DETERMINANTS OF IMPORTS DEMAND IN KENYA

FAUSTINAH NZAMBI KARURI

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DECLARATION

This research paper is my own original work and has not been presented for any degree award in any other university.

Signature.....

Date.....December 5, 2022.....

FAUSTINAH NZAMBI KARURI

REG. NO.: X50/85638/2016

This research paper has been submitted for examination with my approval as the university supervisor.

Signature.....

Date.....06.12.2022.....

DR. BETHUEL KINYANJUI

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DEDICATION

This research paper is dedicated to my dear parents, Mwende Musyoka and Karuri Musyoka (Late), my siblings, and my doting daughter Ayn.

ABSTRACT

This study investigated major determinants of import demand in Kenya, using annual time series data on study variables for the period 1970-2020. It disaggregates the expenditure components of national income to investigate how expenditure and relative import prices affect the import demand of the country. Through use of consumer demand theory framework, the study formulated an import-demand function with real value of imports being the outcome variable, the determinants of imports as the explanatory variables, and followed Khan (1974), the aggregate demand system. To determine the relationships among the variables, an Autoregressive Distributed Lag model was applied to estimate the resulting conditional ECM. A long run relationship between imports, government consumption, investment, and exports were established. A negative relationship was however established between relative prices and imports.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

International trade focuses on both imports and exports of goods and services and plays a critical role in economic development, both directly and indirectly through the multiplier effects. Through trade, economies are able to expand their markets, generate and distribute income, create employment, increase competitiveness, and reduce poverty, Geda, (2012); Anderson, Larch, & Yotov, (2020); Ossa, (2015); Feddersen et al., (2017). Whereas trade entails both exports and imports, a lot has already been written about the former compared to the latter. Various studies have shown the different benefits accrued from importing of goods and services. For instance, Imports provides a big source of raw materials for local industries that are not able to get raw materials internally, and increased intermediate imports increases local productivity, Vacu and Odhiambo, (2020); Keller, (2000)). By importing capital goods and technology, firms enhance their productivity by increasing output and revenues and this in turn increases a country's Gross Domestic Product, Arawomo, (2014); Halpern et al, (2015), Alaoui, (2015); Bakari and Krit, (2017); Cavallo and Landry, (2018); Aisien and Abraham, (2019); Fannoun and Hassouneh, (2019); Aluko and Adeyeye, (2020).

With many countries in Africa not being self-sufficient, importation then constitutes a huge percentage of their trade structure. Because of this, trade in Africa has evolved significantly over the last few decades, with the real impact of international trade coming through the Structural Adjustment Programmes (SAPs). The SAPs of 1980s by the Bretton Woods[1] institutions incorporated a trade liberalization component that required African countries to liberalize their

[1] International Monetary Fund and World Bank

trade to improve their balances of payments and solidify their ability to produce goods and services (Heidhues, & Obare, (2011).

The determinants of imports can be explained based on classical and new trade theories. From the classical theories of trade, the perfect substitute model of imports is derived. Domestic and foreign goods attain perfect substitutability over time. The perfect substitute model shows the inexistence of separate demand and supply functions meaning that a country would only have excess demand for imports and exports as long as the law of one price holds across different nations (Harris, 1998). This model is based on assumptions that there are no any other associated costs other than the price. On the other end, the new trade theorists advocated for the imperfect substitute model that shows foreign and domestic goods as coexisting in the same market.

Various studies have been done in Africa, for instance, Ghodsi et al (2021) revisits the import demand elasticities for over 150 countries to show how country specific characteristics impacted on price elasticities of import demand; Ngoma et al (2020) examines the import demand determinants in Zimbabwe; Olabisi et al (2020), surveyed imports and exports demand for 46 African countries by sampling 32 published papers to show the responsiveness of countries to the usual determinants; Ayodotun et al (2016) modeled the import demand determinants for Sub Saharan Africa, similarly to Asaana and Sakyi (2020). Vacu (2020), applied the cointegration bounds test to explain the drivers of imports in South Africa while Keho (2019) uses the ARDL methodology to study the traditional imports demand function for Cote D'Ivoire. In Kenya, studies such as Friesen (1975), Mwega (1993), Muluvi et al (2014) and Mutuku and Mbithi (2017), and Abodi et al (2021) have been carried out using different econometric techniques to investigate the factors affecting imports.

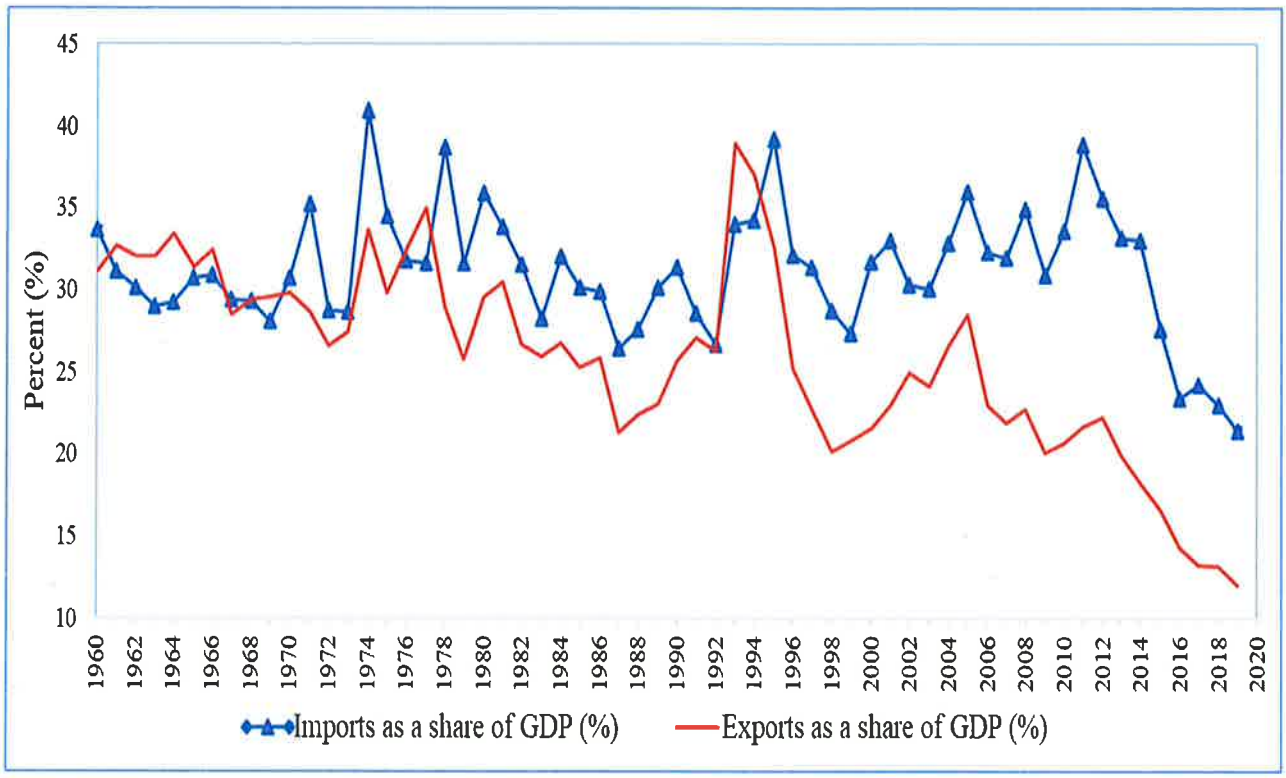
This study therefore updates previous studies by bridging the time period gap, the economic structure change, and applies a different estimation methodology. It disaggregates the expenditure components of national income to investigate how expenditure and relative import prices affect imports demand in Kenya. It uses Autoregressive Distributed Lag Model (ARDL) bounds estimation technique to examine level relationships among variables, a deviation from the various methodologies that have been used in the past studies.

1.1.1 Trends in imports in Kenya

Trade in Kenya has continued to evolve with evolution of trade policies and government regimes (Figure 1.1) and hence the need to focus on the key determinants of these changes and how they impact on the demand for imports (Schurman, & Munro, 2013). After independence until the late 70s, Kenya pursued imports substitution policies that were in place during the colonial period. These policies were aimed at protecting local industries, developing trade, easing pressure on balance of payments, and creating opportunities for employment. At the time, European communities remained the largest trade partners to Kenya. The share of imports to GDP remained low and relatively stable in the 60s while that of exports was higher (Gertz, 2008; Omiti et al 2007)

In the 1970s, the economy experienced huge macroeconomic shocks, for instance, the global recession and drought, and the oil price crisis which led to a huge balance of payment disequilibrium resulting from the high import bill. However, this was reversed as the coffee boom peaked in 1975, spilling over to the tea sector in 1977, and this helped in correcting the balance of payment deficit experienced in the early 70s as reserves from the exports continued to accumulate. However, this surplus was short-lived as by 1980, tea and coffee prices had normalized, and the East African Community, which provided a market for Kenya's manufactured goods collapsed in 1977, reducing its demand, (Swamy, 1994; Gertz, 2008; Were et al., 2009).

Figure 1.1: Kenya's imports and exports as a percent of GDP from 1960-2019.



Source: World Bank, 2021

In 1980, the Structural Adjustment Programs (SAPs) were adopted to further liberalize trade, and Kenya got its first conditional structural adjustment loan from the Breton woods institutions. These SAPS focused on outward-looking policies which entailed highly competitive markets, export expansion, and reforms in trade policies. This was achievable through removal of the quantitative restrictions and tariffs reduction as well as a flexible exchange rate. Imports and exports performed poorly in the 80s relative to the 70s, owing to the macroeconomic mismanagement and governance issues during the time. (Swamy, 1994; Were et al, 2001; Were at al, 2009; Gertz, 2008; Glenday and Ndii, 2003; ROK; 2003; ROK, 2007; ROK, 2017;).

The trade liberalization and export promotion policies in the early 90s significantly boosted imports and exports. Around the same period, regional integration, and trade, in general, grew with the revival of COMESA and EAC which had collapsed by 1977, and Kenya's membership in

AGOA, IGAD, and World Trade Organization (WTO), supported Kenya's exports performance. Moreover, macroeconomic reforms and strategies such as the removal of import licensing and quantitative import restrictions, forex regulations, and tariff reduction were effective in promoting trade. However, thereafter, the country faced huge challenges such as the freezing of donor funds to Kenya in 1993, the drought of 1996-1997, and the elnino rains of 1998 which adversely affected economic activities in the country, leading to declined trade, (Swamy, 1994; Were et al, 2001; Were at al, 2009; Gertz, 2008; Glenday and Ndii, 2003).

In the early 2000s, a new government that was pro reforms took power, with strategies and sound macroeconomic policies that would stimulate the economy to recovery, reversing the economic stagnation of the 80s and 90s. During this time, the country tightened its trade ties with the East and invested massively in infrastructural projects that would act as enablers of growth in other sectors. During this period, imports of capital goods for the infrastructural projects increased significantly, though exports continued to decline throughout the Kibaki government tenure. The Jubilee government took power in 2013 and continued investing massively in infrastructural projects which sustained the high import bill. For instance, the construction of the Standard Gauge Railway was a capital-intensive investment that resulted in higher import values in the period 2013-2017. However, as the SGR construction came to an end, imports a share of GDP has been declining to date, (National Trade policy, 2017; GOK 2002, Vision 2030 plan).

1.1.2 The Structure of imports in Kenya

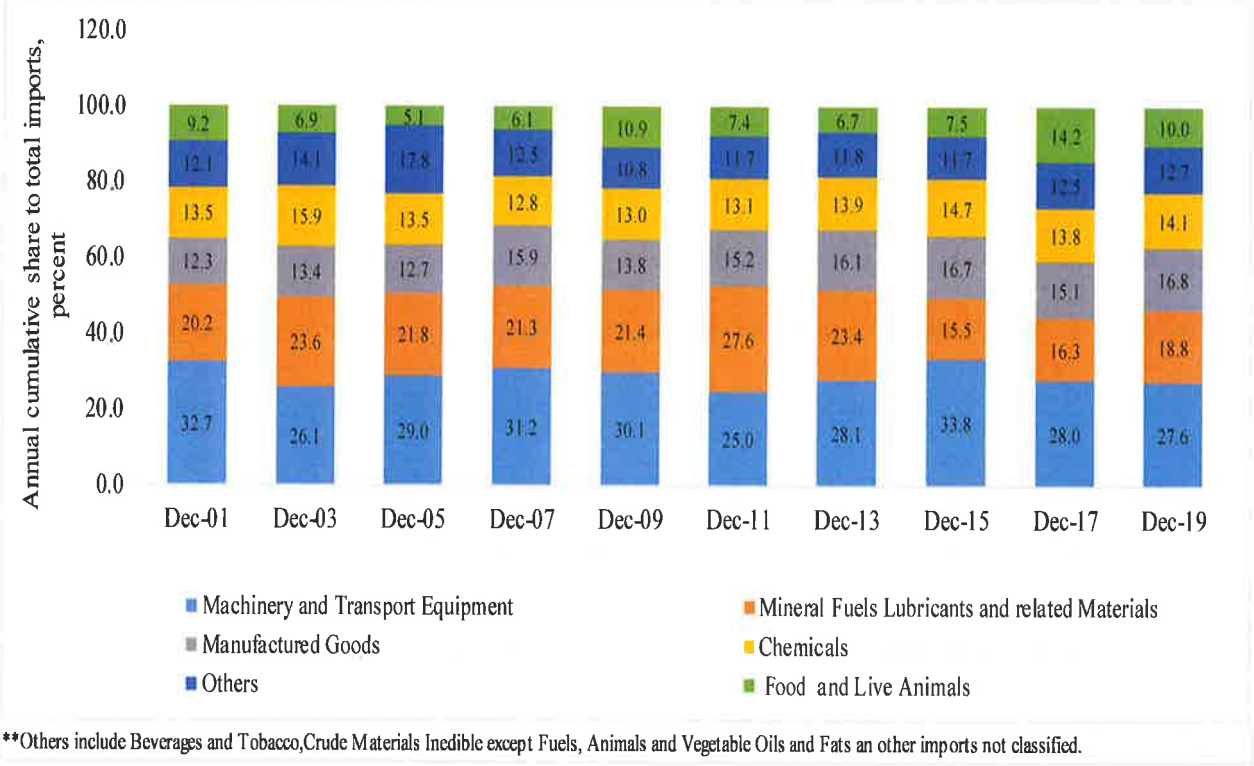
Even though Kenya's imports have been rising, their structure has remained largely unchanged. Machinery and transport equipment, mostly used in the industrial sector, have continued to form the bulk of the imports, accounting for an average of around 29.0 percent of total imports in the period under study while Mineral fuels and lubricants account for around 21.7 percent of Kenya's

imports. These consist of items such as petroleum, diesel, LPG gas, and lubricants used in the transport sector, and various industries to run equipment and machinery **(Figure 1.2 and 1.3)**.

Manufactured goods imports have been on the rise since the mid-2000s, and account for around 16.8 percent of annual cumulative imports in the year to December 2019, from around 11.1 percent in December 2000. This increase is in tandem with the increasing factor incomes in the country, as seen in the growth of the gross national income (GNI), which increased to 63.8 billion US dollars in 2019, compared to 25.9 billion US dollars in 2000. Chemicals and related products, which are mainly used as industrial inputs, especially in the manufacture of drugs account for around 14.1 percent of total imports in the study period **(Figure 1.2 and 1.3).**

The share of foods and live animals to total imports during the study period was 7.8 percent, although the shares increased significantly in 2009 and 2017 when the country faced severe drought. This compromised local food production and sufficiency, calling for increased food imports especially of maize grains, the country's staple food, to avert the situation. Other imports, which in total account for around 13.0 of total imports, consists of items such as beverages, tobacco, crude materials, animal oils, vegetable oils, fats, waxes, and miscellaneous manufactured articles (CBK BOP Statistics, World Bank, 2021) **(Figure 1.2 and 1. 3).**

Figure 1.2: Share of annual cumulative imports in percent; 2001 to 2019



**Others include Beverages and Tobacco,Crude Materials Inedible except Fuels, Animals and Vegetable Oils and Fats an other imports not classified.

Source: Central Bank of Kenya Balance of Payments Statistics

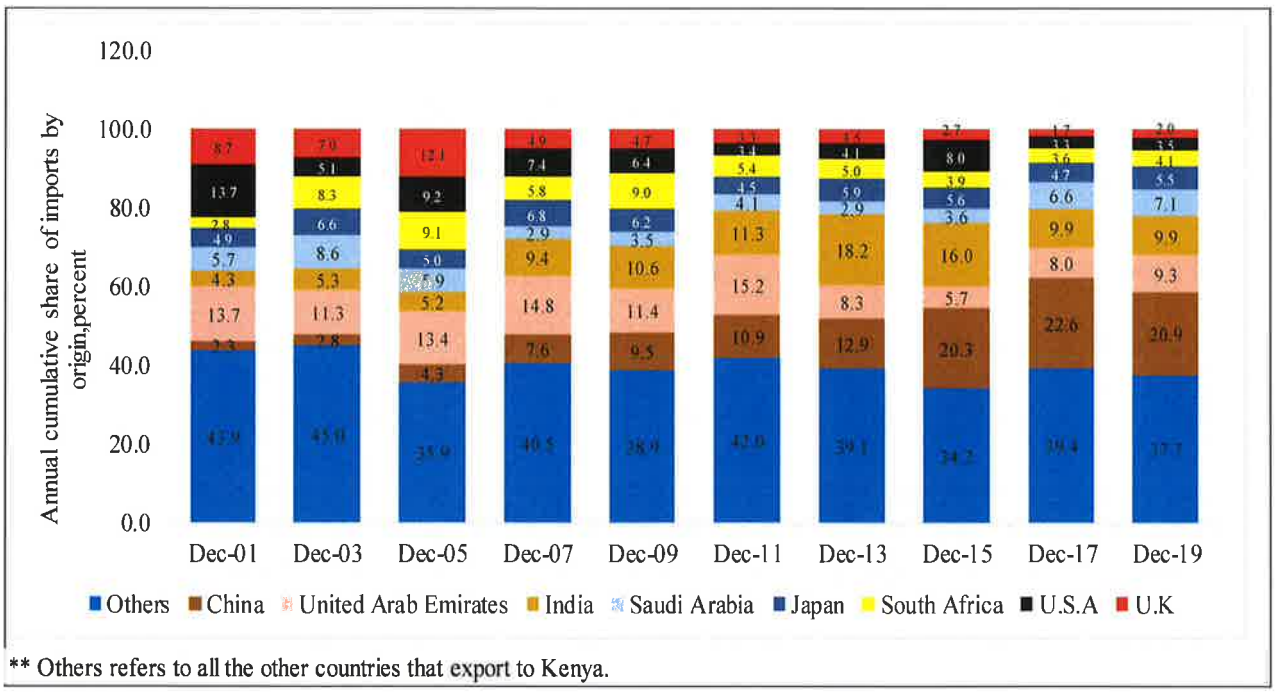
1.1.3 Major exporters to Kenya

China is the major exporter to Kenya according to Figure 4, accounting for around 21.0 percent of Kenya's imports in 2019, a position it has held since 2015 as Kenya's trade ties with the East continued to strengthen as the country sought to gain more resources, investments, and technology from abroad. Kenya's trade ties with China have continued to grow since the early 2000s following the year 2000 formation of the Forum for China-Africa Five Cooperation (FOCAC) that aimed at promoting economic, political, and diplomatic relations between China and African countries, Tsokalida and Jun (2019).

Figure 1.4 also shows that India is the second-largest exporter to Kenya, accounting for around 10 percent of the total imports. The main import commodities to Kenya include pharmaceuticals, mineral oil, and machinery among other goods. In the early 2000s, United Arab Emirates was the

largest exporter to Kenya accounting for around 13.7 percent of the total imports to the country in 2000. However, by 2019, the share of its imports to Kenya had reduced to around 9.3 percent. On the other hand, Saudi Arabia's exports to Kenya have increased to 7.1 percent from 5.7 percent during the same period. Oil and mineral fuels remain Kenya's main import from the Middle East countries. Other major importers to the country include Japan, the Republic of South Africa and other western countries which export machinery and equipment to the country (Central Bank of Kenya Balance of Payments Statistics, 2020).

Figure 1.3: Annual cumulative share of imports in percent; 2001 to 2019



** Others refers to all the other countries that export to Kenya.

Source: Central Bank of Kenya Balance of Payments Statistics

1.2 Statement of the problem

Kenya's imports have assumed an upward trajectory since the 80s, driven by the need to narrow the domestic consumption and production gap, provision of goods for further industrial production, and increased capital investments (Republic of Kenya; 2008, 2013, 2017 & 2018). Given the

centrality of imports in an economy, an understanding of the country's import demand function has vital economic implications, as it can inform policy formulation and implementation aimed at correcting the trade and revenue deficit that Kenya has been experiencing in the last few decades. Understanding the magnitude and rate of response of imports to various variables can be useful in tailor-making sector-specific policies to enhance performance and growth. Several approaches have been advanced in studying the demand for imports globally.

For instance, in Kenya, studies such as Friesen (1975), Mwega (1993), Muluvi et al (2014) and Mutuku and Mbithi, (2017) have been carried out, using different econometric techniques such as the simple regressions, error correction model, panel data analysis and Engel and granger causality, respectively, for different time periods ranging from the trade liberalization period to 2016. These studies explored different variables and arrived at different conclusions.

Friesen's study estimated and compared drivers of import demand in Kenya with those of existing literature on import demand found these variables as key in explaining imports determinants Kenya. Mwega (1993) found that lagged imports were strongly affected by forex reserves as well as earnings from forex. This study concluded that increases in earnings from export and the growing influx of foreign direct investment could positively impact the volumes of imports in Kenya. However, the study could have done better by applying GMM methodology to capture short-run dynamics.

Mutuku and Mbithi, (2017) study found import standards as inhibiting to imports owing to the procedures involved to get conformity certificates. Moreover, Kenya's economic performance and that of its trading partners were found to significantly impact the country's imports. Muluvi et al (2014), study singled out exchange rate, openness, real GDP, and forex reserves as the major drivers of Kenya's import demand. Mwega's study, though detailed, concentrated on the trade

liberalization period. However, since then, Kenya's economic circumstances have significantly evolved, with Kenya's imports increasing significantly from the year 2000 while the exports have continued to decline. Therefore, an update to these studies using the most recent data would be important to ascertain if their findings still hold, given the evolution of the economy and the continuous change in the structure of imports of the country's origin. This would add to the existing literature.

This study updates previous studies by bridging the time period gap, the economic structure change, and uses a different methodology. It disaggregates the expenditure components of national income to investigates how expenditure and relative import prices affect imports demand in Kenya. It uses Autoregressive Distributed Lag Model (ARDL) bounds estimation technique to examine level relationships among variables, a deviation from the different methodologies that have been used in the past studies. This method of estimation is important in examining level relationships among variables, under the Conditional modeling technique and based on VAR (n) (Muhammad, & Zafar, 2016).

1.3 Research objectives

This study is mainly focused on the determinants of imports demand in in the country.

To be specific, this study aimed at identifying:

i. Short-run determinants of imports demand in Kenya.
ii. Long-run determinants of imports demand in Kenya.

1.4 Research questions

The following research questions have been formulated to respond to the stated objectives:

i. What are short-run determinants of imports demand in Kenya?

ii. What are the long-run determinants of imports demand in Kenya?

1.5 Significance of the study

The study aimed at adding to empirical evidence on existing literature on determinants of imports demand in Kenya. Imports are a key ingredient of exports as some imported goods are used in the production of exports, which play a key role in transforming countries to higher income levels, for example, Asian tigers. Therefore, understanding the imported goods with a higher multiplier effect on exports is key in understanding the economic transformation of a country as this has implications on investment and output. Moreover, imports impact largely on domestic inflation, reserves, debt service and exchange rates. Therefore, this study is critical for policy makers in fiscal bodies such as the National treasury that are responsible for formulating policies aimed at correcting the balance of payments deficit, Revenue authorities that regulates and manages tax collection, and monetary authorities such as the central bank that are responsible for price stability and exchange rate management. Other stakeholders such as the ministry of trade, importers and consumers would also benefit this study findings.

1.6 Study organization

The study commences with chapter one detailing the background, problems statement, the objectives, and the study contribution. Chapter two provides a concrete review of theoretical and empirical literature as chapter three presents the methodological approach. Key findings from the study and policy implications are discussed in chapter four while chapter five gives a summary and concludes the study.

1.7 The study scope

This study will conduct a time series analysis of imports demand drivers in Kenya for the period 1970-2020 using annual secondary data for all the variables, extracted from the country's statistical

body, among other sources. The biggest limitation of this study was that all data required was not available on a quarterly basis, thus annual time series data was used instead.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter commences with a review of the theoretical literature to shed light on the drivers of imports demand in Kenya. This is followed by a review of empirical literature that provides a summary of key similar studies that have been done recently on determinants of imports globally, in Africa, and then in Kenya. The chapter will end with a concise overview of existing theoretical and empirical literature.

2.2 Theoretical Literature Review

Existing literature on international trade points to several theories which are representative of the microeconomic and macroeconomic aspects of international economics and their evolvement over time. The main international trade theories are Mercantilism, the classical theory, the New Trade Theories (NTT), both the New and the New New trade theories. These theories are complemented by import-demand functions which explain how factors such as exchange rate affect imports.

The concept of mercantilism was practiced by merchants, bankers, traders, government officials, and philosophers in Europe in the 16^{th} - 18^{th} Century. Mercantilism advocated for the strengthening of nations' powers through accumulation of precious metals such as gold and silver utilizing foreign trade (Conti, 2018). There was the centralization of economic activities, state regulation of corporations, and trading activities aimed at increasing the power of the state. As a result of this, policies were formulated to protect local industries and promote exports, with imports highly regulated and prohibited, except for raw materials for industrial use. However, these imports were taxed to provide revenue for the state. The regulation also ensured that industries produced high-quality goods at low prices, which gave nations a competitive edge in foreign trade (Heckscher,

2013). In this regard, the study will greatly benefit from this theory through looking at factors that promoted countries to focus on importation in the long-run as this was not the case. Countries as currently are, have opened up their borders to allow influx of imports.

The classical theories emerged to address the pertinent issues in international trade such as gains from trade, trade structure, and terms of trade, which mercantilists had failed to address. According to the Absolute Cost Advantage Theory by Adam Smith, all trading nations could increase their wealth by embracing free trade. The labour theory of value used to motivate this study considered only one factor of production, namely, labour. Moreover, as per the theory, closed economies exchanged goods according to the relative amount of labour engaged. Free trade enabled nations to specialize in the export of the goods they had absolute cost advantage in production and imported those that they did not have an absolute cost advantage. On the other hand, the Comparative Cost Advantage Theory by David Ricardo considered international trade as ruled by the comparative cost advantage rather than by absolute cost advantage as indicated by Adam Smith. Nations specialized in the export of goods had maximum comparative cost advantage and imported those commodities whose production had relatively less comparative cost advantage. These theories advocate clearly that no country is self-sufficient and hence there is need to promote both imports and exports.

The modern theory of trade, also referred to as the Heckscher–Ohlin theory was developed to expound on the Ricardian theory of comparative cost advantage through explanation of reasons for the differences in comparative costs in nations. According to the theory, nations trade as a result of differences in factor endowments with some nations being more endowed in capital while others are more endowed in labor. Thus, a nation exports commodities which requires more of the nation's relatively inexpensive and plentiful factor to produce, and imports commodities whose

production uses more of a nation's relatively rare and costly factor. This theory, however, assumes static technology and factor endowments, which do not hold. This theory informs the study on the background that one determinant of demand for imports are the factor endowments inherent in such countries. This means that the imports demand in a country is influenced by the presence of these factor endowments.

The classical theories of international trade were relevant until sometime in the 20th century when their relevance in explaining trade in the modern world started waning. This led to the development of modern theories to explain the structure of international trade in the current world based on emerging trends in trade, giving importance to factors such as imperfect competition, differences in technology among nations, and economies of scale. These theories include the Neo-technological trade theories such as the Theory of availability by Kravis (1956), Volume of trade and demand pattern by Linder (1961), theory of imitation or technological gap by Posner (1961), and theory of Product cycle by Vernon (1966), Intra-industry trade models (1979), Strategic trade policy models (1984), and the new theories of international trade (1999-2005). These theories illustrates that the modern trade and structure of trade has changed and has to be driven by the structures of the economies, need to produce on large scale, and technology; these have become relevant in determining the demand for imports.

2.2.1 Import Demand Functions

The aforementioned trade theories explain how and why countries and firms import based on their factors of production (labor and capital), technology, and type of product, and economies of scale. However, the explanation of how factors such as exchange rates affect imports is missing. This is deduced from import functions. There exist several import function theories, theory

In general, import functions either follow the Kaldorian or Schumpeterian approaches (Romero and McCombie, 2018). The Kaldorian approach assumes growth in domestic demand as constrained by the disequilibrium in the balance of payments and uses domestic and foreign prices as a measure of prices competitiveness. On the other hand, the non-price competitiveness of local production is measured using income elasticities of demand which assumes a direct relationship between demand and quality of goods, given their relative prices. It has the models by Houthakker and Magee (1969) and later Goldstein and Khan (1978) which predict world demand, international competitiveness, and world income and price elasticities as determinants of trade flows. The model by Bahmani-Oskooee (1986) introduces effective exchange rates to the aforementioned models and finds trade flows responding faster to changes in international prices induced by exchange rates, compared to changes in international prices induced by relative prices.

The Schumpeterian export demand function is mainly associated with Fagerberg (1988). The model introduces supply-side factors of productive and technological capacity as determinants of export performance (Romero and McCombie, 2018). The model assumes that the trade competitiveness of a country is determined by its capacity to deliver certain goods while still maintaining high-quality levels. The model by Romero and McCombie (2018) combines the Kaldorian and Schumpeterian approaches.

2.3 Empirical Literature Review

Ghodsi et al (2021) while revisiting the import demand elasticities, used GDP function approach to investigate the import demand elasticities for over 150 countries. The researchers factored in over 5000 products spanning the period 1996-2014. Their main goal was to observe how price of imports affects the quantities of imports demanded. Their results showed that country specific characteristics significantly explained variations in price elasticities of import demand. This meant

that the biggest economies had the largest values of import elasticities belonged while small countries, and as small as islands, had very small values of import demand elasticities. The types and nature of goods significantly affected imports where import demand elasticities were more elastic for intermediate than those of consumption goods.

In Kenya, Abodi et al (2021) investigates the factors affecting the import volume of maize using secondary time series data for 1963-2016, and in consideration of the various maize reforms that have happened in Kenya over time. Applying an Error Correction Model, the researchers find trade openness, the domestic maize prices, production, import volume lag, GDP, the real exchange rate and its lag, and to be the main drivers of import volumes of maize in Kenya.

Ngoma (2020), examines the imports demand determinants in Zimbabwe, considering 40 countries that trade with Zimbabwe, for the period 2004-2017 and using the Gravity model. The study used Ordinary Least Squares (OLS), and sought to know how GDP, trade openness, inflation, population, type of trading partner, bilateral distance, and exchange rate (dollarization) affected demand for imports. The results showed that GDP, trade openness and trading partners positively impacted on the demand for imports. Dollarization of currency and the period of hyperinflation was found to have positively increased demand for imports. However, the bilateral distance between Zimbabwe and the trading partners was found to impact the demand for imports negatively.

Olabisi et al (2020), surveyed imports and exports demand for 46 African countries by sampling 32 published papers. The included surveys were studied using both quarterly and annual data for 1981-2014. The survey showed the responsiveness of countries to the usual determinants of imports. Ayodotun et al (2016) modeled the import demand determinants for Sub Saharan Africa using fixed and random effects estimation for the period 1995–2012. Their study found trade

liberalization, domestic income, and forex reserves to impact import demand levels. A similar study by Asaana and Sakyi (2020), empirically analyzed imports demand for 32 Sub-Saharan Africa countries using the imperfect substitutes model of import demand and applying the dynamic Generalized Method of Moments in the period 1990-2016. Their findings showed foreign exchange reserves, relative import prices, and expenditure components as vital movers of import demand in SSA.

Vacu (2020), applied the cointegration bounds test to explain the drivers of imports in the republic of South Africa for the period 1985-2015. The study found investment, consumer spending and relative import price to be important imports determinants. However, a negative impact on imports was found in the case of government spending. Keho (2019) uses ARDL method to study traditional imports demand function in Cote D' Ivoire for the period 1980-2017. The findings show a positive correlation between imports, real incomes, and domestic prices. However, foreign prices were negatively correlated with imports.

Çulha et al (2019), studied the drivers of imports in Turkey in the period 2003-2018, by examining the time-varying elasticities using the Kalman filter. Looking at how price and income elasticities behave over time, the study shows aggregate imports to be largely determined by change in relative prices and income. A different study on the same country employs an Autoregressive Distributed Lag procedure to assess how imports and economic growth related for the period 1960 to 2017. Their results show economic growth to be a driver of imports. Muhammad and Riaz (2018) disaggregate Pakistan's import demand function to assess the main drivers of imports in the country. Data for 1982 to 2010 is analyzed applying the GMM estimation technique. The results indicate that domestic income, import prices, and exchange rate drive imports. Fannoun and Houseneh (2019), study how economic growth, imports, and exports relate in Palestine using

quarterly data for 2000-2018. Using a vector error correction method, the study concludes existence of long-run relationship between imports and economic growth.

Kannapiran (2019), examines imports demand in Papua New Guinea for the period 1975 to 1995, using quarterly data series and applying the Cointegration and error correction models. The findings supported earlier studies that showed public and private consumption to be the main driver of imports in the country. Ruranga et al. (2019), examines how economic growth and imports relate in Rwanda, using data for 1961-2018. Using Vector Autoregressions models, the study found a bi-directional causality between GDP and imports. Applying equilibrium and disequilibrium models, Ngongang (2019) explores the behavior of imports in Cameroon for the period 1970 to 2016. The study finds real income, variable capacity to import, industrialization and the real exchange rate as the determining factors of Cameroonian imports.

Fedoseeva et al (2018), studied how energy imports respond to changes in its determinants in the Eurozone. Applying the Non-linear Autoregressive Distributed Lag econometric method, the outcomes showed income as the key driver of imports demand in the region. A similar study by Makram et al (2021) conducted a meta-survey on income elasticity of import demand using 152 sampled published papers over the period 1975-2014, to test if higher income levels were associated with increased elastic import demand. Applying both parametric and non-parametric methodologies, the survey found the relationship elasticity of imports and its demand to be significant and robust.

While investigating how government expenditure affected imports in the Eurozone, Konstantakopoulou (2018) used panel data for 17 countries between 1995 and 2015. Using cointegration analysis, the findings show government expenditure to be a major imports determinant in the region. Konstantakopoulou (2020), explored how income inequality affected

import demand in advanced economies. Applying annual panel data for OECD countries for 1995-2016 and applying a variety of techniques such as panel estimators that helped tackled the presence of heterogeneity and cross-sectional dependence, as well as a Bayesian VAR model, the study found inequality to affect imports demand positively and significantly. Moreover, price elasticity of imports demand was found to be negative while that of income was found to be positive.

Giansoldati and Gregori (2017), using quarterly data for the period 1995-2016, and sampling 33 countries comprising of developed and developing countries, compared six different methods of estimating the imports demand function. The study used selected models to separate the effects of aggregate demand and expenditure components and found private expenditure to be the main driver of imports. In yet another study, Giansoldati and Gregori (2020), used import intensity-adjusted demand measures to estimate world and country specific elasticities. Applying panel data for the period 1985-2018 for 34 countries, and using cointegration tests, the researchers concluded that intermediate goods should be included in the assessment of the import demand.

Muluvi et al (2014), used data for Kenya to investigate the impact of GDP growth on imports over the period 1975-2011, applying the error correction model. The real GDP, openness to international trade, foreign exchange reserves, and real exchange rate were found to be the key drivers of Kenya's import demand. Mutuku and Mbithi, (2017) used a panel gravity model and quarterly data to determine how requirements for certain standards and the verification procedures impacted the flow of imports. The study found import standards as inhibiting imports, owing to the procedures involved to get conformity certificates.

In Kenya, Mwega (1993), studied the trade liberalization period, with a focus on the import demand elasticities and their stability. Using data for the period 1964-1991, the researcher applied an error correction model and found imports to strongly respond to changes in the lagged forex

reserves and earnings. However, the findings showed relative prices and real income aggregate imports demand elasticities as insignificant in explaining the demand for imports.

Whereas Mwega (1993) and Mulivi et al (2017) studies used the same econometric technique for estimation, Mwega's study only analyzed the short-run dynamics and covered the trade liberalization period only, while Muluvi et al analyzed the period before and after liberalization. Moreover, Muluvi et al (2014) considered inflation rate and trade openness as extra proxies while Mwega (1993) considered lagged real imports in his estimation, an extra variable from those used in Muluvi, et al (2014).

2.4 Overview of Literature

Theoretical literature explains how international trade theories have sufficed to show why nations trade with one another. Heckscher–Ohlin theory stands in good books in trying to explain the trade of that nation because they have different factor endowments and hence are never self-sufficient on their own. This could partly explain why there is increased demand for imports across countries in SSA and especially Kenya. Furthermore, the theories also show that countries import whatever goods and services that they do not in abundance. The empirical literature has shown that the key determinants of imports include government expenditures, national income (GDP), interest and exchange rates, price of imports, types of imports, trade liberalization, inflation rates, and standards of imports and these have been found to vary across regions with some studies showing that imports are cointegrated with relative imports prices and real incomes (Vacu and Odhiambo, 2020). However, the degree of cointegration varies from one country to another. The literature reviewed in the case for Kenya. These studies have used models such as error correction model, gravity, ARDL in determining the relationships between highlighted determinants and import demands. Both short run and long run model dynamics can be well captured by the ARDL

methodology, hence making it more appropriate. The review also indicates that some studies faced asymmetry of data where they were not able to access data on all the proposed sets of data. This study endeavors to study consumption expenditure, exports of goods and services, and expenditure on investment goods including gross capital formation and change in stock, relative prices and how they affect imports in Kenya using the ARDL method, unlike some Kenyan studies such as Mwega (1993) that used the error correction model.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter commences with a theoretical framework that forms its foundation. In the section that follows the empirical model is presented with a detailed description of the model variables and their measurements. The last two segments show the pre-estimations, the data, the types, and their sources.

3.2 Theoretical Framework

This study employs a model that is based on the consumer demand theory where a consumer maximizes utility subject to a budget constraint (Durmaz, & Lee, 2015). This study follows the traditional import demand model by Khan (1974), where the aggregate import demand equation shows prices and income to be the core imports determinants.

Hence, the specified import-demand at time t function will be:

$$M_t = f(EXP_t, PM_t) \qquad (1)$$

Where;

$M_t = Real\ value\ of\ imports$

$EXP_t = Total\ Expenditure$

$PM_t = Relative\ Prices\ of\ imports\ in\ a\ country$

Notably, the country imports many goods and services and hence it suffices to look at the aggregate determinants of imports. Hence, following Khan (1974) the aggregate demand system can be formulated as follows:

$$M_t = \beta_0 \left[\frac{PF}{PD}\right]^{\beta_1} EXP_t{}^{\beta_2} e^{\varepsilon_t} \qquad (2)$$

Where;

$$\frac{PF}{PD} = Relative\ prices\ of\ imports(rpm)$$

$$PF = Foreign\ price$$

$$PD = Domestic\ price\ of\ imports$$

$$EXP = Total\ expenditure$$

$$\varepsilon_t = Stochastic\ (error)\ term$$

The stochastic (error) term represents all the factors affecting imports that have not been explicitly accounted for in the equation.

To eliminate the possibility of aggregation bias resulting from running a single demand function, the study will decompose expenditure into three comprehensive components namely investment (IE), consumption (CE), and exports (XE) expenditures. Then the model (1) can then be specified as follows:

$$M_t = f(IE_t, CE_t, XE_t\ PM_t) \qquad (3)$$

And similarly, equation (2) above will be expanded as follows

$$M_t = \beta_0 \left[\frac{PF}{PD}\right]_t^{\beta_1} (IE_t, CE_t, XE_t)^{(\beta_2, \beta_3, \beta_4)} e^{\varepsilon_t} \qquad (4)$$

Then, take the natural logarithm of the model in equation (4) above to yield an estimable disaggregated import demand function. Having variables in natural logs will allow imports to reach proportionately to each of the independent variables. Based on the assumption of constant

elasticities, this will help control the drastic rises and falls in elasticities as imports fluctuate throughout the study period.

3.3 Econometric Model

The analysis will adopt the transformed model of equation 4 (after the natural logarithm has been taken) above. Hence the specified equation for estimation will be:

$$log\ M_t = \beta_0 + \beta_1 log\left(\frac{PF}{PD}\right) + \beta_2\ log\ IE_t + \beta_3\ logCE_t + \beta_4 log\ XE_t + \varepsilon_t \qquad (5)$$

Where imports will be measured by the real value of imports of Kenya for the study period.

3.4 Data Source, Measurement, and Description of Variables

This study used secondary annual time series data for the period 1970-2020 from Kenya National Bureau of Statistics (KNBS), Central Bank of Kenya statistics database, World Development Indicators (WDI) database, among other sources.

Variable Name	**Measurement**	**Expected sign**	**Source**
Value of Imports	Value of goods and services to Kenya in Kenya shillings. This is the dependent variable in this study.		CBK

Total expenditure (Explanatory variables)	Overall annual spending in Kenya on exports, investments, and consumption. Consumption expenditures - government expenditures on goods and services. Investment expenditures - government expenditures on capital formation. Expenditure on Exports of goods and services.	±VE A positive sign means that increasing this variable positively impacts of level of imports while a negative sign shows that a decline in this variable reduces imports	KNBS/CBK/WDI
Relative prices (Explanatory variable)	Ratio of domestic prices to that of imports (foreign price level as a ratio of domestic price level); foreign price level is proxied by import value index while the deflator will proxy domestic price level.	±VE A positive sign means that increase in relative prices leads to lower imports while a negative sign shows that relative prices positively impact on imports	CBK

3.5 Estimation Techniques

The ARDL model applied in the study includes an error correction term and thus has an advantage of capturing the short-run and long-run variables relationships. The study will employ an ARDL bounds test procedure of co-integration in running the imports demand function. The ARDL is the

preferred model because it; i) Does not require I(I) order integration for all the variables in the model; ii) Can be employed to a smaller number of observations compared to conventional methods which suffer from small sample bias, Nkoro and Uko (2016), Englama et al (2013). This reduces the pretest uncertainty when it comes to determination of the order of integration of the variables.

This study will find out presence of cointegration among all variables and check if there is short-term and long-term relationships among the estimated coefficients.

Hence the model to be estimated will take the form:

$$\Delta lnM_t = \delta_0 + \sum_{i=1}^{m} \delta_1 \, ln\Delta M_{t-1} + \sum_{j=1}^{n} \delta_2 \, ln\Delta rmp_{t-1} + \sum_{k=1}^{o} \delta_3 \, ln\Delta IE_{t-1} + \sum_{l=1}^{p} \delta_4 \, ln\Delta CE_{t-1}$$

$$+ \sum_{m=1}^{q} \delta_5 \, ln\Delta XE_{t-1} + \gamma_1 ln\left(\frac{PF}{PD}\right) + \gamma_2 \, lnIE_t + \gamma_3 ln\, CE_t + \gamma_4 \, lnXE_t + \varepsilon_t$$

Where $\Delta = Difference\ operator$, $ln = natural\ logarithm$, $\delta_0 = constant$, $\delta_1 \ldots, \delta_6$ are the short-run coefficients while $\gamma_1 \ldots, \gamma_6$ are long-run coefficients. The ideal lag length of the dependent and independent variables will be determined through the use of the Information Criteria; HQIC, BIC and AIC.

3.6 Time series estimation issues

3.6.1 Unit root test

This is carried out to determine the stationarity of a time series. As depicted by Gujarati (2011), the importance of stationarity is that, in the case of non-stationarity, the behavior of the data series can only be concluded for the period being studied. In such, this behavior cannot be generalized to other periods, which is a limitation for forecasting and policy implication. Secondly, regressions

performed on multiple non-stationary time series data may lead to spurious regressions. However, as per Nkoro and Uko (2016), the ARDL bound testing framework does not necessarily require the stationarity tests since the variables do not need to be of any order for them to be estimated.

3.6.2 Cointegration Test

A cointegration test is done to determine existence of relationships among the variables under study. This study applied the bound testing approach within the Auto-Regressive Distributed Lag (ARDL) framework as per Pesaran and Shin (1999) and Pesaran et al. (2001).

3.6.3 Lag length selection

Based on Hannan-Quinn Information Criterion (HQIC) and Schwarz Bayesian Information Criterion (SBIC), one lag length is the appropriate length for the ARDL or a VAR model. SBIC works best for any sample size, especially small samples such as the one used in this analysis.

CHAPTER FOUR

EMPIRICAL FINDINGS

4.1 Introduction

This chapter shows the study findings. The first section displays a detailed summary statistic of the study, the second section discusses the long-run correlation between imports and the explanatory variables. The third section presents findings on the short run relationship between imports and the regressors.

4.2 Descriptive Summary Statistics

The data is specified as time series with the year as the main time dimension and frequency.

Figure 4.1: Summary Statistics

Variable	Observations	Mean	Std Deviation	Minimum	Maximum
lm	51	6.246	0.786	5.089	7.531
lcg	51	7.863	0.594	6.872	8.907
linv	51	6.17	0.654	5.438	7.433
lgdp	51	8.038	0.558	7.027	5.524
lx	51	6.123	0.527	5.346	7.948
lrp	51	4.989	0.327	4.374	5.524
dummyr	51	0.02	0.14	0	1

As shown in figure 4.1, the mean, which is a measure of measure of central tendency, on average summarizes the data on the study variables. All the variables recorded a positive mean throughout the study period. The mean import value over the study period was KSh 625 million. The measures of spread as shown by minimum, maximum, and standard deviation do not show a huge variation across the study period.

This study covers a period of 51 years ranging 1970 to 2020. The variables are transformed into logs (Figure 4.1). An autocorrelation and cross correlogram are applied to determine potential

autocorrelation and the relationships between the variables. The Box-pierce Q statistic is applied to test for autocorrelation, while the correlation matrix is applied to examine the variables relationship before the ARDL model is run (Figure 4.4).

Figure 4.2: Correlation Matrix

	lm	lcg	linv	lgdp	lx	lrp	dummyr
lm	1.000						
lcg	0.9392	1.000					
linv	0.9695	0.9308	1.000				
lgdp	0.91	0.9948	0.9163	1.000			
lx	0.9533	0.9767	0.9237	0.9697	1.000		
lrp	-0.7936	-0.6839	-0.8778	-0.6706	-0.6802	1.000	
dummyr	-0.1413	-0.1349	-0.0722	-0.1183	-0.1614	0.0212	1.000

Figure 4.3: Unit Root Tests

Variables	Augmented Dickey-Fuller (ADF)	Integration Order	Zivot- Andrews Structural Break	Structural Break Year	Integration Order2
Z(t)	*Test statistic*		*Test Statistic*		
Imports	0.115	I(1)	-4.716	1981	I(1)
Government Consumption	-0.137	I(1)	-4.611	1980	I(1)
Investment (GFCF)	0.918	I(1)	-4.481	2005	I(1)
Real GDP	-0.521	I(1)	-3.98	2004	I(1)
Exports	-0.759	I(1)	-3.649	2003	I(2)
Relative Prices	-0.062	I(1)	-3.42	2003	I(1)

The Zivot-Andrews structural break tests reveal structural breaks in the data in 1981 and 1980 for the imports and government spending, while investments, real GDP, Exports, and relative prices of imports to exports all exhibit structural breaks between 2003 and 2005. Imports and government

spending structural breaks may be due to the commodity price crisis in 1980-1983 and structural adjustment programs adopted in 1980, respectively.

4.3 Cointegration and Long-run relationship among the variables

Figure 4.4: Cointegration – Bounds tests results

Dependent Variable (regressors)	ARDL	Break Year	Statistics	Column1	Outcome	Column2
Log imports (Δlm, lcg, linv, lgdp, lx, lrdp, Δlcg, Δlinv,Δlgdp,Δlx,Δlrp)	1,1,1,1,1,1	N/A	F	3.563	Cointegration	
			T	-4.149		
Log imports (Δlm, lcg, linv, lgdp, lx, lrdp, Δlcg, Δlinv,Δlgdp,Δlx,Δlrp)	1,0,4,1,4,1	N/A	F	23.688	Cointegration	
			T	-10.149		
Log imports (Δlm, lcg, linv, lgdp, lx, lrdp, Δlcg, Δlinv,Δlgdp,Δlx,Δlrp)	4,1,4,0,4,4	1981	F	13.859	Cointegration	
			T	-6.124		
	10percent		5percent		1percent	
Critical Values	Lower (I(0))	Upper (I(I))	Lower (I(0))	Upper (I(I))	Lower (I(0))	Upper (I(I))
F	2.329	3.804	2.822	4.511	4.005	6.196
T	-2.401	-3.694	-2.777	-4.145	-3.539	-5.058

An ARDL bounds test is applied to test for any cointegrating link between the dependent variable and the explanatory variables. Based on Pesarana and Shin (2001), assuming unrestricted intercepts and trends (case 3), the bounds test confirms a long-run relationship between imports, total consumption, investment (GFCF), GDP and exports, as we reject the null hypothesis of no levels relationship as the t- test statistic is larger than the critical value at all significance levels.

The bounds test cointegration confirm the presence of a long-run relationship between imports and the explanatory variables (Figure 4.4). The ARDL model results corroborate the long-run link in two ways, the error correction term, and the long-run coefficients of the ARDL models.

In ARDL model 1, 70 percent of the deviation from its equilibrium is corrected in a year. ARDL model 2 and 3, show that 87 percent and 81 percent of the deviations of imports from the mean is corrected within one year, respectively. the coefficients in ARDL model 2 and 3 are statistically significant at the 1percent level of significance (Figure 4.5).

The error correction terms (ADJ) in the three ARDL models is negative, bound between 0 and 1 and statistically significant. The error correction term from all these models is comparable to the initial ARDL model indicating a fast correction and mean reversion of imports to its equilibrium. The ARDL models in Figure 4.5suggest that over 80 percent of the deviation of imports is corrected and returns to equilibrium within a year compared over 70 percent of the correction in the initial ARDL model in Figure 4.5. All the ARDL models suggest presence of a long-run relationship as the error correction term (ADJ) is negative and statistically significant at the one percent level of significance, indicating imports are mean-reverting when they deviate from their equilibrium due to the independent variables.

Figure 4.5: ARDL Model Results

Variables	**Coefficients**	**Coefficients**	**Coefficients**
ARDL Model	**1**	**2**	**3**
ADJ (error correction term)	-0.7. (0.169)***	-0.877 (0.086)***	-0.811 (0.132)***
Long - Run			
lcg	2.420 (0.364)***	1.601 (0.288)***	2.061 (0.256)***

linv	0.420 (0.176)**	0.579 (0.141)***	0.473 (0.070)***
lgdp	-2.554 (0.290)***	-2.057 (0.213)***	-2.402 (0.228)***
lx	0.847 (0.150)***	1.161 (0.117)***	1.073 (0.124)***
lrp	-1.138 (0.159)	0.134 (0.132)	
dummyr			0.261 (0.220)
Short-Run			
Δ lm	0.176 (0.387)	0.125 (0.112)	-0.097 (0.085)
Δ lcg			0.539 (0.213)**
Δ linv	0.318 (0.149)**		0.323 (0.100)**
Δ lgdp	0.280 (0.731)	0.957 (0.449)**	
Δ lx	0.171 (0.204)	-0.383 (0.164)**	-0.203 (0.121)
Δ lrp	0.051 (0.156)	-0.217 (0.723)	
Δ dummyr			-0.264 (0.167)
cons	0.440 (0.759)	-1.015 (0.723)	-0.126 (0.168)
Model Statistics & Diagnostics			
# of Obs	50	47	47
R-squared	0.826	0.927	0.959
Adj. R-squared	0.776	0.888	0.922
Root MSE	0.060	0.043	0.035
LM test	0.139	2.010	0.144
prob > chi-square	0.7090	0.1563	0.7044
Breusch-Pagan test	1.36	0.12	2.48
prob > chi-square	0.2439	0.7263	0.1153
Ramsey RESET test	1.08	0.35	0.28
prob > F	0.3692	0.7920	0.8384

Secondly, the coefficients of the ARDL models imply a long-run relationship as captured in the long-run section of ARDL model results which represent the level relationship between imports, investment (GFCF), government consumption, Real GDP, relative prices, and exports in their logged transformation. The long-run coefficients indicate a statistically positive long-run relationship between imports, exports, investment, and government consumption based on t-statistics and p-values of the coefficients on government consumption, investment, and exports.

Across the three ARDL models, a 1 percent increase in government consumption increases imports by between 160 percent and 240 percent, while a similar rise in investment increases imports by between 42 percent and 58 percent. Similarly, a 1percent in exports raises imports by between 84 percent and 116 percent. Contrastingly, the long-run coefficients suggest a statistically significant negative relationship between imports and Real GDP based on the t-statistic and p-value of the coefficient on Real GDP. A 1percent increase in Real GDP lowers imports by between 205 percent and 255 percent. Based on the t-statistic and p-value of relative prices, there is no statistically significant long-run relationship between imports and relative prices. The dummy variable included in ARDL model 3 to capture the effect of the structural break on imports in 1981 is not found to have a statistically significant impact on imports though the coefficient is negative indicating softening trend of imports in 1981 relative to other periods in the analysis (Figure 4.5).

The ARDL models in Figure 4.5 confirm statistically significant long-run relationships between imports and the regressors. The direction of the long-run relationship between imports and the explanatory variables remains similar across the all the three ARDL models where long-run coefficients indicate a statistically positive relationship between imports, investment, government consumption, and exports and a statistically negative long-run relationship between Real GDP and imports. All the models also concur on the lack of statistically significant relationship between imports and relative prices; However, the consistently positive sign of the coefficient suggests a positive relationship though not significant. The dummy variable for the year 1981 is not statistically significant at levels though has a positive sign.

4.3 Short-run dynamics of imports and explanatory variables

The short-run relationship between imports, Real GDP, government consumption, exports investment, and relative prices is captured in the short-run section of the model results in Figure 4.5. The short-run coefficients of the regressors and the t-statistics and p-values of the regressors in ARDL model 1 suggests a positive and significant short-run relationship between imports and investment, such that a 1 percent increase in investment increases imports by 31 percent in the short-run at the 5 percent level of significance. ARDL model 1 reveals lack of a statistically significant short-run relationship between imports, exports, government consumption and relative prices. Although, the short-run coefficients of relative prices, exports and Real GDP are positive indicating a positive effect of these variables on imports, the effect is not statistically significant (Figure 45).

ARDL model 2 corroborates the positive short-run relationship between investment and imports similar to the finding in ARDL model 1. In ARDL model 2, a 1 percent increase in investment increases imports by 95 percent with the effect being y significant at the 5 percent level of significance. ARDL model 2 finds a negative short-run relationship between imports and Real GDP indicating a 1 percent increase in Real GDP lowers imports by 38 percent in the short-run and the effect significant at the 5 percent level of significance. ARDL model 3 finds a positive short-run relationship between government consumption. A 1 percent increase in government consumption raises imports by 53 percent and the effect is significant at the 5 percent level of significance. Similar to the findings in ARDL model 1 and 2, ARDL model 3 also reveals a positive short-run relationship between investment and imports, comparable to the magnitude in ARDL model 1 and the effect is significant at the 5 percent level of significance. The short-run coefficients on exports and relative prices are mixed across all the ARDL models but they are not statistically

significant at standard significance level across all the three models. The dummy variable in ARDL model 3 has a negative coefficient in the short-run indicating a transient decline in imports in 1981 relative to other years in the study period but the coefficient is not statistically significant.

Comparing all three ARDL models indicates similar trends and relationships between the dependent variables and the regressors. ARDL model appears as the most appropriate model based on the information criteria and with the lowest root mean squared error of 3.5 percent compared with the other ARDL models. This model also includes the dummy variable that accounts for the structural break in 1981 as identified by the Zivot- Andews. The lag lengths of ARDL model 2 and 3 are determined optimally by STATA based on the properties of the data.

Various diagnostic tests including autocorrelation, heteroskedasticity, and model specification tests are run on the ARDL models as presented in Figure 4.5 The Breush-Godfrey LM test for serial correlation confirms no serial correlation in the ARDL models as the chi-squared statistic is less than its critical value therefore we fail to reject the null hypothesis of no serial correlation. This finding suggests that the coefficients in the ARDL models are reliable and valid.

The Breush-Pagan test for homoskedasticity confirms errors have constant variance thus errors are normally distributed (independently an identically distributed) as the chi-squared statistic is less than the critical chi-squared value, thus we fail to reject the null hypothesis that errors are normally distributed with constant variance Based on this test result, the coefficients are efficient and remain unbiased and consistent.

The RAMSEY reset test aims to examine correct model specification by determining if a linear specification is the best fit for the data and whether any relevant explanatory variables have been omitted and thus have affected the significance of the other regressors. Based on the RAMSEY RESET test run on the ARDL models, the results of the RAMSEY RESET tests confirm there are no omitted variables in the models, and the linear ARDL models are correctly specified. This is inferred from the F-statistic test which is less than the critical F-statistic, thus we fail to reject the null hypothesis, that the model is correctly specified such that all the powers of the coefficients of the regressors are jointly zero (statistically insignificant).

From the diagnostic tests, the ARDL models are reliable based on the explanatory variables' coefficients which meet OLS assumptions of normally distributed errors and the ARDL models are correctly specified. The test findings suggest that the findings of the ARDL models can be relied upon and used to make inferences on how the dependent and explanatory variables relate.

The ARDL models find evidence of cointegration based on the bounds test and a negative statistically significant error term. The ARDL models reveals a positive long-run relationships between imports, exports, investment and government consumption and a negative long-run relationship between Real GDP and imports, similar to Kannapiran (2019) and Ruranga et al (2019 and Vacu (2020), respectively. The ARDL models does not show any short-run relationship between imports, exports, and Real GDP and neither a long-run nor short-run relationship between imports and relative prices, which corroborates Mwega (1993) findings. These models also reveal events such as transitory shocks in 1980 – 1984 occasioned by the commodity crisis that lowered non-energy commodity prices may have depresses imports.

CHAPTER FIVE

CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Introduction

This chapter highlights the key findings and conclusions of this study that aimed at investigating the drivers of the demand for imports in Kenya for the period 1970-2020. The chapter also expounds on how the findings the impact on policy, the limitations of the study and concludes by providing areas of further research around determinants of imports in Kenya.

5.2 Key Findings and Conclusions

The long-run coefficients show a statistically positive long-run relationship between imports, government consumption, investment, and exports, based on t-statistics and p-values of the coefficients on government consumption, investment, and exports. Across the three ARDL models, a 1 percent increase in government consumption increases imports by between 160 percent and 240 percent, while a similar rise in investment increasing imports by between 42 percent and 58 percent. Similarly, a 1 percent rise in exports increases imports by between 84 percent and 116 percent. Contrastingly, the long-run coefficients suggest a statistically significant negative relationship between imports and Real GDP. A 1 percent increase in Real GDP lowers imports by between 205 percent and 255 percent. There is no significant long-run relationship between relative prices and imports. The error correction term in the ARDL models is significant indicating that the imports revert to their equilibrium quickly, with over 70 percent of the deviation from equilibrium corrected in a year. The inclusion of a dummy variable in the ARDL model to capture the impact of the structural break on imports in 1981 shows a softening trend of imports in that year relative to other periods in the analysis.

In the short run a positive and statistically significant relationship between imports and investment exists, such that a 1 percent rise in investment increases imports by 31 percent. However, Although, the short-run coefficients of Real GDP, relative prices and exports are positive indicating a positive impact of these variables on imports, the effect is not statistically significant. ARDL model 2 corroborates the positive short-run relationship between investment and imports similar to the finding in ARDL model 1. ARDL model 2 finds a negative short-run relationship between Real GDP and imports indicating a 1 percent increase in Real GDP lowers imports by 38 percent in the short-run and the effect significant at the 5 percent significance level. ARDL model 3 finds a positive short-run relationship between government consumption. A 1 percent increase in government consumption raises imports by 53 percent Similar to the findings in ARDL model 1 and 2, ARDL model 3 also reveals a positive short-run relationship between investment and imports, comparable to the magnitude in ARDL model 1 The short-run coefficients on exports and relative prices are mixed across all the ARDL models but they are not statistically significant at standard significance level across all the models. The dummy variable in ARDL model 3 has a negative coefficient in the short-run indicating a transient decline in imports in 1981 relative to other years in the study period.

5.3 Policy Implications

The study findings are expected to be of great value to policymakers in their policy formulation framework in the Central Bank of Kenya, Ministry of Trade, National Treasury, Revenue Authority; and to investors, scholars and other stakeholders interested in understanding trade and its drivers.

5.4 Limitation of the study

Although quarterly data was preferred for this study, data on some of the variables was only available in annual frequency, and therefore annual data was used for the study.

5.5 Areas of Further Research

There seems to be vast literature globally around determinants of imports. However, it was noted, that majority of the studies in recent times have preferred disaggregated model, because of the ability to break down income expenditure to its distinct components. This study recommends use of more components of expenditure besides final consumption, gross national and export expenditures. Majority of studies in Kenya have applied the VECM and simple regression models. Going forward, studies are encouraged to use ARDL bound testing techniques and other various frameworks in order to bring out the long-run and short-run relationships among the variables. Further studies around the determinants of imports are recommended.

APPENDIX

Graphical representation of the data

Figure 1: Line graph of imports over time (1970 - 2020)

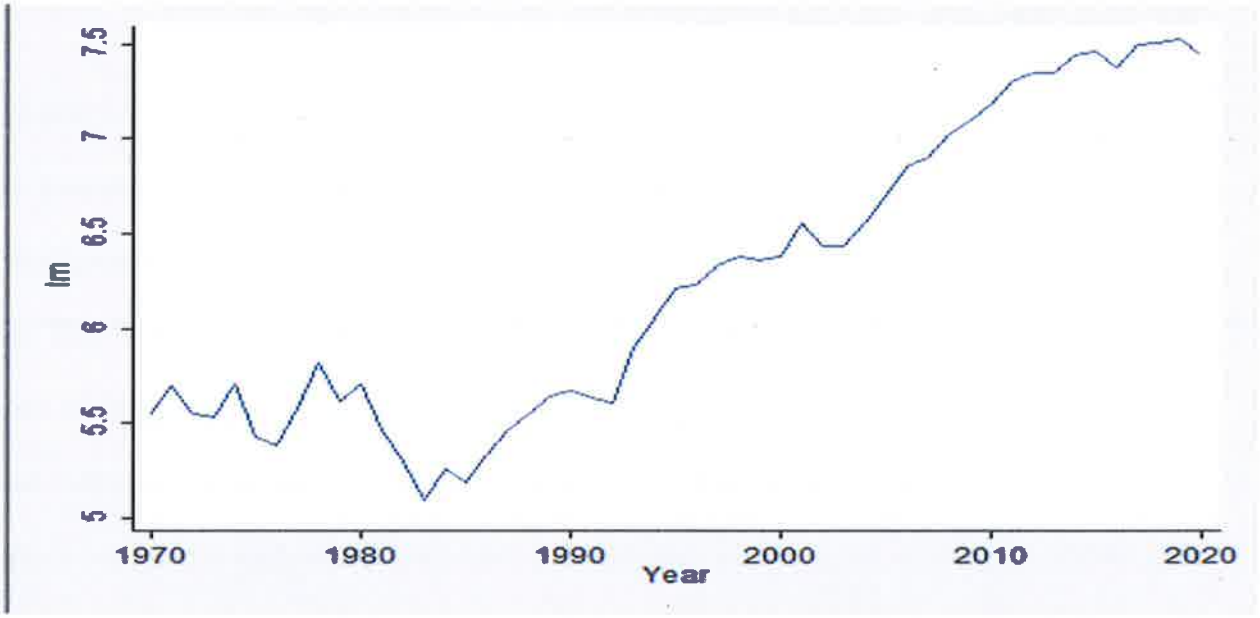


Figure 2: Line graph of total consumption over time (1970 - 2020)

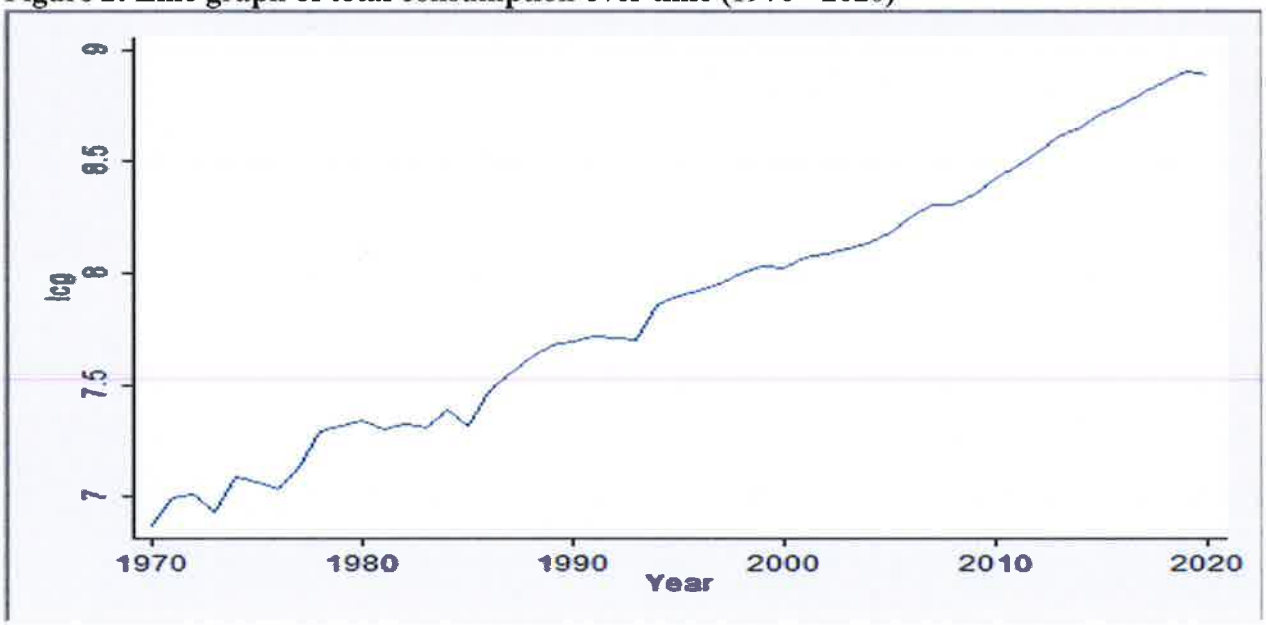


Figure 3: Line graph of gross fixed capital formation over time (1970 - 2020)

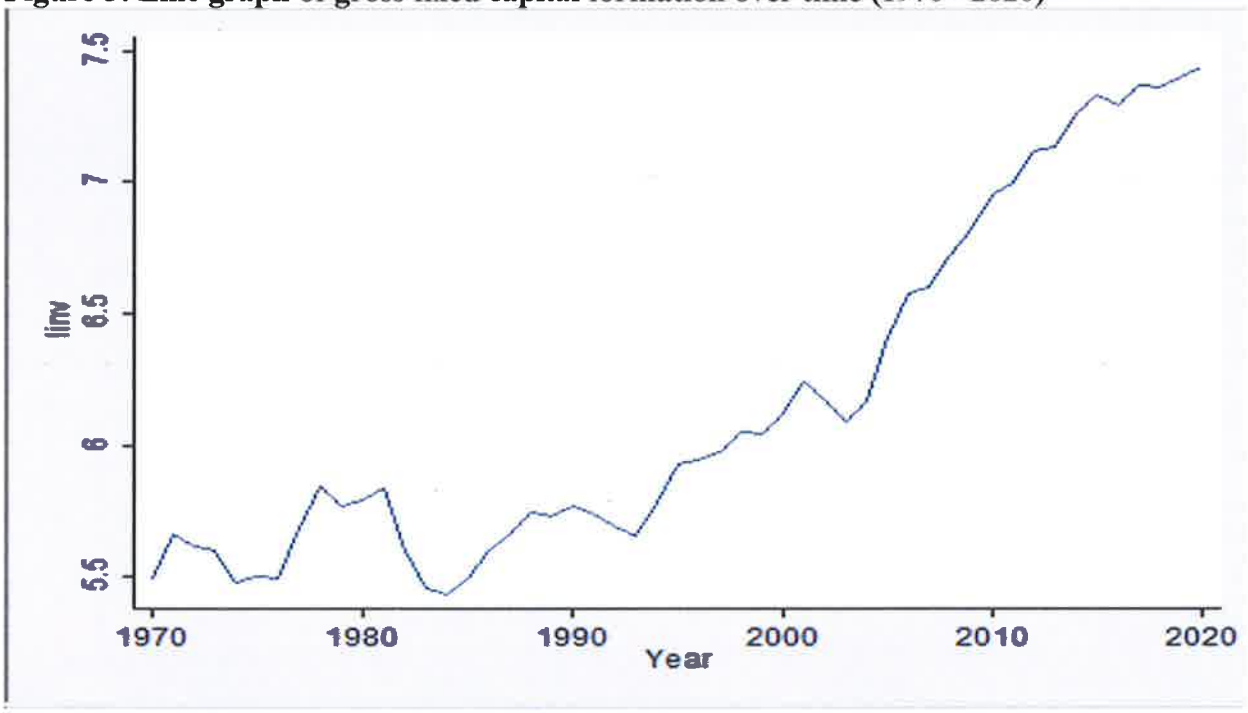


Figure 4: Line graph of GDP over time (1970 - 2020)

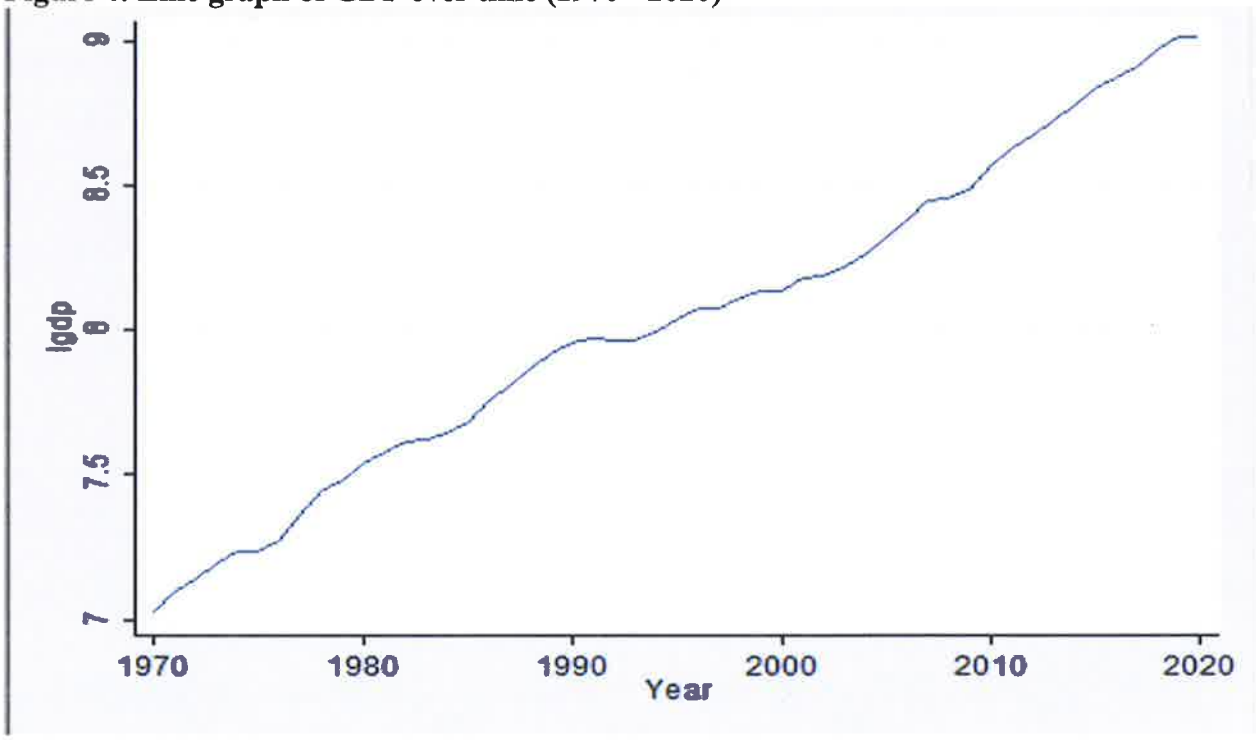


Figure 5: Line graph of Exports over time (1970 - 2020)

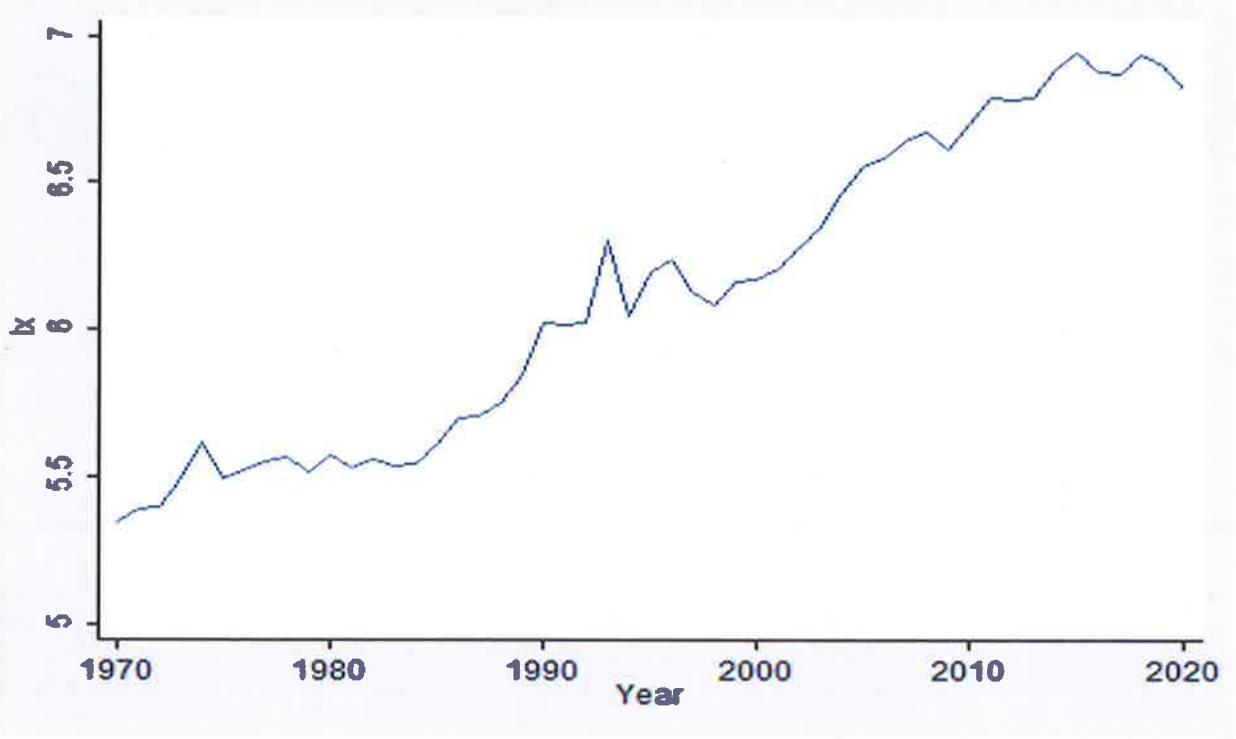


Figure 6: Line graph of Relative Prices over time (1970 - 2020)

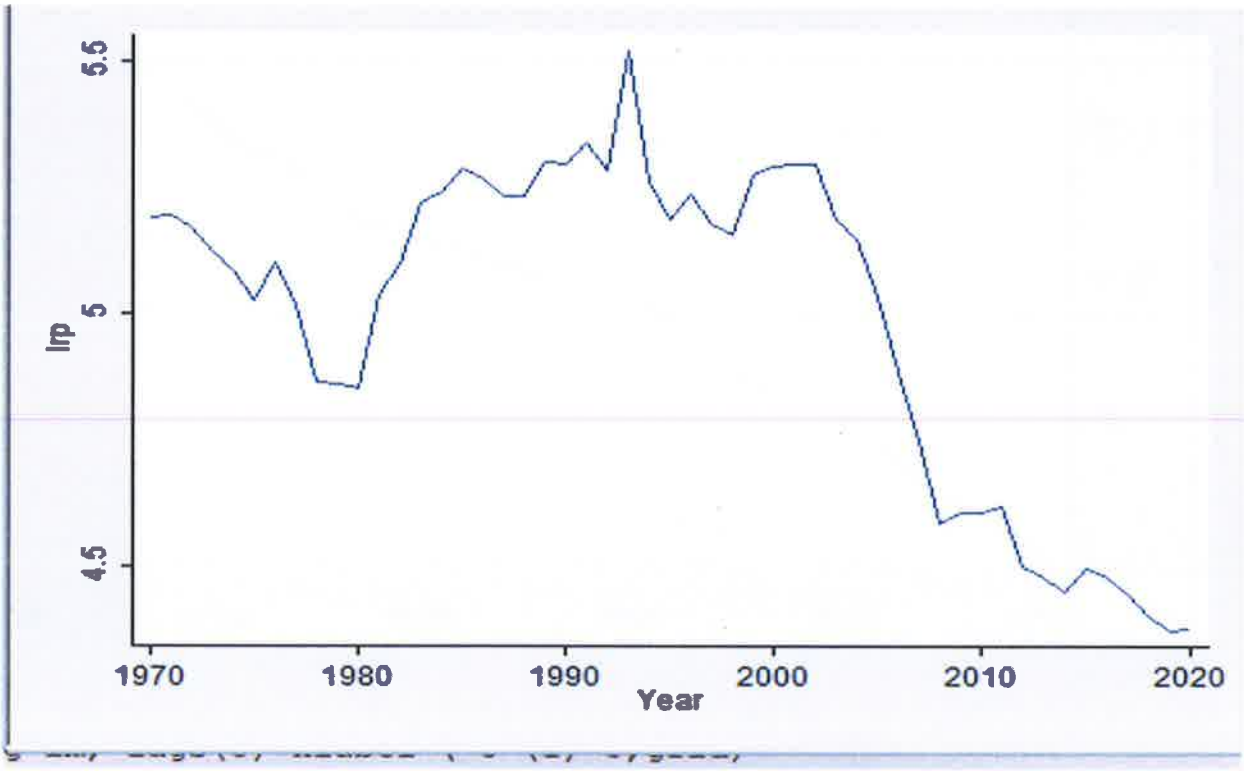


Figure 7: Cross Correlogram of Imports and Consumption

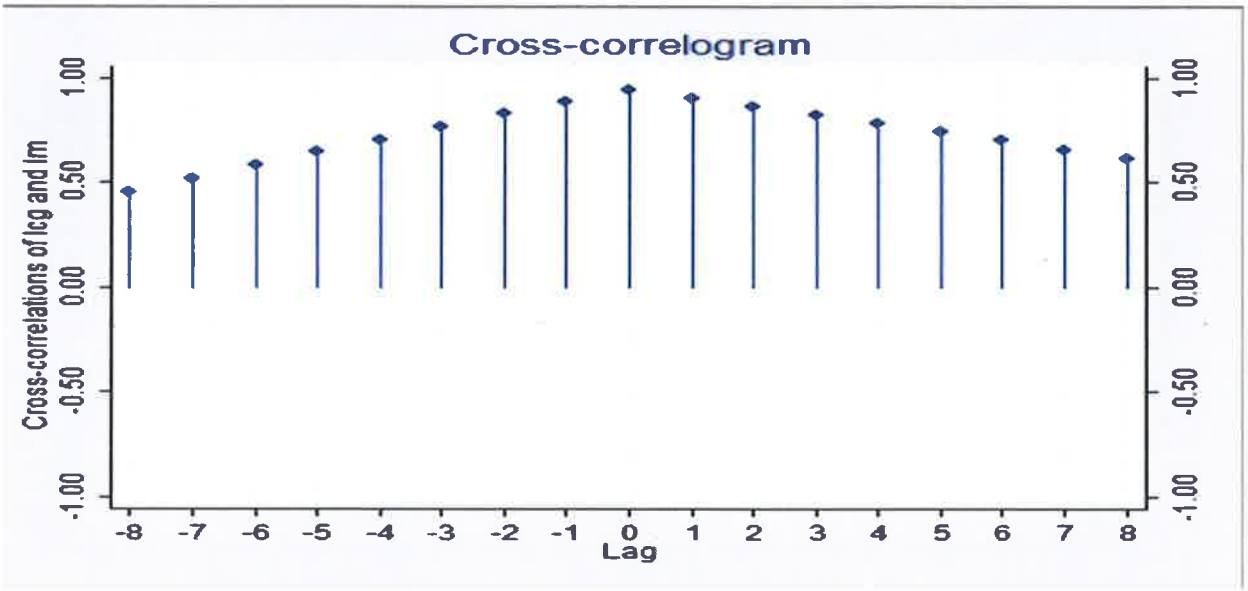


Figure 8: Cross Correlogram of log of gross fixed capital formation and imports

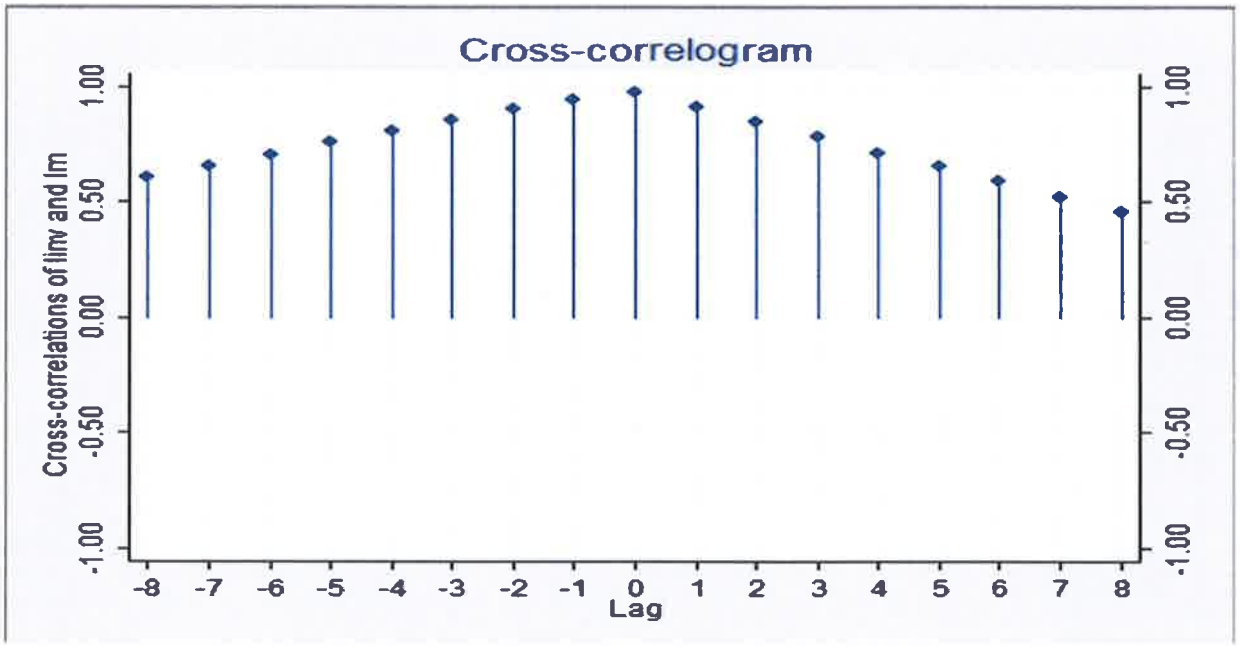
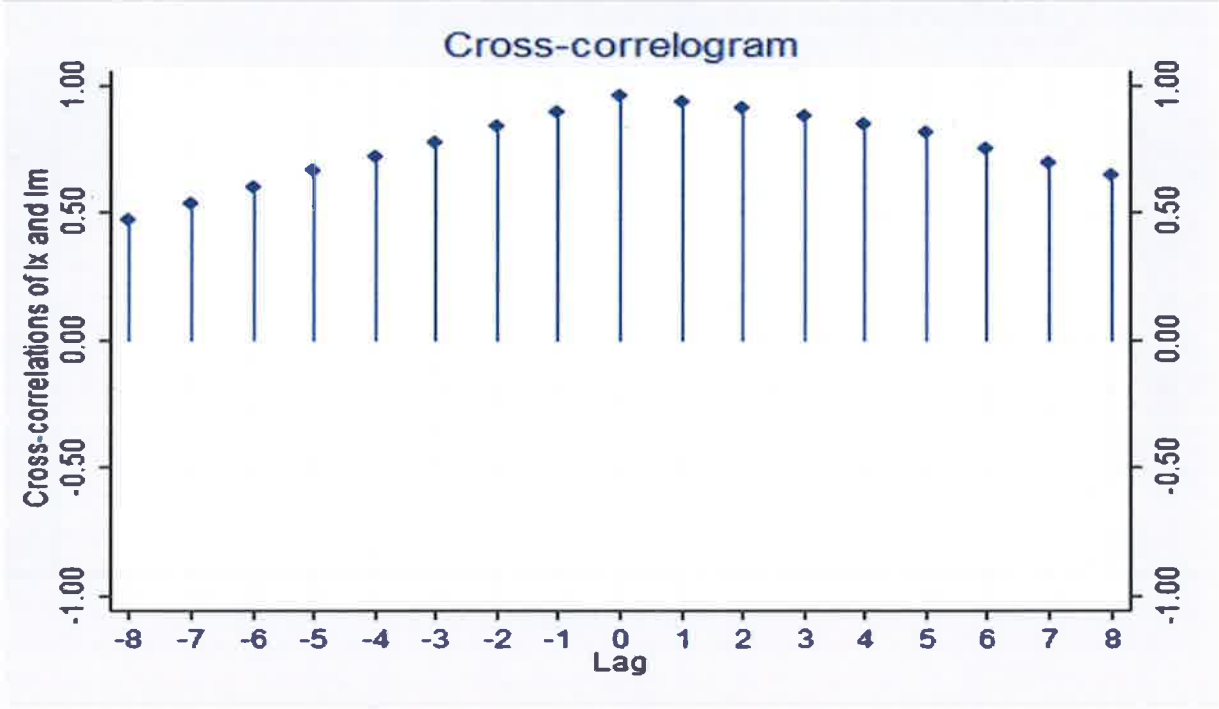
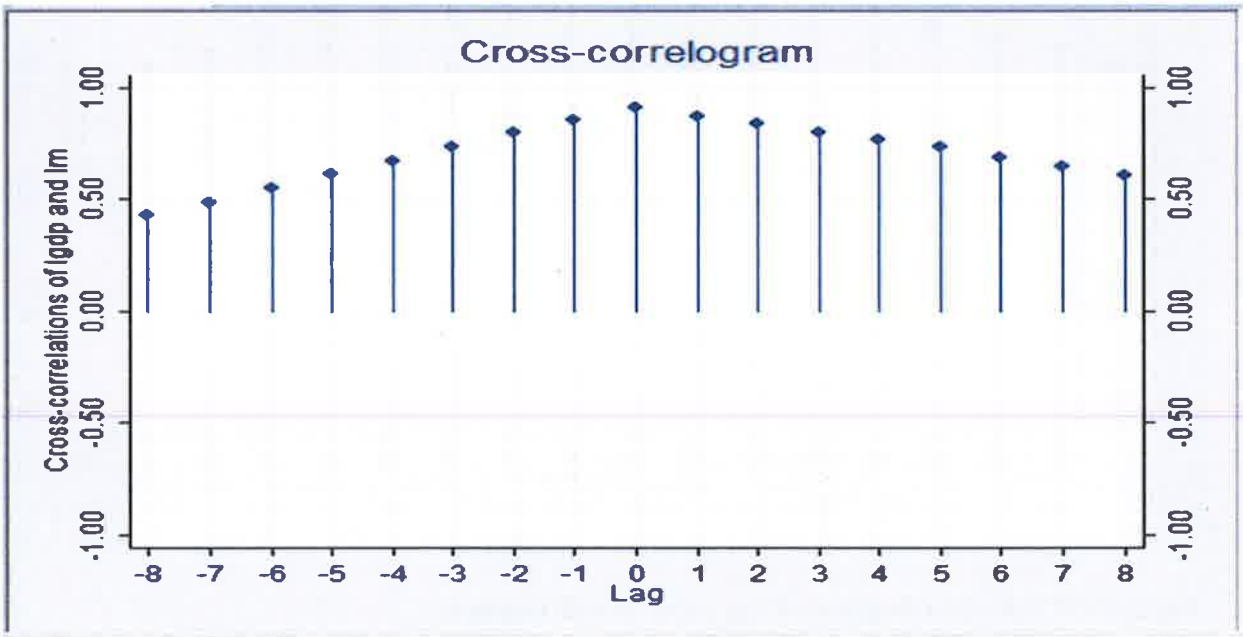


Figure 9: Cross correlogram of log exports and imports



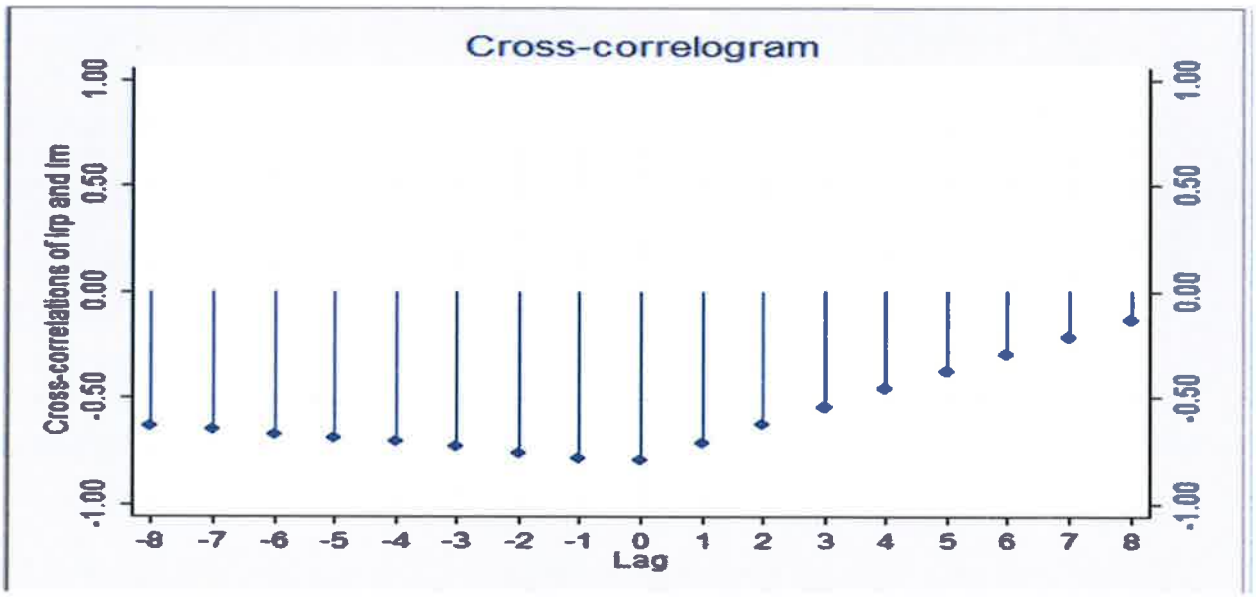
Exports are positively correlated with imports and the effect persists for eight years (Figure 9).

Figure 10: Cross Correlogram of GDP and imports



GDP is positively correlated with imports, as GDP increases, imports increase (Figure 10).

Figure 11: Cross Correlogram of relative prices and imports



Relative prices of exports to imports is negatively correlated with imports. A rise in the prices of exports relative to imports reduces imports. The effect peaks in the first two years and dissipates sharply over eight years (Figure 11).

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