# CAUSALITY BETWEEN FOREIGN TRADE AND ECONOMIC GROWTH: EVIDENCE FROM KENYA (1970-2017)

**BY**

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# DECLARATION

**Declaration by the Candidate**

This thesis is my original work and has not been submitted for the award of any degree in any University. No part of this thesis may be produced without consent from the author or that of Moi University.

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**Declaration by the Supervisors**

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## DEDICATION

To the Almighty God for the gift of life and good health and to my entire family for the moral and financial support they gave me.

## ACKNOWLEDGEMENT

I sincerely thank my supervisors, Dr. Ernest Saina and Dr. Patrick Onsando for the useful guidance they gave me. With their support, this thesis was completed. May God bless you abundantly. I wish to thank my dad and mum, Mr. and Mrs. Monayo for taking me to school in my early days and helping me understand the importance of education. May God bless you abundantly. I also thank my wife Janet for her love and understanding and more so for taking care of our daughters Benita and Betila when I was away attending classes. May God bless you abundantly. Lastly, I thank my siblings, Philip, Stella and Charles for their prayers and moral support. May God bless you abundantly.

## ABSTRACT

The study of foreign trade and economic growth has mainly focused on two main hypotheses; export led growth and import led growth hypothesis. Conflicting results have been reported whereby export and import led growth have been found to be valid for some countries and not valid for some. This study therefore sought to answer the question whether or not foreign trade causes economic growth in Kenya. Specific objectives include; determining causality between exports and economic growth, to find out causality between imports and economic growth, to determine causality between openness to trade and economic growth and to determine causality between foreign direct investment and economic growth. The following hypotheses were tested; exports, imports, volume of trade and foreign direct investment inflows do not cause economic growth. The study was based on the international trade theory. This study adopted both descriptive and explanatory research designs. ARDL and Granger Causality models were used to test the relationship and causal direction among the variables. Annual time series data for the years 1970 to 2017 from World Bank databank was used. Data analysis entailed unit root test, cointegration analysis, Granger Causality test and finally running model diagnostic tests. Wald Test of Cointegration (F-statistic = 6.0802) revealed that long run equilibrium relationship exist between imports, foreign direct investment, exports, openness to trade and economic growth. Further analysis showed that imports (p=0.1798), foreign direct investment (p=0.3129), exports (p=0.1798) and openness to trade (p=0.0750) were not significant in determining economic growth in the long run. In the short run period, imports (p= 0.0084) were significant and positively related to economic growth. Openness to trade (p= 0.0149) was significant and negatively related to economic growth. Other variables such as FDI (p=0.8983) and exports (p=0.1987) were not significant in determining economic growth in the short run. Granger causality tests revealed that there was no causality between FDI (p=0.8972), openness to trade (p=0.9224), imports (p=0.3110), exports (p=0.3827) and economic growth in the long run at 5 percent level of significance. Since imports, exports, FDI and openness to trade do not cause economic growth in the long run, the study concluded that import and export led growth hypothesis are not supported in Kenya. In order to realize positive gains from foreign trade, policy recommendations include; encouraging more FDI inflows, more trade openness to attain a positive impact on economic growth.

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## ABBREVIATIONS AND ACRONYMS

| | | |
|---|---|---|
| **ADF** | - | Augmented Dickey Fuller |
| **ARDL** | - | Autoregressive Distributed Lag |
| **CUSUM** | - | Cumulative Sum of Recursive Residuals |
| **ECM** | - | Error Correction Model |
| **FDI** | - | Foreign Direct Investment |
| **GDP** | - | Gross Domestic Product |
| **OLS** | - | Ordinary Least Squares |
| **VECM** | - | Vector Error Correction Model |

# CHAPTER ONE

# INTRODUCTION

## 1.0 Overview

In this chapter, the researcher presents the background of the study, statement of the problem, objectives of the study, hypotheses tested, significance of the study and the scope of the study.

## 1.1 Background to the Study

The essence of studying the relationship between trade and economic growth is to determine whether or not foreign trade causes growth in the long run. It is generally argued that trade can be growth enhancing although importation for direct consumption can be growth retarding (Kumara and Malhotra, 2014). Several analytical and empirical studies have focused on how imports and exports can affect growth (Olanyi, 2013; Kwamboka, 2013; Muhoro and Nandwa, 2007). Two main hypotheses that have been tested in these studies are export led growth and import led growth hypotheses. Conflicting results have been reported whereby export led growth and import led growth have been found to be valid for some countries such as Kenya (Kwamboka, 2013) and not valid for other countries like Cameroon (Forgha and Aquilas, 2015).

There are two traditional approaches used to study the effect of foreign trade on growth. One is the Ricardian model (Ricardo, 1817) and the other is the Heckschel-ohlin (Ohlin, 1933; Heckscher, 1919) approach. Ricardo uses the concept of comparative advantage to explain the gains from trade. Assuming for instance country X and Y produce good A at different production costs. Country X is said to have a comparative advantage in producing good A if the opportunity costs for producing the good are low compared to country Y. Assuming country Y on the other hand has comparative advantage in

producing good B. Both countries will be better off if they trade in goods they face the least opportunity cost for production.

Heckscher Ohlin developed Ricardian framework further by introducing factor endowments. Countries are entitled to different characteristics for instance lakes, climate and forests and different amounts of natural resources. Assuming that country X is endowed with resource C and less of resource D. Using these resources, the country produces good $C_1$ using C and $D_1$ using D. Since resource C is abundant, it is cheaper to produce good $C_1$ than producing good $D_1$. If the same applies to country Y where resource D is abundant compared to resource C thus producing good $D_1$ at least cost, both countries will gain from trade as compared to producing goods with their scarce resources. These theories imply that a country gains from trade and that through trade, a country will achieve growth (Heckscher, 1919; Ohlin, 1933).

### 1.2 Trends and Composition of Foreign Trade in Kenya

When explaining foreign trade, it is necessary to consider its breakdown by its components. These components include; exports and imports. Exports generate foreign income which is invested and may thus affect economic growth. Imports comprise of capital goods, consumer goods and services which may affect economic growth in different ways. Foreign direct investment, net inflows affect imports and exports which in return may impact economic growth. Openness to trade is a measure of trade liberalization. Increased imports and exports may affect economic growth.

From the graph in appendix I, export earnings have increased over the years from 2.3 billion in 1970 to 9.6 billion in 2017. Similarly, imports have also grown from 2.5 billion in 1970 to 18 billion in 2017. Kenya has also been identified as a destination that has recorded the fastest rise in foreign direct investment inflows. In 1970, foreign

direct investment inflows as a percentage of GDP were 0.86 percent whereas in 2017, FDI inflows as a percentage of GDP was 0.90 percent.

### 1.3 Foreign Trade and economic growth in Kenya

The figure in appendix III shows that GDP growth rate was high in 1971 at 22 percent and thereafter dropped drastically. The rate of GDP growth has been cyclical, indicating no clear pattern and responsiveness to changes in foreign trade. Foreign trade seems to grow faster than GDP. According to Kenya's vision 2030, the government is aiming a growth rate of over ten percent by the year 2030 (Republic of Kenya, 2007). To achieve this, the government has laid its focus on foreign trade. Strategies that the government is using to improve foreign trade include; tax incentives for local and foreign investors, use of tariff as the main trade policy instrument, unilateral liberalization, regional and bilateral trade negotiations, multilateral trading systems and establishment of export processing zones.

### 1.4 Statement of the Problem

According to the World Bank (2018), economic growth in Kenya has been slow with an average growth rate of 4.5 percent. The costs associated with slow economic growth include increased government borrowing, unemployment if growth is insufficient to create new jobs displaced by technology, slower increase in living standards, inequality may become more noticeable to those on lower incomes and less tax revenue than expected to spend on public services. Attempts to increase economic growth in Kenya have centered on foreign trade among other economic approaches. Kenya has for instance established export processing zones and introduced incentives that have led to the growth of export earnings from 2.3 billion in 1970 to 9.6 billion in 2017. Similarly, imports have also grown from 2.5 billion in 1970 to 18 billion in 2017. Foreign direct

investment inflows have also increased from 0.86 percent in 1970 to 0.90 percent in 2017. As much as foreign trade has been intensified over the years, its contribution to economic growth remains unclear because no definite conclusive evidence has been reached on the causality (Borisova, 2013; Kwamboka, 2013 and Olaniyi, 2013).

The mixed results could be attributed to differences in methodology and empirical model building and the present study builds on these gaps to test whether or not foreign trade causes economic growth in Kenya. Knowledge of causality between foreign trade and economic growth is important in unearthing the necessary trade reforms that are still needed in order to put the economy on a high growth path of 10 percent and above as envisaged in Kenya's vision 2030.

### 1.5 Objectives of the Study

The general objective of the study was to determine causality between foreign trade and economic growth in Kenya.

The study addressed the following specific objectives;

i. To determine causality between exports and economic growth
ii. To determine causality between imports and economic growth
iii. To determine causality between openness to trade and economic growth
iv. To determine causality between Foreign Direct Investment inflows and economic growth

### 1.6 Hypotheses Tested

i. **$H_{O1}$:** Exports do not cause economic growth in Kenya
ii. **$H_{O2}$:** Imports do not cause economic growth in Kenya
iii. **$H_{O3}$:** Openness to trade does not cause economic growth in Kenya

iv. **$H_{O4}$:** Foreign Direct Investment inflows do not cause economic growth in Kenya

### 1.7 Significance of the Study

The study revealed Kenya's economic growth trends upon which prudent foreign trade policies could be formulated. The main contribution of this study which differentiates it from other studies on foreign trade and economic growth in Kenya is the empirical model building. No study has jointly tested the effect of the four independent variables on economic growth in Kenya. This study therefore filled the knowledge gap that existed about causality between foreign trade and economic growth in Kenya.

### 1.8 Scope of the Study

The focus of this study was on foreign trade and economic growth in Kenya. Data on GDP growth rate, FDI, imports, exports and trade openness for a span of 47 years (1970-2017) which is the minimum number of observations required for a time series analysis was sourced from the World Bank.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Overview

The researcher presents; review of theories, concepts, empirical literature, summary of literature, emerging issues, conceptual framework and the theoretical framework.

## 2.1 Review of Concepts

### 2.1.1 Export led Growth Hypothesis

The idea behind this hypothesis is that when a country's export increases, economic growth will be realised. According to this hypothesis, firms need to be competitive by producing high technology goods with better quality. In so doing, firms will acquire appropriate technology for production and this will result to spill over effect and GDP would eventually increase. Proponents further argue that countries that export try to diversify their goods increase production capacity therefore resulting to creation of employment. Trade between countries is also a source of foreign exchange that can be used to import capital goods. Export led growth hypothesis has been found to be valid by a number of studies such as Sharma and Smyths, 2009; Muhoro and Otieno (2014) and Kwamboka (2013).

### 2.1.2 Import led Growth Hypothesis

According to this hypothesis, when imports increase, GDP also increases. The need to import arises because not all countries have the necessary factors of production to complete the production cycle. Arguments for this hypothesis include; acquiring of technology and quality products through imports can improve the overall production process. Growth of the economy as a result of imports was reported in Syria by (Mohsen, 2015) Algeria by Habib, (Abderrahmane and Lakhdar, 2014) Sri-Lanka by

(Velnampy and Achchuthan, 2013) Pakistan by (Zaheer, Khattak, Ashar and Khanzaib, 2014) Portugal by (Francisco and Ramos, 2001) and for Turkey by (Ugur, 2008).

### 2.1.3 Growth led Exports

Proponents of growth led exports argue that a country can start exporting the excess products after satisfying its internal demand. Growth led exports hypothesis requires that a country attain internal growth to increase productivity and thus increase its exporting capacity (Hamid, 2013).

### 2.1.4 Growth led Imports

The relationship between imports and GDP growth can also arise due to consumers' increased demand for imported goods. When GDP grows to a point where consumers are able to afford imported goods, imports will also increase as a result. A number of empirical studies have tested this hypothesis and found it valid (Hamid, 2013).

## 2.2 Theoretical Literature

### 2.2.1 International Trade Theory

This study is based on international trade theory. According to this theory, trade between countries promotes economic growth. This theory is based on two main frameworks; Ricardian model (Ricardo, 1817) and Heckschel-Ohlin model (Ohlin, 1933; Heckscher, 1919). Ricardo used the concept of comparative advantage to explain the gains from trade. Assuming for instance country X and Y produce good A at different production costs. Country X is said to have a comparative advantage in producing good A if the opportunity costs for producing the good are low compared to country Y. Assuming country Y on the other hand has comparative advantage in producing good B. Both countries will be better off if they trade in goods they face the least opportunity cost for production.

(Heckscher, 1919; Ohlin, 1933) developed the Ricardian framework further by introducing factor endowments. Countries are entitled to different characteristics for instance lakes, climate and forests and different amounts of natural resources. Assuming that country X is endowed with resource C and less of resource D. Using these resources, the country produces good $C_1$ using C and $D_1$ using D. Since resource C is abundant, it is cheaper to produce good $C_1$ than producing good $D_1$. If the same applies to country Y where resource D is abundant compared to resource C thus producing good $D_1$ at least cost, both countries will gain from trade as compared to producing goods with their scarce resources. These theories imply that a country gains from trade and that through trade, a country will achieve growth.

## 2.3 Empirical Literature on Foreign Trade and Economic growth

### 2.3.1 Relationship between Exports and Economic growth

Mohan and Nandwa (2007) examined relationship between economic growth and a country's export using ARDL technique. They found that a long run relationship exists between exports and GDP growth. This relationship was unidirectional, running from exports to GDP. Molapo and Damane (2015) concur with these findings after studying the impact of mining exports on economic growth in Lesotho. Their study employed ARDL technique on annual time series data leading to the conclusion that export-led growth is valid for Lesotho. The main weakness of these studies is that they failed to include variables like imports, FDI and openness which are important in explaining foreign trade and economic growth. Efforts to explore the actual relationship between trade and growth have resulted to a number of studies. Among them, is a study by Shihab, Soufan and Khaliq (2014) on the impact of exports on economic growth in Jordan. Using Granger methodology, the study found a significant relationship running from economic growth to exports. Abbas (2012) concurs with these findings after

studying the causality between exports and GDP growth using data from Pakistan for the period 1975 to 2010. Johansen test and Granger methodology were employed with findings indicating that unidirectional short term and long term causality running from GDP to exports exists. Halicioglu (2007) also concurs with these findings after studying causality between growth and exports in Turkey using the ARDL technique coupled with Granger methodology. The researcher concluded that there exists unidirectional relationship running from exports to GDP growth. However, these studies contradicts other studies that have found bidirectional causality between exports and GDP. Apart from that, other variables such as imports, FDI and openness to trade were omitted.

Studies from Africa have also tried to examine the relationship between trade and growth. Adeleye, Adeteye and Adewuyi (2015) for example studied international trade and economic growth in Nigeria employing balance of payments and net exports as proxies for international trade. Cointegration and ECM modeling technique were employed to analyze time series data leading to the conclusion that exports and GDP have a significant and positive relationship. This relationship was also observed by Bbaale and Mutenyo (2011) after doing a panel data analysis on economic growth and export composition in Sub-Saharan Africa. The technique employed was Generalized Methods of Moments which led to the conclusion that agricultural exports have a significant effect on GDP growth. Trade and economic growth has also been studied in Botswana by Jordaan and Eita (2014). These researchers examined export led growth hypothesis by employing causality approach. They pointed out that exports and economic growth assume a bidirectional causal relationship. Biyase and Zwane (2014) analyzed reliability of export-led growth hypothesis in selected African countries by employing panel data from these countries. They established that export-led growth hypothesis was applicable to those countries. In their analysis, they pointed out that if

exports increase by 1 percent, a 0.1 percent economic growth rate will be realized. This study reaffirms the validity of export led growth hypothesis in African countries. This study however did not test the short and long run dynamics between the variables.

Forgha and Aquilas (2015) examined the effect of timber export on economic growth in Cameroon. By employing the Johansen Cointegration test and the Error Correction Modeling test, it was found that timber export did not have any significant effect on economic growth rate. This was observed in both short and long run period. This study however excluded other categories of exports and therefore, these findings cannot be generalized. The current study on the other hand will consider aggregate exports. To understand the true relationship between exports and GDP, Dreger and Herzer (2011) did a further examination of the export-led growth hypothesis using data from 45 developing countries. The technique of analysis employed was panel cointegration which revealed that there is a positive significant relationship between exports and non export GDP in the shortrun. The study further revealed existence of a negative relationship between the two variables in the long run. Similar findings were reported by Lopete (2006) who examined the validity of the export led growth hypothesis using data from nine Southern African countries. His research revealed that despite adoption of export friendly policies, their impact in the long run is yet to be observed in some of these countries. Kenya has put emphasis on export promotion with an aim of achieving economic growth. It was therefore necessary to study this relationship to advice appropriately on trade policies to be adopted.

Chigusiwa, Mudavanhu, Muchabaiwa and Mazambani (2011) assesed the validity of export led growth hypothesis in Zimbabwe by employing the ARDL technique. They revealed existence of a long term relationship between exports and non export GDP. Unidirectional relationship, that is from exports to non export GDP in both the short

and long term period was also observed. To further test the relationship between trade and growth, Kaberuka, Rwakinanga and Tibesigwa (2014) tested export led growth hypothesis in Uganda by employing cointegration and causality techniques. Their study revealed that liberalizing trade did have a significant impact on growth. The relationship between the variables was infact negative. It was however established that total labour force Granger-caused exports after trade liberalization. This study failed to state the causal relationship between exports and economic growth. This shortcoming was addressed in the current study by testing causality between exports and economic growth.

Olaniyi (2013) tested export led growth hypothesis in four Sub Saharan African countries namely Kenya, South Africa, Nigeria and Ghana by employing Vector Autoregressive model and Granger causality test. He found evidence of export and import led growth in Kenya and South Africa. There are other studies done in Kenya on exports and growth such as Kwamboka (2013) who studied export led growth hypothesis using time series data from Kenya. Her study employed the ECM methodology and Granger technique and studied, exports, GDP growth, imports, terms of trade, the real exchange rate, labour and capital. From her findings, she concluded that export led growth hypothesis was relevant for Kenya. A unidirectional relationship running from exports to growth was also observed. Similar results were reported by Muhoro and Otieno (2014), after studying exports and growth by employing the ARDL model and the 2- Stage Least Squares method. Results showed existence of a positive relationship between growth and exports. This relationship was observed in the shortrun and it was unidirectional, moving from exports to growth. The current study employed other variables such as FDI and openness to trade since they are important in explaining foreign trade and economic growth. To understand trade and growth relationship

further, Ndambiri, Ritho, Nganga, Mairura, Nyangweso, Muiruri and Cherotwo (2012) explored the factors determining growth in Sub Saharan countries. They employed data from 19 countries and analysed it using GMM technique. The study revealed that a exports significantly contribute to growth. This study did not state the short term and long term effects between exports and growth. In this present study, the causal relationship between growth and exports was examined and further determine the short and long term dynamics.

Mbithi (2016) studied causality directions among exports, human development and economic growth in Kenya using time series data ranging between 1980 to 2015. The purpose of his study was to test whether or not export-led growth hypothesis is applicable in Kenya. Results of VECM and block erogeneity Wald test revealed existence of bi-directional causality between exports and economic growth hence leading to the conclusion that export led growth was valid for Kenya.

### 2.3.2 Relationship between Imports and Economic Growth

To understand the relationship between economic growth and imports, several studies have been done in various countries and the results are conflicting leaving one to wonder what kind of relationship exists between these two variables. In India for instance, Veeramani (2014) investigated import of capital goods and economic growth and found that capital goods lead to faster growth rate of GDP in the long run. This finding was supported by Arawomo (2014) in Nigeria after studying capital goods import and growth by employing panel ARDL. He established that capital import positively affects growth in the short term and long term period. However, this study did not study aggregate imports and therefore these findings cannot be generalized. There is need therefore to study the impact of aggregate imports on growth in Kenya. Researchers from North Cyprus, Katircioglu and Katircioglu (2011) also examined

growth and imports using the cointegration methodology and causality techniques. It was established that long term equilibrium relationship exists between the two variables. On the other hand, causality tests did not support existence of the import led growth. Studies from China yielded different results as Peng and Almas (2010) posits in their study on the impact of international trade on growth. Their study demonstrated that with increased participation in trade, China reaps the static and dynamic benefits thus stimulating rapid national growth.

In another study in Turkey by Ugur (2008) using VAR analysis, it was revealed that there exist a bidirectional relationship between capital goods and raw materials imports and GDP. Imports for consumption however revealed existence of unidirectional relationship existed between GDP and consumption goods import. In another study on World trade, Amiri (2013) confirmed that imports have a higher impact on growth compared to exports. This study employed Granger methodology to test the underlying relationship between exports, imports and growth. However, this study failed to indicate the short and long term dynamics of imports and growth. It is therefore necessary to test these dynamics in the current study. To further understand the underlying association between growth and imports, Priede (2012) investigated imports impact on regional growth and concluded that a positive impact of imports and exports on GDP growth rate exists. Velnampy and Achchuthan (2013) in Sri-Lanka also confirmed that exports and imports have a significant impact on growth. These studies did not test the short and long term dynamics of the variables. This will be tested in the present study.

In a study by Francisco and Ramos (2001) in Portugal, existence of feedback effect between exports and growth and imports and growth was reported. This study employed cointegration tests to investigate the relationship between the variables. Similar

findings were reported by Mohsen (2015) after studying imports, exports and growth in Syria using Johansen co integration methodology, impulse response functions, Granger causality and variance decomposition. The tests revealed that exports and imports have a positive and significant effect on GDP. Existence of bidirectional causality between imports, exports and GDP was also reported in the short and long run period. In South Korea, Tsegaye (2011) studied the trade and growth employing the VECM technique and reported that unidirectional long term causality between growth and exports exists. Imports and growth on the other hand demonstrated feedback effect.

In another study by Borisova (2013) on trade and growth in the Scandinavian countries, contradicting results were reported where Sweden for instance supported all the four hypotheses; export led growth, growth led exports, imports led growth and growth led imports. Analysis from Denmark revealed existence of unidirectional causality resulting from imports to economic growth and from imports to exports. In Norway on the other hand, export led growth was not supported. Canas and Giraldo (2015) also reported similar findings after studying causality between growth and trade in Nafta. Findings did not reveal existence of a long term relationship between GDP and exports. The scenario in US and Mexico was different whereby in Mexico, exports were Granger caused by imports and GDP whereas in US, GDP was Granger caused by imports and exports. The contradictions reported in these studies calls for further research to determine the causal relations between exports, GDP and imports.

To understand the causal relations between growth and trade, Taghavi, Goudarzi, Masoudi and Gashti (2012) studied exports, imports and growth using time series data from Iran and found existence of a long term relation between these variables. The study reported that exports had a direct and positive relation with economic growth whereas imports showed existence of a significant but negative relation with growth.

Kumara and Malhotra (2014) also support these findings after doing a comparative study on trade and growth between India and China. After employing a multivariate model, Johansen co-integration technique and Toda-Yamamoto methodology, empirical findings revealed existence of unidirectional causality running from GDP to exports and no causal relations between imports and GDP in India. Reports from China indicated existence of bidirectional causality running from GDP to exports and imports and vice versa. These studies however did not indicate the short and long run dynamics between imports and growth. This shortcoming will be addressed in the current study.

In a recent study by Hussaini, Abdullahi and Mahmud (2015) on exports, imports and economic growth in India using Johansen technique, causality tests and VECM technique, results revealed existence of equilibrium among the variables and bidirectional causal relations between exports and GDP. In the same year, Rai and Jhala (2015) also studied the association between exports, imports and growth in India and established that a positive relationship exists between growth, imports and exports. These studies also failed to test the short and long run causal relations between imports and growth. This gap will filled by the current study. The importance of growth and the role of trade in achieving growth has been a concern to many countries. For this reason, studies have been done in several countries and different results have ben reported. In Pakistan, Waseem (2014) after studying the major determinants of economic growth in Pakistan established that government spending has a significant effect on GDP whereas the impact of exports and imports on GDP was less significant. Similar findings were reported by Ahmed and Uddin (2009) after studying causal relations between exports, imports, remittances and GDP growth using Johansen technique and VECM approach in Bangladesh. The researchers revealed existence of minimal support in favor of export led growth. Their findings further revealed that

remittance, exports and imports cause GDP growth in the short run. The causal relation was also unidirectional.

Using Granger Causality tests, Khan, Umar, Zaman, Ahmad and Shoukat (2012) assessed the long term correlation among growth, exports and imports in Pakistan. Results revealed existence of long term relations among growth, exports and imports. These findings were supported by Zaheer, Khattak,Ashar and Khanzaib (2014) who employed Vector error correction model to determine the effect of imports and exports on GDP growth rate in Pakistan. They pointed that a significant long term relation exists among imports, exports and GDP growth rate. The current study will employ ARDL technique on Kenyan data to test the relations between imports, exports and growth. In another study by Atif (2011) in Pakistan on the effect of exports, imports and FDI on GDP growth, it was revealed that FDI was not significant in explaining GDP growth rate whereas growth of imports and exports had a positive significant effect on GDP. Hye, Wizarat and Lau (2013) also reported similar results after studying trade led growth by employing data from six Asian Countries. The researchers used the ARDL model to determine the long term relations among exports, imports and growth. Findings revealed existence of export led growth in all countries except in Pakistan. On the other hand, import led growth model was supported in all the countries considered in this study. Habib, Abderrahmane and Lakhdar (2014) after employing the ECM technique in studying the effect of imports on growth in Algeria also found existence of a positive and significant relationship between imports and growth. However, these studies did not identify the short and long term causal relations between the variables.

Hussein (2015) did a Granger causality analysis using time series data to analyze the causal relations among growth, imports and exports in Pakistan. The study established that causality runs from GDP to exports. These findings were disputed by Sharma and

Smyths (2009) in their study on causal relations between exports, imports and growth in pacific Island countries using Granger technique and cointegration approach. Existence of bidirectional Granger causality was observed between exports and growth, imports and growth and exports and imports. These studies failed to indicate the short term and long term causal relations among the variables. The current study will address this gap by testing the short and long term causal relations among the variables. Chen (2009) did an investigation on the relationship between trade and growth in China using simultaneous multi-equation model and found that exports promote growth. Imports on the other hand showed existence of negative effect on growth. The causal relation between imports and growth has also been studied in South Africa by Mogoe (2014). In his study, the researcher examined the impact of international trade on growth. Proxies for international trade included; inflation rate, export and exchange rates whereas the proxy for economic growth was GDP. Using cointegration technique and VECM approach, analysis revealed that there exits long run relations among the variables. Results further revealed that imports are negatively related to GDP.

In a recent study by Mushfica (2015), similar findings were reported after studying the effect of imports and exports on growth in Bangladesh. He revealed existence of a positive impact of exports on growth whereas that of imports was negative. The relationship between imports and growth was also analysed in Kenya by Wanjau (2014) in her analysis of the rate of import growth in Kenya and the rate of growth. Using ARDL to model annual time series data, findings indicated that imports grew faster than GDP growth rate. These findings contradict studies from other countries that have found causal relations between imports and GDP. Marundu (2015) studied this association among imports, exports and growth in Kenya further by employing regression analysis. According to his findings, exports cause growth. Existence of a

direct positive relationship between imports and growth which he attributed to import of capital goods was also observed. In another study by Ngumi (2009) on exports and economic growth in Kenya using time series data for the period 1970 to 2007 and by employing Engel Granger method and Granger causality test, findings revealed existence of a positive and significant relationship between imports and GDP. Even though Marundu used exports and imports as proxies for international trade, the regression analysis might have led to biased coefficients of estimation because data was not tested for stationary, a process that is very crucial for time series analysis. Therefore, these findings are not reliable and there is need to investigate the association among imports, exports and growth using econometric methods such as time ARDL model.

### 2.3.3 Relationship between Openness to Trade and Economic Growth

The relationship between trade openness and growth has been investigated by a number of researchers in various countries. Researchers from France for instance Bourdon, Mouel and Vijil (2013) studied trade openness and growth and established that export of higher products leads to rapid growth. This study concludes that for countries that have specialised in export of low quality products, trade may impact growth negatively. Findings further revealed existence of non linear association among trade ratio, exports variety and economic growth thus implying that countries specializing in export of wide range of products will tend to grow faster to a point where the economy is dependent on trade. This finding was supported by Mercan, Gocer, Bulut and Dam (2013) after studying openness to trade and economic growth among BRIC-T countries. The researchers established existence of a positive and significant relationship between openness and growth. The causal relations between openness to trade and growth has also been studied in African countries. Yeboah, Naanwaab, Saleem, Akuffo (2012) for instance studied trade openness and growth among African countries by employing

Cobb-Douglas production function. Their study indicated existence of a positive relation between trade openness and GDP. These studies did not test the short and long term causal relations between openness to trade and growth. The current study will employ ARDL model to analyse the causal relations between openness and growth.

In a recent study by Hystad and Havard (2015) on growth and openness to trade in Bergen, Hystad and Havard established existence of a negative relation the two variables. Balanika (2015) also concurs with this finding after studying the impact of openness trade on growth in selected developing countries. His study employed the Solow growth model on panel data. He concluded that increased openness to trade does not have any significant impact on growth. These studies failed to indicate the short and long term dynamics of openness to trade and growth. The current study will address this shortcoming by employing ARDL model to determine existence of shortrun and longrun equilibrium between the variables. Other researchers have found a positive impact between openness and growth as Habibi (2015) reports in his study which was carried out in Iran. After employing panel cointegration analysis ECM technique, he found that openness to trade and growth are cointegrated with a long term association. Evidence of existence of a long run equilibrium relationship between trade openness and growth has also been reported in Nigeria according to Oluwaseyi and Adejoke (2013). Sakyi (2010) in Ghana after studying trade openness, growth and foreign aid using ARDL bounds technique also concurs that openness to trade has a positive and significant effect on growth in both the short and the long run period. Again in Nigeria, Aboubacari, Xui and Ousseini (2014) after analysing the causal relations between trade openness and growth found existence of a long run equilibrium relationship between trade openness and growth. These studies were carried out in other countries and

therefore there is need to test the causal relations between openness to trade and growth using Kenyan data.

The positive relationship between openness and growth also reported in India by Nowbutsing (2014). Indicators for trade openness used in the study were; trade expressed as a percentage of GDP, exports expressed as a percentage of GDP and imports expressed as a percentage of GDP. Results indicated that three indicators of openness to trade had a positive effect on growth. Imports expressed as a percentage GDP had the greatest impact on growth. In the same country India, Chatterji, Mohan and Dastidar (2014) also concurred with these findings after studying the causal relations between growth and trade openness. Their study used the VAR model and found that increase in trade volume accelerates growth. Tariq (2010) also established that trade openness has a positive and significant impact on growth of Asia. These studies did not analyse the short and long term relations between the variables. The current study will fill this gap by employing ARDL model to study this relationship.

Azeez, Dada and Aluko (2014) examined the causal relations between international trade and growth of Nigeria. Using OLS on time series data on GDP, imports and trade openness, findings revealed that trade had a significant and positive impact on growth. OLS estimation technique was however not appropriate for the time series data which in most instances is non stationary. For that case, OLS estimation might have led to supurious regression results. These limitations were taken care of in the present study by employing the ARDL model to bring out the true associationship between the variables. The association between growth and openness to trade was further studied by Hassen, Anis, Taha and Yosra (2013) in Tunisia using OLS technique. According to their findings, trade openness, FDI, financial development and human capital have a long term positive and significant impact on growth. Umer (2014) concurs with this

finding after studying the impact of openness to trade on growth of Pakistan. He employed ARDL approach which revealed that volume of trade, human capital and investment exert positive and significant effect on growth. The researcher further added that trade restriction tendencies have a negative and significant effect on growth in the long run. In another study by Paudel and Perera (2009) on trade openness, foreign debt, labor force and growth in Sri Lanka, it was concluded that cointegration exists between foreign debt, growth, labor force and trade openness. The study also reported that trade openness; labor force and foreign debt have a positive impact on growth in the long run. In a recent study in Nigeria by Olasode, Raji, Adedoyin and Ademola (2015), it was also observed that a long run equilibrium relation exist among growth, openness to trade, government spending, labour force, gross fixed capital formation, exchange rate and FDI. These studies were carried out in other countries other countries and there is need to investigate the scenario in Kenya. Apart from that, some of these studies employed OLS on time series data which is not an appropriate technique when analyzing non stationary time series data.

Githanga (2015) did an empirical investigation on Trade Liberalization and Economic Growth in Kenya using time series data for the period 1975 to 2013. Using OLS method, his findings revealed that openess to trade is signficant in explaining economic growth. Abdillahi and Manini (2017), concurs with this finding after studying the impact of trade openness on economic growth in Kenya using time series data for the period 1970 to 2014. His findings also revealed that openness to trade is significant in explaining economic growth.

### 2.3.4 Relationship between FDI and Economic growth

A number of studies have been done concerning growth and FDI and different results reported. Onwuka and Zoral (2009) from Turkey for instance analyzed the association

between imports and FDI using ARDL technique and found existence of a long run association between the two variables. GDP and domestic price level were found to be the most important determinants for imports growth in the long term. This study however failed to analyze the causal relations between growth and FDI. This shortcoming will be addressed in the current study using ARDL model. In a study by Hamid (2013) on openness to trade, exports, FDI inflows and growth in India using multiple regression analysis, findings revealed that 98 percent of variations in GDP is explained by openness to trade and exports. The OLS technique of analysis used was not appropriate since most of the times time series data is not stationary. Regression might be spurious and therefore the estimates may not be reliable in determining the relationship between these variables. This current research will therefore employ ARDL model to test the association between growth and FDI in Kenya.

The relationship between FDI and growth has also been studied by Kakar and Khilji (2011) in Pakistan and Malaysia using Granger methodology and Johansen cointegration technique. The study established that openness to trade has a long run and significant effect on growth. Bibi and Ahmad (2014) concurred with these findings after studying the effect of openness to trade, exchange rate, FDI, inflation, exports and imports on growth in Pakistan. This study employed Dynamic Ordinary Least Square and cointegration and established existence of a long term association among the variables. Trade openness on the other hand had a negative impact on growth. Shawa and Yaoshen (2014) also investigated the association between FDI and host counry GDP growth rate, exports and domestic investment in Kenya using cointegration technique concluded that, long run equilibrium relationships exist among the four variables. The present study will analyse the association between growth and FDI using ARDL technique and determine the consistency of these findings. Apart from that,

other variables such imports, openness to trade and exports will be included in this study. Granger methodology will also be used to tell the direction of causality. In a more recent study by Hussain and Haque (2016) on FDI, trade and growth carried out in Bangladesh found that trade and FDI had a significant effect on the GDP growth rate, This study employed the VECM technique whereas the present study will employ ARDL technique. A similar finding was reported by Ahmed, Cheng and Messims (2015) after studying the association between FDI, exports, imports and growth in Sub Saharan Africa using ARDL methodology and Pedroni estimation technique. The researchers established that FDI and exports exert a significant effect on growth. These studies did not report the short term and long term causal relations between these variables. This gap will be addressed in the current study

The association between FDI, exports and growth was also studied by Ndoricimpa (2009) in a panel of 16 COMESA countries. The study aimed at testing three hypotheses;, export led growth, FDI led growth and FDI led exports. Findings of this study suggested existence of FDI led growth, export led growth as well as the FDI led exports. Keho (2015) on the other hand found bidirectional causality after studying the association between exports, FDI and growth in Africa. He used multivariate cointegration approach of Johansen and established that growth has a positive and long run impact on FDI among five countries whereas exports were positively associated with FDI in four countries studied. Findings from Granger causality tests indicated a short term bidirectional causal relation between GDP and FDI and unidirectional causal relation resulting from GDP to exports in Ghana. The study reported existence of bidirectional causal relation between exports and foreign direct investment in Benin, Unidirectional causality resulting from GDP to exports was reported in Congo, Benin and Gabon. Unidirectional causality resulting from FDI to exports was evidenced in

Kenya, and Cote d'Ivoire. GDP and exports were found to cause FDI in the long term. In the long run, both GDP and exports caused FDI in Burkina Faso, Benin, Senegal and Gabon;. The study also reported bidirectional causality between GDP and FDI in South Africa and Cameroon, Cote d'Ivoire. Further analysis showed existence of bidirectional causality between exports, GDP and FDI in Congo. Existence of bidirectional causality between exports and GDP in Ghana and between exports and FDI in Kenya was also reported. These study did not demonstrate existence of any causal relations between FDI and growth in Kenya and moreso existence of long run equilibrium between the two variables. These shortcomings will be addressed in the present study.

Vogiatzoglou and Nguyen (2016) studied the relationship between exports, imports, Foreign direct investment and economic growth among Association of Southeast Asian Nations using time series data fro the period 1980 to 2014. Based on the vector error correction model, results showed that FDI led growth hypothesis was supporeted in these countries. Bi-directional causality was also reported between exports and FDI. Kitavi (2014) studied the impact of regional trade on growth among the East African countries. Proxies for trade were imports, exports and foreign direct investment. Findings of her study revealed that imports and exports exert positive and significant effect on GDP growth. This finding was further supported by Yelwa and Diyeko (2013) after studying export led growth in ECOWAS member countries using panel models analysis procedure. Their research supported export led growth hypothesis and there was no mention of the relationship between growth and FDI. It is clear that very few studies have analysed the association between FDI and growth. More so, little has been done to ascertain the short and long run equilibrium relations between FDI and GDP. These shortcomings are addressed in the present study which will employ ARDL model and Granger methodology.

Maingi (2014) studied the impact of FDI on economic growth in Kenya using time series data for the period 2004 to 2013. He conducted a correlation analysis and established that there is a direct positive relationship between FDI and GDP. Chege (2015) concurs with this finding after studying the impact of foreign direct investment on economic growth in Kenya using time series data for the period 1984 to 2013. His study used a regression model which led to the conclusion that there is a positive and significant relationship between FDI and economic growth. Shawa and Yaoshen (2014) studied FDI and GDP growth from the year 1980 to 2013 using co integration and Granger causality test. Results indicated existence of a long run relationship between FDI and GDP growth. Bidirectional relationship was also found between exports and FDI. This study did not indicate causality between FDI and GDP growth. The present study will however identify the causal direction between the two variables.

### 2.4 Summary of Literature and Emerging Issues

Literature review reveals conflicting arguments on causality directions between foreign trade and economic growth. Previous studies also adopted various econometric techniques such as the simple Ordinary Least Squares method to complex multivariate cointegration techniques. Marundu (2015) for instance used OLS on non stationary time series data hence the resulting regressions could not be used to make meaningful predictions. Studies that followed the right econometric procedure in time series analysis (Kwamboka, 2013) for instance did not exhaust all the determinants of foreign trade. The present study filled these gaps by determining causality between foreign trade and economic growth by employing appropriate econometric techniques such as ARDL modeling and Granger causality tests. The empirical model was also expanded to incorporate other variables such as Foreign Direct Investment and openness to trade as proposed by Hamid (2013).

## 2.5 Conceptual Framework

GDP growth rate in Kenya is a function of a number of factors such as foreign trade. Export growth earns foreign exchange therefore facilitating import of capital goods which drive economic growth. Foreign Direct Investment inflows are performed in order to create an export platform in the host economy which drives economic growth. Increased openness to trade signifies increased exportation and importation of goods and services which drive economic growth. The interaction between the variables is shown in figure 2.1 that follows.

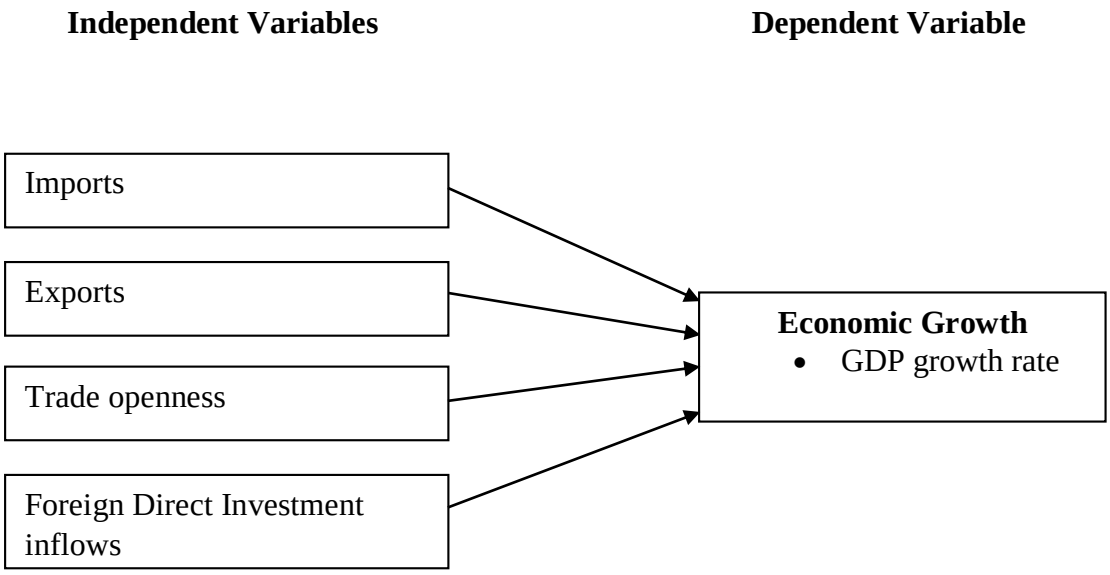


**Figure 2.1: Conceptual Framework**

***Source:*** Researcher, 2018

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.0 Overview

In this chapter, the researcher presented research design, data and the data sources, data analysis, empirical model that was adopted for the study, the variables that were used are defined and model diagnostic checks are presented.

## 3.1 Research Design

This research adopted both descriptive and explanatory research designs. Explanatory research is conducted in order to identify the extent and nature of cause and effect relationships. On the other hand, descriptive research design provides a picture of a situation as it naturally happens (Burns and Grove, 2003). The study used secondary data on imports, exports, foreign direct investment, openness to trade and economic growth for the period 1970 to 2017.

## 3.2 Types and Sources of Data

Time series data was used whereby data on GDP growth rate, exports, imports and Foreign Direct Investment for the years 1970-2017 was sourced from World Bank databank. To obtain the measure of openness to trade, values of imports and exports were summed then divided by the value of GDP. All the data obtained was measured in calendar years.

## 3.3 Data Analysis

Eviews 8 statistical analysis software was used to analyze the data. Both descriptive and inferential statistics were employed in this study. The first step involved determining if the series had a unit root using ADF test. ARDL modeling technique was used to determine cointegration. Schwarz information criterion was used to determine

the optimum lag length. Breusch-Godfrey Serial Correlation LM Test was done to determine whether the residuals were serially correlated. CUSUM test was used to test the robustness of the ARDL model for forecasting. Granger Causality test was also performed to establish the direction of causation of the variables.

### 3.3.1 Choice and Specification of the Model

The empirical model was defined as follows;

GDP = *ƒ (EXP, IMP, TO, FDI, €)*..... (i)

Where;

GDP= Gross Domestic Product growth rate

EXP= Real exports in constant prices

IMP= Real imports in constant prices

TO= Trade openness (EXP+IMP)/ GDP.

FDI= Foreign direct investment as a percentage of GDP

€= Error term captures other factors that explain GDP growth rate not included in the model

With GDP growth rate as the dependent variable, the linear form of the model was estimated as follows;

$$\ln GDP_t = \beta_0 + \beta_1 \ln EXP_t - \beta_2 \ln IMP_t + \beta_3 \ln TO_t + \beta_4 \ln FDI_t + \varepsilon \quad \text{(ii)}$$

### 3.3.2 Description and Measurement of Study Variables and Expected Sign

**Table 3.1: Description and Measurement of Study Variables and Expected Sign**

| Variable | Definition | Measurement | Expected Sign |
|---|---|---|---|
| Gross Domestic Product | Monetary measure of market value of finished goods and services produced in a country. | Annual percentage growth | Positive |
| Exports | Value of goods and services exported to other countries | Current US$ | Positive |
| Imports | The total value of all commodities imported from the rest of the world | Current US$ | Negative |
| Trade Openness | The ratio of the summation of imports and exports to GDP. | Current US$ | Positive |
| Foreign Direct Investment | A long term investment by a foreign entity in another country. FDI inflows are performed in order to create an export platform in the host economy, | Percentage of GDP | Positive |

***Source***, Author Conceptualization, 2018

### 3.3.3 Stationarity Test

The first step involved determining if the series had a unit root. According to Brooks (2008), this procedure is necessary for purposes of ensuring existence of a constant variance and mean so that the resulting regression model is meaningful. For a stationary series, there is no unit root and therefore integrated of order I(0). A stationary series does not have estimation problems. For a non stationary series, differencing is required to make it stationary. The order of integration as defined by Engel and Granger (1987) is same as the number of times a series needs to be differenced to become stationary. When testing the presence of unit root, two methods are used; Philips Perron test and

Augmented Dickey-Fuller test. However, this study will employ the ADF test. This technique relies on rejecting null hypothesis (H0=1). An ADF model is written as;

$\Delta y_t = \Psi y_{t-1} + \sum_{i=1}^{p7} \alpha \Delta y_{t-i} + \mu_t$ ..... (iii)

### 3.3.4 Model Diagnostic Tests

#### 3.3.4.1 Normality Test

Residuals are expected to be normally distributed with zero mean and constant variance. In order to observe misspecification problem, residuals will be observed. Breusch-Godfrey Serial Correlation LM Test was done to determine whether the residuals were serially correlated.

#### 3.3.4.2 Cumulative Sum of Recursive Residuals (CUSUM) Tests

Macroeconomic variables particularly time series variables are affected by changes such as in fiscal or monetary policy. It is therefore important to test stability of the modeled variables. CUSUM test will be used to test the structural stability of the modeled macroeconomic variables.

#### 3.3.4.3 Determination of Optimum Lag Length

It is important to find the optimal lag length in order to obtain standard normal error terms that do not suffer from non-stationarity, autocorrelation and non-normality (Gaussian error terms). Optimum lag length was determined using Schwarz information criterion. Pesaran and Shin (1998) advice that Schwarz information criterion is the most preferred lag selection criterion since it specifies more parsimonious specification. Apart from that, this criterion is appropriate for small data samples.

### 3.3.4.4 Cointegration

Brooks (2008) explains that developing dynamic economic models requires a detailed examination of characteristics of time series data involved. Should these features be ignored and the set of time series data modelled jointly, resulting regression output may indicate a high degree of correlation among the variables. Existence of a high degree of correlation among variables does not mean that there is a causal relation between these variables. On the other hand, when two or more variables are cointegrated, the possibility of the estimated relationship being spurious is ruled out according to Engle and Granger (1987).

Tests of cointegration like Engle and Granger two step (Engle and Granger, 19870), Phillips and Hansen (Phillips and Hansen, 1990), Johansen maximum likelihood (Johansen and Juselius, 1990) require I(1) variables. However, there are special cases where linear combination results in I(0) variable (Brooks, 2008). However, the requirement of I(1) variables does not always hold since the order of integration depends on choice of lag length, the type of unit root test and whether trend or a constant has been added in the unit root test used. To overcome some of these challenges, ARDL modeling technique can be used to estimate such cointegrating series according to Pesaran and Shin (1999). This technique allows estimation of long term relationship between variables. More so the choice of ARDL technique is motivated by the advantages it has over stationary series dependent cointegration tests. For instance, this model gives valid output regardless of whether the underlying series are *I(0), I(1)* or even a combination of both orders of integration. Lastly Ordinary Least Squares can be easily used to detrmine the cointegration relationship. According to Pesaran and Shin (1999), ARDL technique does not necessarily need symmetry of lag length since each

variable can have different number of lags. A simple example of the ARDL scheme can be presented as;

$y_t = w + \alpha y_{t-1} + \beta_0 x_t + \beta_1 x_{t-1} + \varepsilon_t$.....(iv)

This is labelled as ARDL (1,1) because the dependent variable and the explanatory variable are each lagged once as indicated in equation one above. The ε series is presumed to be a white noise. The ARDL model was estimated using OLS method (Hill, William and Guay, 2008). Based on equation (ii) above, the estimated ARDL model was;

$\Delta \ln GDP_t = \alpha_0 + \sum_{i=1}^{p} \gamma \Delta \ln GDP_{t-1} + \sum_{i=1}^{p4} \Phi_1 \Delta \ln X_{t-1} - \sum_{i=1}^{p5} ¥_1 \Delta \ln M_{t-1} + \sum_{i=1}^{p6} ɾ_1 \Delta \ln V_{t-1} + \sum_{i=1}^{p7} \upsilon_1 \Delta \ln FDI_{t-1} + \upsilon_{1\ln} GDP_{t-1} + \upsilon_4 \ln X_{t-1} - \upsilon_5 \ln M_{t-1} + \upsilon_6 \ln V_{t-1} + \upsilon_7 \ln FDI_{t-1} + e$..... (v)

Where ʊs denote the long run model parameters. To obtain the short run model parameters we estimate the following Error Correction Model;

$\Delta \ln GDP_t = \alpha_0 + \sum_{i=1}^{p} \gamma \Delta \ln GDP_{t-1} + \sum_{i=1}^{p4} \Phi_1 \Delta \ln X_{t-1} - \sum_{i=1}^{p5} ¥_1 \Delta \ln M_{t-1} + \sum_{i=1}^{p6} ɾ_1 \Delta \ln V_{t-1} + \sum_{i=1}^{p7} \Omega_1 \Delta \ln FDI_{t-1} + \eta ecm_{t-1}$..... (vi)

Where $\gamma, \beta, \psi, \Phi, ¥, ɾ$ and Ω denote the short term impact multipliers and η the speed of adjustment to equilibrium or the extent of disequilibrium correction in the model.

### 3.4.4.5 Granger Causality test

In order to determine the direction of causality, Granger causality test was employed. In econometrics, causality is defined as the ability of a variable being able to predict and cause the other. Given two variables, say $y_t$ and $X_t$ and assuming that they affect each other, the underlying relationship between these two variables can be estimated by a Vector Autoregressive model. The possible estimation results can be; $x_t$ causes $y_t$, $y_t$ causes $x_t$, there is bi-directional feedback or the variables are independent.

# CHAPTER FOUR

# RESULTS AND DISCUSSIONS

## 4.0 Overview

This section of the thesis starts by giving the descriptive characteristics of the time series variables. It then discusses the unit root test results, cointegration analysis, Granger Causality and finally diagnostic tests.

## 4.1 Descriptive Statistics

The purpose of descriptive statistics is to summarize data. Descriptive statistics entail mean, maximum and minimum among others. Descriptive statistics indicate the distribution of variables. Table 4.1 summarizes the results.

**Table 4.1: Descriptive statistics**

| | FDI (%) | Economic growth (%) | Imports (Kshs) | Trade openness (X+M)/GDP | Exports (Kshs) |
|---|---|---|---|---|---|
| Mean | 0.750248 | 4.558015 | 6320000000 | 0.431113 | 5,060,000,000 |
| Maximum | 3.45722 | 22.17389 | 18100000000 | 0.723385 | 10,600,000,000 |
| Minimum | 0.004721 | -4.65545 | 1560000000 | 0.262767 | 2,210,000,000 |
| Jarque-Bera | 49.54401 | 105.5536 | 10.3682 | 0.911572 | 0.711006 |
| Probability | 0 | 0 | 0.005605 | 0.63395 | 2.193625 |

***Source:*** Author, 2018

Average economic growth rate was 4.55 percent whereas the minimum was 4.65 percent. Maximum economic growth rate was 22.17 percent. According to Jarque-Bera probaility value (0), economic growth data is not normally distributed because the P value is less than 5 percent. Average FDI was **0.75** percent while the minimum was 0.004721 percent and the maximum was 3.45 percent. FDI data was not normally distributed according to Jarque-Bera probability value which is zero. Average imports were 6.32 billion while the minimum was 1.56 billion and the maximum was 18.1

billion. Imports data was not normally distributed. Average openness to trade was 0.43 while minimum was 0.26 and maximum was 0.72. Trade openness data was normally distributed ($p>0.05$). Average exports on the other hand were 5.06 billion while the minimum was 2.21 billion and maximum was 10.6 billion. According to Jarque-Bera probability value, export data was normally distributed ($p>0.05$). These results clearly indicate that import values have remained high since 1970 to 2017 compared to exports.

### 4.2 Unit Root Test

It is important to determine the order of integration of time series data before building econometric models. This ensures that the models resulting from these variables are statistically significant and can therefore yield valid predictions. Time series data can either be stationary or nonstationary. Modelling of nonstationary time series data results to spurious regressions which means, no meaningful predictions can be made from such models. The first step therefore was to test stationarity of the time series data using Augmented Dickey Fuller Test. This test relies on rejecting a null hypothesis which signifies extistence of a unit root. The aim of unit root test is to determine whether the time series data is stationarity or not. It is also important to perform unit root test especially for nonstationary series because the order of integration is easily determined. For a nonstationary series, differencing is required to make it stationary. When a nonstationarity series is modelled, the resulting regression model is termed as spurious which means no meaningful prediction can be made based on the model. The tables that follow summarize the results of stationarity tests.

**Table 4.2a: Unit Root Test at Level**

| Variable | ADF Test Statistic | Mackinon P value | Comment | Order |
|---|---|---|---|---|
| Log of Foreign direct investment | -6.194810 | 0.0000 | Stationary | I(0) |
| Log of Imports | 0.518688 | 0.9857 | Nonstationary | I(1) |
| Log of Exports | -0.095586 | 0.9438 | Nonstationary | I(1) |
| Log of Economic growth | -5.707637 | 0.0000 | Stationary | I(0) |
| Log of Trade openness | -2.215564 | 0.2037 | Nonstationary | I(1) |

*Stationarity was tested at 5 percent level of significance.*
***Source:*** Author, 2018

Test of stationarity was first done on the variables at level as shown in table 4.1. Findings revealed that economic growth and FDI were the only stationary variable. The order of integration was zero which is indicated as I(0). Other variables; imports, exports and Trade Openness were nonstationary since their P values exceeded 5 percent level of significance.

**Table 4.2b: Unit Root Test at First Difference**

| Variable | ADF Test Statistic | Mackinon P value | Comment | Order |
|---|---|---|---|---|
| Log of Imports | -6.648822 | 0.0000 | Stationary | I(0) |
| Log of Exports | -6.925151 | 0.0000 | Stationary | I(0) |
| Log of Trade openness | -6.450515 | 0.0000 | Stationary | I(0) |

*Stationarity was tested at 5 percent level of significance.*
***Source:*** Author, 2018

Table 4.2 indicates that imports, exports and Trade Openness were stationary at first difference. Their P values were less than 5 percent. Imports, exports and Trade Openness were therefore integrated of order one since the series had to be differenced

once in order to be stationary. The series is therefore a combination of I(0) and I(1) variables.

### 4.3 Cointegration Analysis Test Results

It is necessary to test co-integration when dealing with time series data in order to establish existence of linear long run economic relationship between the variables. Co-integrating variables are tested at levels since differencing to make the series stationary results to loss of long run information. When two or more variables are cointegrated, the possibility of the estimated relationship being spurious is rulled out according to Engle and Granger (1987). Tests of cointegration like Engle and Granger two step (Engle and Granger, 19870), Phillips and Hansen (Phillips and Hansen, 1990), Johansen maximum likelihood (Johansen and Juselius, 1990) require *I(1)* variables. However, the requirement of *I(1)* variables does not always hold since the oder of integration depends on choice of lag length, the type of unit root test and whether trend or a constant has been added in the unit root test used.

In this study, economic growth and FDI were found to be stationary and therefore integrated of order zero while imports, exports and Trade Openness were found to be non stationary and integrated of order one. Given the characteristics of the data, ARDL model was considered to be the appropriate model for testing the long run economic relationship among the variables. This is because the model gives valid output regardless of whether the underlying series are *I(0), I(1)* or even a combination of both orders of integration (Pesaran and Shin, 1999).

### 4.4 Lag Selection Results

It is important to consider the number of lags to be included in an econometric model because the more the lags, the less the degrees of freedom. It is advisable that the

number of lags selected should be minimal as much as possible. Pesaran and Shin (1999) advice that SIC is the most preferred lag selection criterion since it specifies more parsimonious specification. Apart from that, this criterion is appropriate for small data samples (less than 100 observations). Lag specification criteria is summarized in table 4.3.

**Table 4.3: Lag Selection**

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|---|---|---|---|---|---|---|
| 0 | -91.03042 | NA | 0.000108 | 5.054233 | 5.269704 | 5.130896 |
| 1 | 107.3375 | 334.0934 | 1.19e-08 | -4.070397 | -2.777566* | -3.610418 |
| 2 | 141.8591 | 49.05699* | 7.75e-09* | -4.571533* | -2.201343 | -3.728238* |
| 3 | 166.6456 | 28.70012 | 9.51e-09 | -4.560295 | -1.112745 | -3.333683 |
| 4 | 189.5731 | 20.51408 | 1.61e-08 | -4.451216 | 0.073693 | -2.841288 |

*** indicates lag order selected by the criterion**
***Source***: Author, 2018

From table 4.3, Schwarz information criterion indicates that the appropriate lag length for the ARDL model is lag one.

### 4.5 ARDL Model Estimation Results

Unrestricted and no Trend ARDL Model was estimated after obtaining the optimum lag length. The model is presented in table 4.4.

**Table 4.4: Unrestricted and no Trend ARDL Model**

Dependent Variable: D(Log of Economic Growth)
Method: Least Squares
Date: 07/24/18 Time: 10:11
Sample (adjusted): 1973 2017
Included observations: 42 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| Constant | -8.901202 | 6.020760 | -1.478418 | 0.1509 |
| D(Log of Economic growth (-1)) | -0.152734 | 0.094835 | -1.610517 | 0.1189 |
| D(Log of FDI) | 0.064585 | 0.070115 | 0.921134 | 0.3651 |
| D(Log of FDI (-1)) | -0.101960 | 0.080948 | -1.259585 | 0.2186 |
| D(Log of imports) | 15.36743 | 1.781263 | 8.627267 | 0.0000 |
| D(Log of imports (-1)) | 3.148682 | 2.828495 | 1.113200 | 0.2754 |
| D(Log of Exports) | 18.85598 | 2.111918 | 8.928369 | 0.0000 |
| D(Log of Exports (-1)) | 1.861853 | 3.507321 | 0.530848 | 0.5999 |
| D(Log of openness to trade) | -32.07889 | 3.661257 | -8.761714 | 0.0000 |
| D(Log of openness to trade (-1)) | -5.673491 | 5.618468 | -1.009793 | 0.3216 |
| Log of Economic growth (-1) | -1.222416 | 0.226238 | -5.403226 | 0.0000 |
| Log of FDI (-1) | 0.187754 | 0.144984 | 1.294996 | 0.2063 |
| Log of imports (-1) | -0.333789 | 0.695213 | -0.480124 | 0.6350 |
| Log of Exports (-1) | 0.711116 | 0.898891 | 0.791104 | 0.4358 |
| Log of openness to trade (-1) | -0.659716 | 0.704163 | -0.936880 | 0.3571 |

| | | | |
|---|---|---|---|
| R-squared | 0.902306 | Mean dependent var | -0.044199 |
| Adjusted R-squared | 0.851651 | S.D. dependent var | 1.112725 |
| S.E. of regression | 0.428579 | Akaike info criterion | 1.415770 |
| Sum squared resid | 4.959361 | Schwarz criterion | 2.036366 |
| Log likelihood | -14.73117 | Hannan-Quinn criter. | 1.643243 |
| F-statistic | 17.81246 | Durbin-Watson stat | 2.080074 |
| Prob(F-statistic) | 0.000000 | | |

***Source:*** Author, 2018

After obtaining the ARDL model results, the next step involved testing for long run relationship among the variables. The assumption is that the coefficients of Log of Economic growth (-1), Log of FDI (-1), Log of imports (-1), Log of exports (-1) and Log of trade openness (-1) are jointly zero, meaning that there is no long run relationship between the variables. The null hypothesis that was tested was;

H0 =C(11)=C(12)=C(13)=C(14)=C(15)=0

The general representation of the coefficients of the variables in the ARDL model is shown in table 4.5.

**Table 4.5: Variable Coefficients**

| | Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|---|
| C1 | Constant | -8.901202 | 6.020760 | -1.478418 | 0.1509 |
| C2 | D(Log of Economic growth (-1)) | -0.152734 | 0.094835 | -1.610517 | 0.1189 |
| C3 | D(LNFDI) | 0.064585 | 0.070115 | 0.921134 | 0.3651 |
| C4 | D(Log of FDI (-1)) | -0.101960 | 0.080948 | -1.259585 | 0.2186 |
| C5 | D(Log of imports) | 15.36743 | 1.781263 | 8.627267 | 0.0000 |
| C6 | D(Log of imports (-1)) | 3.148682 | 2.828495 | 1.113200 | 0.2754 |
| C7 | D(Log of Exports) | 18.85598 | 2.111918 | 8.928369 | 0.0000 |
| C8 | D(Log of Exports (-1)) | 1.861853 | 3.507321 | 0.530848 | 0.5999 |
| C9 | D(Log of openness to trade) | -32.07889 | 3.661257 | -8.761714 | 0.0000 |
| C10 | D(Log of openness to trade (-1)) | -5.673491 | 5.618468 | -1.009793 | 0.3216 |
| C11 | Log of Economic growth (-1) | -1.222416 | 0.226238 | -5.403226 | 0.0000 |
| C12 | Log of FDI (-1) | 0.187754 | 0.144984 | 1.294996 | 0.2063 |
| C13 | Log of imports (-1) | -0.333789 | 0.695213 | -0.480124 | 0.6350 |
| C14 | Log of Exports (-1) | 0.711116 | 0.898891 | 0.791104 | 0.4358 |
| C15 | Log of openness to trade (-1) | -0.659716 | 0.704163 | -0.936880 | 0.3571 |

***Source:*** Author, 2018

From the above table, the coefficient for the constant is C(1) whereas the coefficients for Log of Economic growth (-1), Log of FDI (-1), Log of imports (-1), Log of exports (-1) and Log of trade openness (-1) are C(11), C(12), C(13), C(14) and C(15) respectively. Cointegration among the four variables was tested using the Wald Test Coefficient Restrictions technique and results presented in table 4.6.

**Table 4.6: Wald Test of Cointegration**

| Test Statistic | Value | df | Probability |
|---|---|---|---|
| F-statistic | 6.080250 | (5, 27) | 0.0007 |
| Chi-square | 30.40125 | 5 | 0.0000 |

Null Hypothesis: C(11)=C(12)=C(13)=C(14)=C(15)=0
Null Hypothesis Summary:

| Normalized Restriction (= 0) | Value | Std. Err. |
|---|---|---|
| C(11) | -1.222416 | 0.226238 |
| C(12) | 0.187754 | 0.144984 |
| C(13) | -0.333789 | 0.695213 |
| C(14) | 0.711116 | 0.898891 |
| C(15) | -0.659716 | 0.704163 |

***Restrictions are linear in coefficients.***
***Source:*** Author, 2018

From table 4.6, the F-statistic was 6.080 and it was statistically significant since its P value was less than 0.05. The null hypothesis of no long run relationship is rejected If the estimated F-statistic falls above the upper bound critical value. On the other hand, we fail to reject the null hypothesis when the estimated F-statistic falls below the lower bound critical value. However, in a situation where the estimated F-statistic falls between the lower and upper bound critical values, it is best concluded that the results are inconclusive and in such a case, cointegration should be tested using other techniques such as the ECM version of ARDL (Pesaran et al., 2001). Due to the small sample size, Narayan (2005) critical values table was used in this study. This table is appropriate for sample sizes that are less than 100.

At the 5 percent level of significance, the lower and upper bound values were 3.136 and 4.416 respectively. Since the estimated F-statistic (6.080) was higher than the upper bound critical value, there is a long run relationship among economic growth and its

determinants, namely foreign direct investment, imports, exports and openness to trade. Existence of a long run economic relationship between economic growth, exports, imports, foreign direct investment and openness to trade has also been reported in other studies such as Hussaini, Abdullahi and Mahmud (2015) in India, Onwuka and Zoral (2009) in Turkey, Kakar and Khilji (2011) in Pakistan and Malaysia, Chigusiwa, Mudavanhu, Muchabaiwa and Mazambani (2011) in Zimbabwe and Shawa and Yaoshen (2014) in Kenya.

### 4.5.1 Long run ARDL Model

After establishing the existence of a long run economic relationship between economic growth and its determinants, the long run model was estimated to obtain coefficients. It was necessary to obtain the coefficients because of the need to test the statistical significance of the independent variables in explaining economic growth in the long run. According to the AIC and SBC, an ARDL model with lag specification (11111) was the best model to estimate the long run relationship among the variables. Table 4.7 presents computed long run coefficients.

**Table 4.7: Long run ARDL Model**

| Dependent Variable: Log of Economic growth | | | |
|---|---|---|---|
| **Variable** | **Coefficient** | **t-Statistic** | **Prob** |
| Constant | -1.453630 | -0.319136 | 0.7524 |
| Log of FDI | 0.084602 | 1.139723 | 0.3129 |
| Log of Exports | -0.616034 | 7.853371 | 0.3148 |
| Log of imports | 0.649368 | 9.478788 | 0.1798 |
| Log of openness to trade | -1.034556 | -9.318039 | 0.0750 |
| R-squared | -0.771716 | | |
| Adjusted R-squared | -0.711288 | | |
| F-statistic | -12.77082 (Prob. 0.0000) | | |
| Durbin-Watson stat | -2.206059 | | |

***Source**:* Author, 2018

The above table presents long run ARDL regression. The adjusted R Square value of 0.7112 implies that 71.12 percent of the variations in economic growth are explained

jointly by the independent variables. The F statistic is also statistically significant meaning that the model can be used to make valid predictions. This also implies that FDI, exports, imports and openness to trade determine economic growth in Kenya. Specifically, foreign direct investment had a positive and statistically insignificant coefficient of 0.084602. This means that FDI does not determine economic growth in the long run. This result contradicts Voglatzoglou and Nguyen (2016) who found a positive and significant effect between FDI and growth in Malaysia. However, the coefficient of FDI was the least compared to exports and imports.

The coefficient of exports (-0.616) was negative and statistically insignificant. This means that exports do not determine economic growth in the long run. These findings challenge the conventional view that exports contribute significantly to growth as theory suggests. However, similar findings have been reported by Forgha and Aquilas (2015), Dreger and Herzer (2011) and Lopeto (2006) among others. It therefore means that the impact of exports on economic growth is yet to be observed in some of the countries that have adopted export friendly policies. On the other hand, there are studies that have found a positive and significant relationship between exports and growth. Biyase and Zwane (2014) for instance found that an increase in exports by 1 percent would result to an increase in economic growth by 0.1 percent. Ndambiri, Ritho, Nganga, Mairura, Nyangweso, Muiruri and Cherotwo (2012) also found that exports significantly contribute to growth in all the 19 African countries they studied.

Imports on the other hand had a positive and statistically insignificant coefficient of 0.649368. This implies that imports do not determine economic growth in the long run. This result contradicts Veeramani (2014), Arawomo (2014), Katircioglu and Katircioglu (2011), Priede (2012), Marundu (2015) and Achchuthan (2013) who found existence of a positive and significant relationship between imports and GDP growth

rate in the long run. Other studies have reported existence of a negative and significant relationship between the two variables (Mohsen, 2015) whereas Kwamboka (2013) found a negative and insignificant relationship between imports and GDP growth rate. The coefficient of openness to trade (-1.034) was negative and statistically insignificant at 5 percent level of significance. This means that openness to trade does not determine economic growth in the long run. This result contradicts Hystad and Havard (2015), Bibi and Ahmad (2014), Githanga (2015), Abdillahi and Manini (2017), Sakyi (2010), Nowbutsing (2014), and others who found a positive and significant relationship between openness to trade and economic growth in the long run.

### 4.5.2 Short run ARDL model

**Table 4.8: Short run ARDL model**

| Variable | Coefficient | t-Statistic | Prob |
|---|---|---|---|
| Constant | -0.231181 | -1.908677 | 0.0589 |
| First difference of Log of FDI | 0.008990 | 0.993336 | 0.8983 |
| First difference of Log of imports | *3.487827 | 10.07122 | 0.0084 |
| First difference of Log of Exports | 2.331324 | 9.204718 | 0.1987 |
| First difference of Log of openness to trade | *-6.810128 | -9.628091 | 0.0149 |
| ECT(-1) | -1.005910 | -5.379219 | 0.0000 |
| R-squared | 0.892577 | | |
| Adjusted R-squared | 0.892577 | | |
| F-statistic | 25.75787 (Prob. 0.0000) | | |
| Durbin-Watson stat | 1.969451 | | |

***Source***: Author, 2018

Table 4.8 presents short run ARDL regression. The adjusted R-Square value of 0.8579 implies that 85.79 percent of the variations in economic growth are explained jointly by the independent variables. Specifically, the coefficient of FDI was positive and statistically insignificant. This means that FDI does not determine economic growth both in the short run and in the long run. These results are in line with Arawomo (2014)

and Ahmed and Uddin (2009) who found that FDI does not determine economic growth in the short run. Other studies that have found a positive and significant relationship between FDI and growth include Muhoro and Otieno (2014). The coefficient of imports (3.487827) was positive and statistically significant. This implied that imports determine economic growth in the short run. As a result, increase in imports by 1 percent will result to a 3.48 percent positive change in economic growth. These findings are in line with theory which suggests that import of capital goods from high technology countries contributes significantly to economic growth. In this regard, Ngumi (2009) also found a positive and significant relationship between imports and GDP. According to him, a 1 percent increase in imports will result to a 2.2 percent positive change in GDP.

Exports on the other hand had a positive and statistically insignificant coefficient of 2.331. This implies that exports do not determine economic growth both in the short run and in the long run. These results are contrary to the conventional view held by theory that exports contribute significantly to economic growth. This can be explained by Kenya's exports composition which is generally agricultural goods which do not command high value compared to high technology exports. However, there are studies from Kenya that have found a positive and significant relationship between exports and economic growth in the short run. Kwamboka (2013) and Muhoro and Otieno (2014) for instance found a positive and significant relationship between exports and growth. Lastly; trade openness had a negative and statistically significant coefficient of -6.810 which implies that openness to trade determines economic growth in the short run. The effect is however negative since increase in the degree of openness to trade by 1 percent will result to a 6.81 percent negative change in economic growth. These results supports Sakyi (2010), Muhoro and Otieno (2014) who found a negative and significant

relationship between trade openness and economic growth. On the other hand Aboubacari, Xu, and Ousseini (2014) did not find a significant relationship between trade openness and economic growth in the short run.

The speed of adjustment to equilibrium, the error correction term (ECT) has a negative and statistically significant coefficient of -1.005. This is the expected sign which further proves that there is a long run relationship between the variables. According to Narayan (2006), if the coefficient of the lagged error correction term lies between -1 and -2, it means that the error correction term generates weakened fluctuations in dependent variable. In the above short run model, the speed of adjustment to long run equilibrium after a shot run shock is 100 percent. This means that the deviation from the long term economic growth rate is corrected by 100 percent in the following year. The extremely significant error correction term further implies that the disequilibrium in the previous year is fully corrected in the present year.

### 4.6 Granger Causality Tests

Existence of a cointegrating relationship was supported among the variables which implied that there ought to be Granger causality in at least one direction. According to Granger (1988), long run Granger causality running from the independent variable to the dependent variable exists when the Error correction term is highly significant.

**Table 4.9: Pairwise Granger Causality Tests**

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---|---|---|---|
| Log of FDI does not Granger Cause log of Economic growth | 44 | 0.01689 | 0.8972 |
| Log of Economic growth does not Granger Cause log of FDI | | 2.98701 | 0.0915 |
| D(log of imports) does not Granger Cause log of Economic growth | 44 | 1.05235 | 0.3110 |
| log of Economic growth does not Granger Cause D(log of imports) | | 0.48628 | 0.4895 |
| D(Log of trade openness) does not Granger Cause log of Economic growth | 44 | 0.00962 | 0.9224 |
| log of Economic growth does not Granger Cause D(Log of trade openness) | | 1.35123 | 0.2518 |
| D(Log of exports) does not Granger Cause log of Economic growth | 44 | 0.77858 | 0.3827 |
| log of Economic growth does not Granger Cause D(Log of exports) | | 0.61436 | 0.4377 |

***Source***: Author, 2018

Granger causality tests revealed that there was no causality between FDI, openness to trade, imports, exports and economic growth in the long run at 5 percent level of significance. These results are consistent with long run ARDL results which revealed that the independent variables were not significant in determining economic growth in the long run. Absence of Granger causality between the variables means that we cannot reject the following null hypotheses; exports do not cause economic growth in Kenya, imports do not cause economic growth in Kenya, openness to trade does not cause economic growth in Kenya and finally, FDI inflows do not cause economic growth in Kenya.

Based on these results, we can further state that Kenya does not support import and export led growth. These results however contradict studies that have found existence of export and import led growth in Kenya. Olaniyi (2013) and Kwamboka (2013) for instance found evidence of both import and export led hypothesis whereas, Muhoro and

Otieno (2014), Mohan and Nandwa (2007) and Muhoro (2012) found evidence of export led growth hypothesis in Kenya.

### 4.7 Diagnostic checks

#### 4.7.1 ARDL Model

The estimated ARDL model was tested for serial correlation and stability using the Breusch-Godfrey Serial Correlation LM Test and CUSUM test respectively. Findings are reported in table 4.10a.

**Table 4.10a: Breusch-Godfrey Serial Correlation LM Test:**

| | | | |
|---|---|---|---|
| F-statistic | 1.098743 | Prob. F(1,26) | 0.3042 |
| Obs*R-squared | 1.702927 | Prob. Chi-Square(1) | 0.1919 |

***Source:*** Author, 2018

The results on serial correlation revealed that the estimated ARDL model did not suffer from serial correlation. This is because, the P value (0.1919) is greater than 0.05.

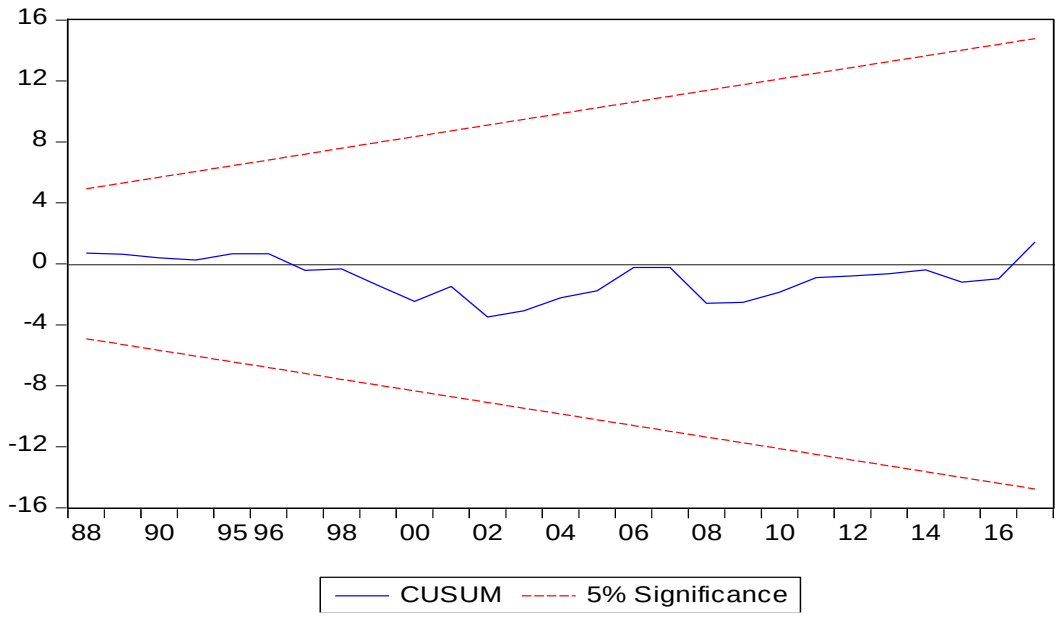


**Figure 4.1a: Stability Test**

***Source:*** Author, 2018

The model was further subjected to stability tests using CUSUM test. Results indicated that the model was stable. This decision was arrived after observing the blue line, which was in between the two red lines. Should this line exceed the red lines, it means the model is unstable and cannot therefore be used to make economic forecasts.

### 4.7.2 Long run ARDL model

Breusch-Godfrey Serial Correlation LM Test and CUSUM test were conducted on the long run ARDL model. Findings are reported in table 4.10b.

**Table 4.10b: Breusch-Godfrey Serial Correlation LM Test:**

| | | | |
|---|---|---|---|
| F-statistic | 1.076077 | Prob. F(1,33) | 0.3071 |
| Obs*R-squared | 1.389461 | Prob. Chi-Square(1) | 0.2385 |

***Source***: Author, 2018

The estimated long run ARDL model did not suffer from serial correlation. This is because, the P value (0.2385) is greater than 0.05.

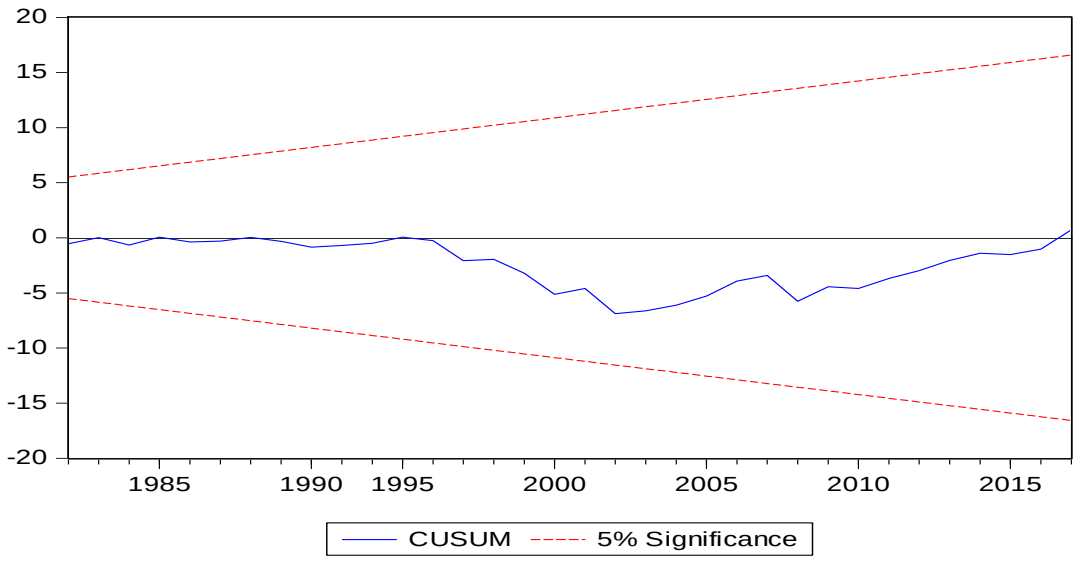


**Figure 4.1b: Stability Test**

***Source:*** Author, 2018

The model was also found to be stable according to CUSUM test. The model was therefore fit for economic analysis.

### 4.7.3 Short run ARDL Model

The estimated short run ARDL model was subjected to serial correlation and stability tests using the Breusch-Godfrey Serial Correlation LM Test and CUSUM test respectively. Findings are reported in table 4.10c.

**Table 4.10c: Breusch-Godfrey Serial Correlation LM Test:**

| | | | |
|---|---|---|---|
| F-statistic | 0.211015 | Prob. F(1,30) | 0.6493 |
| Obs*R-squared | 0.293357 | Prob. Chi-Square(1) | 0.5881 |

***Source:*** Author, 2018

Findings revealed that the estimated short run ARDL model did not suffer from serial correlation was stable. The model was therefore fit for economic predictions.

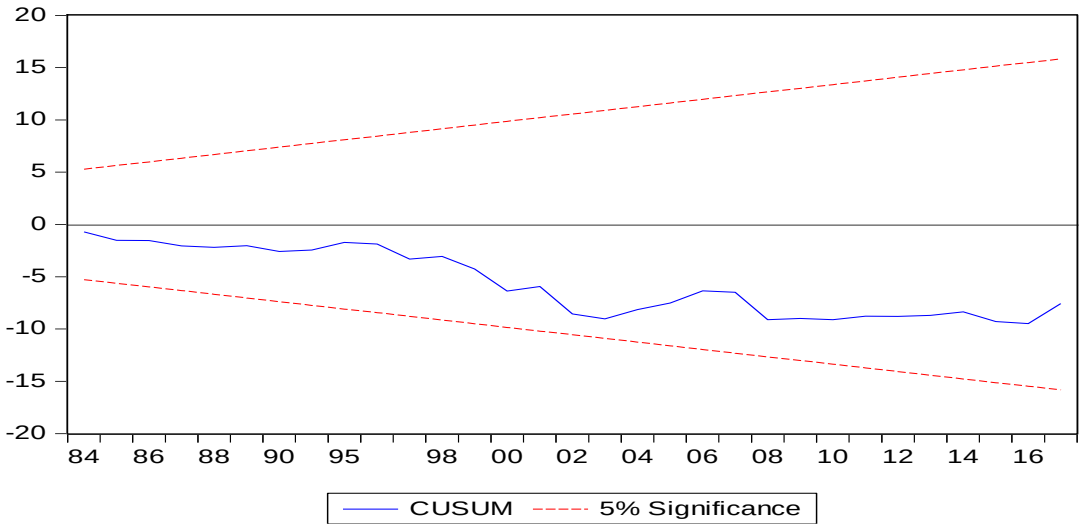


**Figure 4.1c: Stability Test**

***Source:*** Author, 2018

The model was also found to be stable according to CUSUM test. The model was therefore fit for economic analysis.

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

## 5.0 Overview

This section is organized as follows. Section 5.1 gives summary and conclusion of the study, 5.2 policy implications and finally 5.3 identifies areas of further research.

## 5.1 Summary and Conclusion

The aim of the study was to determine causality between foreign trade and economic growth in Kenya. The study began by giving an overview of economic growth in Kenya since 1970 to 2017 and the costs associated with slow economic growth. The study went on to examine the trends in foreign trade in Kenya. Autoregressive distributed lag model was used to determine the long run and short run properties of the modelled variables (economic growth, exports, imports, foreign direct investment and trade openness). This technique was chosen because of the underlying characteristics of the time series data which were found to be a mixture of stationary and first difference stationary. The test revealed existence of cointegration and provided parameter estimates for both the short run and long run. In both cases, the models passed the diagnostic tests and were therefore fit for making forecasts. The short run model revealed that deviation from the long term economic growth rate is corrected by 100 percent in the following year. In this study, we fail to reject the null hypothesis that the independent variables (exports, imports, foreign direct investment and trade openness) do not granger cause economic growth.

## 5.2 Policy Implications

The study has demonstrated that foreign trade does not granger cause economic growth. For this reason, Kenya needs to address a number of issues for her to realize the gains

from foreign trade. Specifically, the national industrialization policy should be fully supported and implemented in order to promote export growth. On the other hand, import of goods should be restricted to capital goods, raw materials and intermediate goods that can be processed further by local industries. Favourable policies that will encourage foreign direct investments should also be adopted. It is also necessary for Kenya to drive towards more trade openness in order to attain a positive impact on economic growth since the degree of trade openness is still far from impacting economic growth positively. Trade openness should however be geared towards promoting exports.

### 5.3 Suggestions for Future Research

Future research should test causality between foreign trade and economic growth using a different set of data such as the rate of change in export and import values instead of the real import and export values. Researchers should also consider using ARDL model because of its superior features compared to other techniques of testing cointegration.

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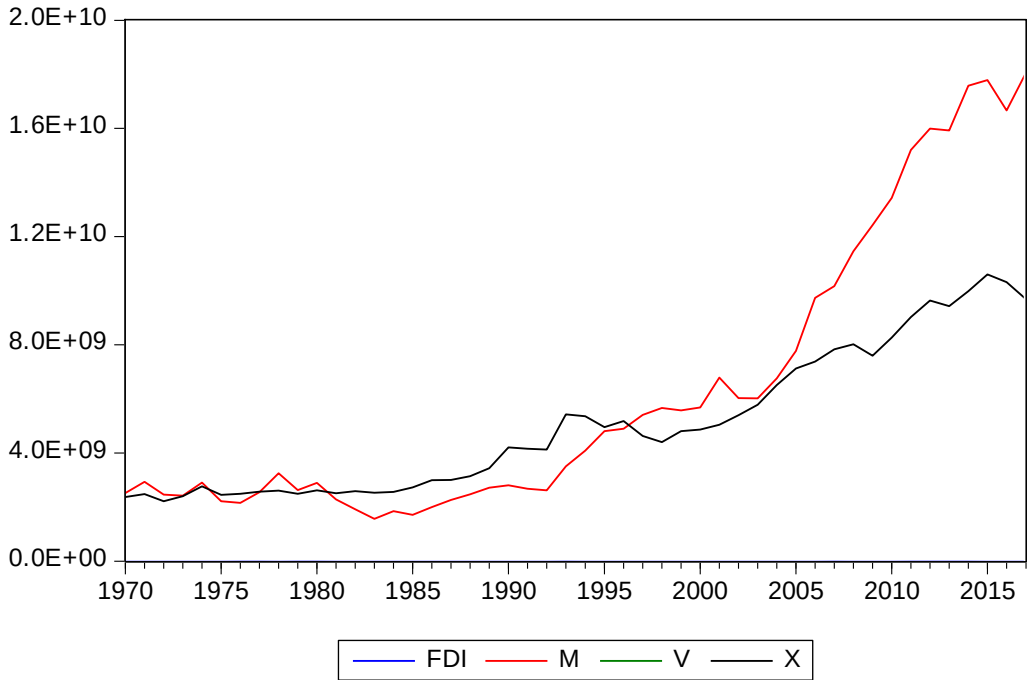
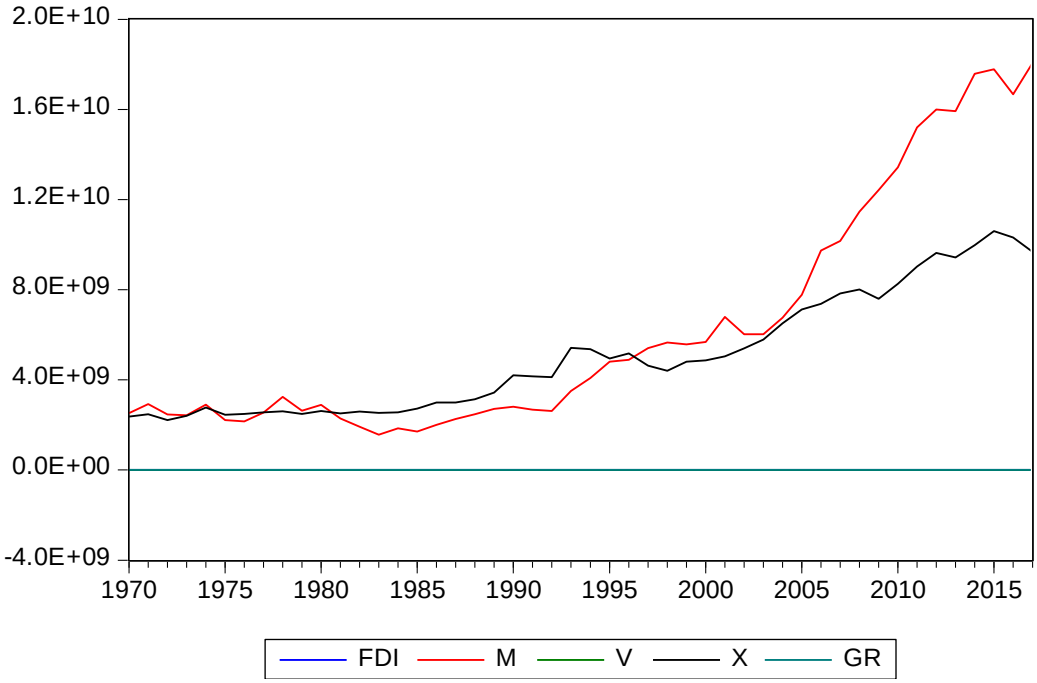
# APPENDICES

## Appendix I: Trends and composition of Foreign Trade



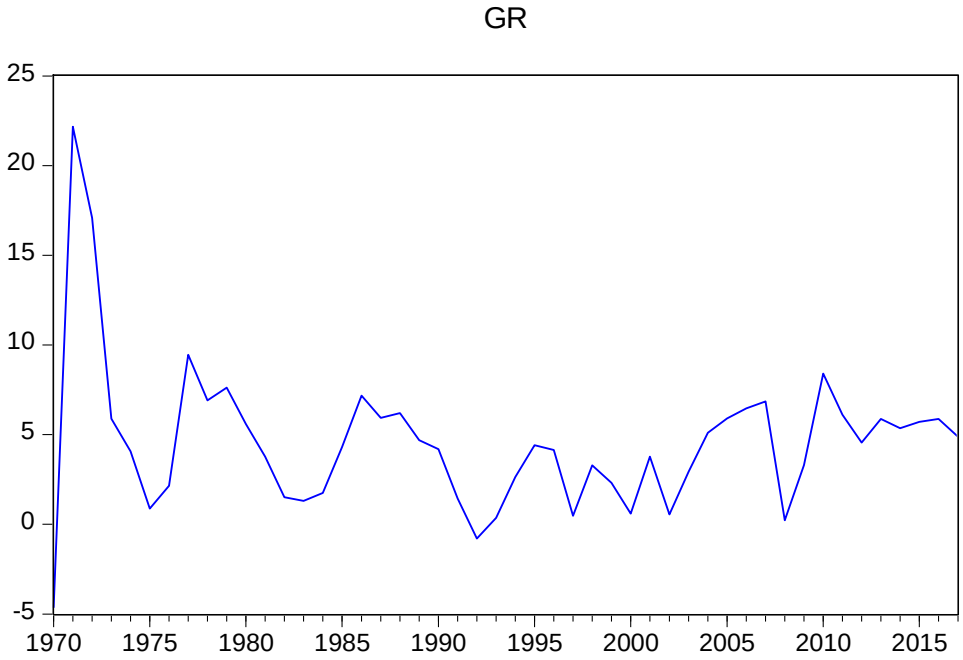

***Source of Data***: World Bank (2018)

**Appendix II: Foreign Trade and Economic Growth in Kenya**




***Source of Data***: World Bank (2018)

**Appendix III: Trends in Economic Growth in Kenya**




***Source of Data***: World Bank (2018)