253337826	8.200837258379849	0
_MOZ - 00	21.73791243308838	2.786691927860118	25.63857895117367	22.33599215065759	1.328363329829108	0.4213137076143523	8.200837258379849	0
_MOZ - 01	22.19757379333404	3.077480026657225	25.52331177830804	22.28496806613061	1.849727748991753	0.4409452050254759	8.200837258379849	0
_MOZ - 02	21.78610537226348	3.205910402659905	25.47238051061611	22.33898615567477	2.06789542925051	0.590095891584662	8.200837258379849	0
_MOZ - 03	21.78818168083402	3.210128377260813	25.88951930500778	22.44556229811921	1.948094360641791	0.5682048096006756	8.200837258379849	0
_MOZ - 04	21.86135087335057	3.160455827330795	26.15521334124788	22.6448553262676	1.522098774100225	0.5721390080487381	8.200837258379849	0
_MOZ - 05	22.46520662909191	3.180590817805401	26.2753451896199	22.76757828883384	0.9496793958721014	0.5674011081022119	8.200837258379849	0
_MOZ - 06	21.93937649735057	3.273393523731892	26.32773981584595	22.84097553800382	1.391631625550342	0.5376726801187163	8.200837258379849	0
_MOZ - 07	22.03745439446555	3.289906033706614	26.42509640788071	22.9604312003861	1.695359576819225	0.53502722373183	8.200837258379849	0
_MOZ - 08	21.81325838079234	3.230829789482197	26.38194633769368	23.16516381968048	1.884018229547346	0.5218287451911286	8.200837258379849	0
_MOZ - 09	21.85617054349206	3.350545985073774	26.41340905167954	23.11310128086521	2.253802662274711	0.5379352836743323	8.200837258379849	0
_MOZ - 10	21.82361785341014	3.554207376870298	26.65112209678444	23.04115701695447	2.594760381813247	0.5751040415796249	8.200837258379849	0
_MOZ - 11	22.30918305464608	3.403448177719187	26.75538516459757	23.29825447888269	3.363931512528982	0.6330492552333094	8.200837258379849	0
_MOZ - 12	22.23214217436512	3.380075356663504	26.70817393745767	23.39977572727576	3.683139311723639	0.7458809845401806	8.200837258379849	0
_MOZ - 13	22.04831365641343	3.437339999838009	26.62605762774083	23.49703192781566	3.756763214164127	0.7625610274909656	8.200837258379849	0
_MOZ - 14	22.16395186614539	3.476697099412336	26.58083606844129	23.55329112873656	3.417680626159295	0.7253341358883896	8.200837258379849	0

_MUS - 92	19.64172177875194	2.807183869926295	25.59474633765625	21.89397110918445	0.3759386860623758	0.7968381784482281	7.917900586327916	0
_MUS - 93	19.99839419313305	2.925740242358898	25.62341639787484	21.90602433715715	0.372564553888012	0.7998653128890745	7.917900586327916	0
_MUS - 94	20.37811543957838	2.942350835774898	25.66313526015649	21.99250479777533	0.4458174992620166	0.7983330408164048	7.917900586327916	0
_MUS - 95	20.16181807421943	2.911606728724113	25.76965430075492	22.11959519389964	0.3802535549914467	0.7872725209919678	7.917900586327916	0
_MUS - 96	20.27752981213422	2.941701903632474	25.71782594819277	22.20984709254784	0.6038107545556321	0.823551722177183	7.917900586327916	0
_MUS - 97	20.3008903773969	3.093641723690052	25.7509942084754	22.15534009497179	0.8416134014205995	0.8233217115360946	7.917900586327916	0
_MUS - 98	20.12061493703941	3.218581781641728	25.64888775672297	22.15110344666029	0.2560976378064757	0.842425143819957	7.917900586327916	0
_MUS - 99	20.14488558014681	3.265217597218703	25.64055701727062	22.17982558552793	0.7655189961800185	0.8387669657019881	7.917900586327916	0
_MUS - 00	20.58706437199213	3.305037312904506	25.63857895117367	22.2455241546067	1.916449544715054	0.8034804917991946	7.917900586327916	0
_MUS - 01	20.49224461938747	3.40549673717379	25.52331177830804	22.23543148015707	-0.4762703652981613	0.8372065778079506	7.917900586327916	0
_MUS - 02	20.38195572565852	3.432760646118274	25.47238051061611	22.28504660565094	0.5144825735667074	0.791188689160158	7.917900586327916	0
_MUS - 03	20.13126535778611	3.363892631878272	25.88951930500778	22.44778738600209	0.7497371862476945	0.7517251352637297	7.917900586327916	0
_MUS - 04	20.35611138570821	3.349852039253463	26.15521334124788	22.57732559277037	0.196874918516164	0.7439048983019251	7.917900586327916	0
_MUS - 05	20.40983593312337	3.417603178609888	26.2753451896199	22.56124011823949	0.5097271630788928	0.8140942608990258	7.917900586327916	0
_MUS - 06	21.04791860228792	3.487621734636898	26.32773981584595	22.63006817158371	0.9500893392512539	0.8389018709321829	7.917900586327916	0
_MUS - 07	20.60640106817891	3.475489934994009	26.42509640788071	22.77637016417242	1.681427947455813	0.8110859432013635	7.917900586327916	0
_MUS - 08	20.41808909868519	3.382790255201588	26.38194633769368	22.98929998959409	1.592874187410423	0.7840462854076362	7.917900586327916	0
_MUS - 09	20.54402743394537	3.495288637061696	26.41340905167954	22.90194857684346	1.362355775929395	0.728880920802601	7.917900586327916	0
_MUS - 10	20.44567358264869	3.45897560338151	26.65112209678444	22.99726974261369	1.690877870821133	0.7713080451384864	7.917900586327916	0
_MUS - 11	19.83779105609142	3.391347362444274	26.75538516459757	23.14384605528201	1.579238883677291	0.7874419627498255	7.917900586327916	0
_MUS - 12	20.98320998375169	3.435597895979716	26.70817393745767	23.16087621456496	1.815836691366347	0.7941984265880944	7.917900586327916	0
_MUS - 13	20.18630592666909	3.456359529492034	26.62605762774083	23.20247849837355	1.240827066179219	0.7478222475282726	7.917900586327916	0
_MUS - 14	20.438263404384	3.453840958557822	26.58083606844129	23.25799065256712	1.462667711080866	0.7634675708371156	7.917900586327916	0
_TZA - 92	16.49377149893823	5.699466786456174	25.59474633765625	22.24962932477726	0.2346579028056447	0.4173634769363335	6.854354502255021	1
_TZA - 93	18.4389673403012	6.007027849927314	25.62341639787484	22.17199546156365	0.3923720076707939	0.5049527242021511	6.854354502255021	1

_TZA - 94	20.06111455948432	6.235646971056035	25.66313526015649	22.22975077083359	0.7459574124657874	0.4961521875301685	6.854354502255021	1
_TZA - 95	20.6727073167567	6.355693932240131	25.76965430075492	22.38248797663881	1.188525468712989	0.5042988915113969	6.854354502255021	1
_TZA - 96	19.53331762992445	6.364710595460256	25.71782594819277	22.59448252740734	1.196968033905059	0.4179249758866508	6.854354502255021	1
_TZA - 97	20.86134771489031	6.418564752839347	25.7509942084754	22.7623868856768	1.116702462644208	0.3500061381010501	6.854354502255021	1
_TZA - 98	20.38938647112851	6.500795867408458	25.64888775672297	22.95812592080482	1.045140894820379	0.3178544766923706	6.854354502255021	1
_TZA - 99	20.78747709578952	6.614402592278242	25.64055701727062	22.99516976638202	1.844983154295368	0.3029449348560355	6.854354502255021	1
_TZA - 00	19.6547498836929	6.68637082542284	25.63857895117367	23.04425909365937	1.713705192827962	0.2888627808911583	6.854354502255021	1
_TZA - 01	19.66030334618061	6.776976285543643	25.52331177830804	23.06348968129791	1.838930441467444	0.324184578037375	6.854354502255021	1
_TZA - 02	19.61604552936123	6.874800986411405	25.47238051061611	23.1033303454011	1.539178634821883	0.3178796500018627	6.854354502255021	1
_TZA - 03	19.79223741435174	6.946417188918594	25.88951930500778	23.17935539158514	1.316654366365265	0.3462359390278439	6.854354502255021	1
_TZA - 04	19.88834799458461	6.994240057426421	26.15521334124788	23.27472472757057	1.492990634680776	0.3764967530117249	6.854354502255021	1
_TZA - 05	19.86592009592155	7.0299146613373	26.2753451896199	23.55235165098772	1.875767121494415	0.3298960925347331	6.854354502255021	1
_TZA - 06	21.20418435893362	7.133216121701502	26.32773981584595	23.64698964281319	1.152361049129861	0.3514046560371998	6.854354502255021	1
_TZA - 07	19.50243176368543	7.127722161221649	26.42509640788071	23.79139978079873	1.309544783033875	0.4094805361422741	6.854354502255021	1
_TZA - 08	19.59567788927568	7.08783324497412	26.38194633769368	24.03265440170272	1.80075648080026	0.401709955673656	6.854354502255021	1
_TZA - 09	19.66960663455671	7.186380507509896	26.41340905167954	24.07575524791616	1.466474973361078	0.3622224576907734	6.854354502255021	1
_TZA - 10	19.84670185122693	7.251538022185832	26.65112209678444	24.17032556480359	1.912954196957428	0.3912065841102921	6.854354502255021	1
_TZA - 11	19.43376720983042	7.360813787804893	26.75538516459757	24.24605031778005	1.532280586307334	0.4497700273183294	6.854354502255021	1
_TZA - 12	19.38207918808488	7.36771033184252	26.70817393745767	24.38907491061523	1.723501723362897	0.4343575369159308	6.854354502255021	1
_TZA - 13	19.34807181842994	7.378661199165946	26.62605762774083	24.51500544896238	1.741885371690046	0.3968995677166092	6.854354502255021	1
_TZA - 14	19.47642943461204	7.411559013487207	26.58083606844129	24.59510000080816	1.659519440529343	0.4012790661805029	6.854354502255021	1
_NAM - 92	11.0360180594077	1.348596171758815	25.59474633765625	21.96115498194867	1.488102477848616	0.6495731709467033	7.515344571180436	1
_NAM - 93	10.37773217603912	1.451084784043167	25.62341639787484	21.89217376177938	0.999600337421024	0.6784068304297872	7.515344571180436	1
_NAM - 94	9.140775908590273	1.515302675374137	25.66313526015649	22.01432766414746	1.306759928710928	0.6430552148144131	7.515344571180436	1
_NAM - 95	7.607878073278507	1.531927080190535	25.76965430075492	22.09507534907535	1.58539095565315	0.6648281781089254	7.515344571180436	1

_NAM - 96	7.547501682814966	1.667584014338456	25.71782594819277	22.09580116951607	1.449719985404923	0.681164121634224	7.515344571180436	1
_NAM - 97	7.549085350619228	1.724187314295232	25.7509942084754	22.13489863158163	1.168579991341595	0.6628156628606934	7.515344571180436	1
_NAM - 98	7.548555979169874	1.87614414719845	25.64888775672297	22.06522360540861	1.25700398978061	0.6588237211005871	7.515344571180436	1
_NAM - 99	7.549082710812286	1.961429690831628	25.64055701727062	22.06324251765073	0.04085464966706998	0.6537985495855284	7.515344571180436	1
_NAM - 00	4.060443010546419	2.07189165449635	25.63857895117367	22.08646082983157	1.460073022092351	0.6174973606773751	7.515344571180436	1
_NAM - 01	7.550661243105336	2.262718978245954	25.52331177830804	21.98930703230518	0.835730125814398	0.6357700963427841	7.515344571180436	1
_NAM - 02	7.550661243105336	2.445883961759783	25.47238051061611	21.93557912225982	0.5453096777942306	0.6630811174333496	7.515344571180436	1
_NAM - 03	7.551659692963631	2.147654845532885	25.88951930500778	22.31887094536877	-0.6767167624695646	0.6722211606945559	7.515344571180436	1
_NAM - 04	7.552237287560801	2.009514193526967	26.15521334124788	22.61137415652525	0.8491196161249456	0.5982388219646643	7.515344571180436	1
_NAM - 05	7.552762084214147	1.995968669473159	26.2753451896199	22.70582936736625	1.198167985618353	0.5920112543004486	7.515344571180436	1
_NAM - 06	7.553286605600419	2.050469522498683	26.32773981584595	22.80004563971515	1.210581043736641	0.6260891553358687	7.515344571180436	1
_NAM - 07	7.553836965923025	2.085096149210073	26.42509640788071	22.89127506072583	0.8566934304583675	0.7241605307442238	7.515344571180436	1
_NAM - 08	7.554334823725747	2.225836149327659	26.38194633769368	22.86176865175557	1.763055108384137	0.7939301644872339	7.515344571180436	1
_NAM - 09	21.40611814973716	2.248516810623207	26.41340905167954	22.90663837423199	1.828727586453895	0.8130504478247965	7.515344571180436	1
_NAM - 10	21.262170989757	2.118809114361229	26.65112209678444	23.14649144409152	2.040998325387522	0.7343538593197296	7.515344571180436	1
_NAM - 11	21.42409480885159	2.111561640126223	26.75538516459757	23.24173860791791	1.908054105767818	0.7080415023970036	7.515344571180436	1
_NAM - 12	21.31566756935629	2.220286443855333	26.70817393745767	23.2894568866505	1.717910278100455	0.7108281779077961	7.515344571180436	1
_NAM - 13	21.88624108946781	2.366034527761043	26.62605762774083	23.26647546243846	-1.684402380818756	0.6981315404738832	7.515344571180436	1
_NAM - 14	21.51028116353412	2.472551941208947	26.58083606844129	23.27570159730142	1.380947821565515	0.7160397921688951	7.515344571180436	1

Appendix 2 - Basic gravity model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP_SA	0.164120	0.504040	0.325609	0.7452
LGDP_SADC	1.031637	0.234949	4.390905	0.0000
LDIS	2.856283	0.258413	11.05319	0.0000
C	-30.60538	6.733376	-4.545325	0.0000
R-squared	0.109148	Mean dependent var		19.00430
Adjusted R-squared	0.092125	S.D. dependent var		3.992641
S.E. of regression	3.804287	Akaike info criterion		5.534665
Sum squared resid	2272.198	Schwarz criterion		5.611222
Log likelihood	-441.5405	Hannan-Quinn criter.		5.565750
F-statistic	6.411909	Durbin-Watson stat		0.149147
Prob(F-statistic)	0.000399			

Appendix 3 – Pooled regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LER	0.554925	0.068339	8.120206	0.0000
LGDP_SA	0.453635	0.161698	2.805446	0.0057
LGDP_SADC	-0.326756	0.134778	-2.424396	0.0165
LFDI	0.351144	0.043997	7.981151	0.0000
LOPEN	-3.500310	0.361731	-9.676558	0.0000
DUMMYLL	-3.425678	0.353009	-9.704212	0.0000
LDIS	0.662933	0.245158	2.704105	0.0076
C	11.44230	3.235899	3.536052	0.0005
Weighted Statistics				
R-squared	0.621132	Mean dependent var		48.72492
Adjusted R-squared	0.603798	S.D. dependent var		29.34248
S.E. of regression	2.031065	Sum squared resid		631.1593
F-statistic	35.83352	Durbin-Watson stat		0.760064
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.388577	Mean dependent var		19.00430
Sum squared resid	1559.489	Durbin-Watson stat		0.206714

Appendix 3 – Normal test

