DO EARNINGS FROM FOOD EXPORTS IMPROVE KENYA'S CURRENT ACCOUNT BALANCE?

BY

MICHAEL ODHIAMBO WAIROMA

X50/11156/2018

SUPERVISOR: DR. DANIEL.O. ABALA

A RESEARCH PAPER SUBMITTED TO THE UNIVERSITY OF NAIROBI, SCHOOL OF ECONOMICS IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS OF ARTS IN ECONOMICS

NOVEMBER 2020

DECLARATION

I hereby declare that this is my original work and that to the best of my knowledge it has never been presented for the award of any degree in any other university or institution.

CANDIDATE: MICHAEL ODHIAMBO WAIROMA

REGISTRATION NUMBER: X50/11156/2018

SIGNATURE: .....**DATE:** 18/11/2020

APPROVAL

This MA Research Paper has been forwarded for examination with my approval as university supervisor.

DR. DANIEL OKADO ABALA

SIGNATURE: .....**DATE:** 18/11/2020

ii

DEDICATION

This paper is dedicated to members of my family who stood by me while I was writing the paper. I wish to thank them for their emotional, material and prayer support which lead to the achievement of this important milestone.

ACKNOWLEDGEMENTS

I express my sincere appreciation to my supervisor Dr. Daniel Okado Abala for his guidance and inspiration during the course of writing this paper. Your mentoring, advice and support is much appreciated.

Secondly, I acknowledge the University of Nairobi School of Economics staff for their valuable support and guidance during the course of my studies.

Let me also take this opportunity to thank my classmates who shared with me some invaluable skills, knowledge and criticisms that helped me improve on my paper.

Finally, I thank the Almighty Lord for providing me with the valuable time and resources which enabled me accomplish this noble task.

LIST OF FIGURES

Figure 1: Trend of Current Account in Kenya (1970-2018)…….9

Figure 2: Trend of Food Export Earnings in Kenya (1970 – 2018)…….**.....**11

LIST OF TABLES

Table 1: Summary of Descriptive Statistics……37

Table 2: Unit Root Test Results……...…39

Table 3:Cointegration Test Results……..40

Table 4:Lag Length Selection Criteria……40

Table 5: Vector Error Correction Model……..41

Table 6: Granger Causality ……..42

Table 7:Regression Analysis……43

LIST OF APPENDICES

Appendix 1: Serial Correlation Test ……..……54

LIST OF ABBREVIATIONS

ARDL – Autoregressive Distributed Lag

BOP – Balance of Payments

CA - Current Account

CAB - Current Account Balance

CBK – Central Bank of Kenya

COMESA – Common Market for Eastern and Southern Africa

DPI – Domestic Price Index

FDI – Foreign Direct Investment

FAO – Food and Agriculture Organization

GDP – Gross Domestic Product

KETA – Kenya External Trade Authority

KEPROBA – Kenya Export Promotion and Branding Agency

KNBS – Kenya National Bureau of Statistics

LDCs – Least Developed Countries

MLC - Marshall Lerner Condition

OECD – Organisation for Economic Cooperation and Development

SITC – Standard International Trade Classification

TB – Trade Balance

UN – United Nations

UNCTAD – United Nations Conference on Trade and Development

UNESA – United Nations Economic and Social Affairs Department

VAR – Vector Autoregressive Approach

VECM – Vector Error Correction Model

TABLE OF CONTENTS

DECLARATION ..... **Error! Bookmark not defined.**
DEDICATION ii
ACKNOWLEDGEMENTS iv
LIST OF FIGURES v
LIST OF TABLES vi
LIST OF APPENDICES vii
LIST OF ABBREVIATIONS viii
ABSTRACT 3
1.0 INTRODUCTION 4
1.1.1 Background 4
1.1.2 Evolution of Kenya's Current Account (1970-2018) 8
1.1.3 Evolution of Kenya's Food Exports (1970-2018) 11
1.2 Statement of the Problem 14
1.3 Research Questions 15
1.4 Objectives of the study 15
1.4.1 General Objective 15
1.4.2 Specific Objectives 15
1.5 Relevance of the study 15
1.6 Organization of the Study 16
2.0 LITERATURE REVIEW 17
2.1 Introduction 17
2.2 Theoretical Literature Review 17
2.3 Empirical Literature 20
2.4 Overview of the Literature 23
3.0 METHODOLOGY 25
3.1 Introduction 25
3.2 Theoretical Framework 25
3.3 Model Specification and Estimation 28
3.4 Pre-Estimation Tests 30
3.4.1 Unit Root/Stationarity Test 30

3.4.2 Cointegration Test 31
3.4.3 Vector Error Correction Model 31
3.4.4 Granger Causality 32
3.4.5 Diagnostic Test for Serial Correlation 32
3.5 Definition of Variables and Expected Signs 33
3.6 Data Type and Sources 35
4.0 DATA ANALYSIS, RESULTS AND DISCUSSIONS 37
4.1 Descriptive Statistics 37
4.2 Unit Root Test Results 38
4.3 Cointegration Test Results 39
4.4 Granger Causality 41
4.5 Regression Results 42
5.0 CONCLUSIONS AND POLICY IMPLICATIONS 46
5.1 Conclusions 46
5.2 Policy Implications 46
6.0 REFERENCES 48
7.0 APPENDICES 54

ABSTRACT

This study focused on the influence food export earnings have on current account balance in Kenya. It encompassed five independent variables namely; food export earnings, balance on services, foreign exchange rate, current transfers and income per capita with its main objective being to determine whether food export earnings can improve Kenya's current account balance. The study applied time series analysis using Ordinary Least Squares method. The findings from the analysis revealed balance on services, food export earnings and foreign exchange rate exhibit long run association characteristics through unit root and cointegration test.

It was further established from the analysis that there was a negative coefficient in Vector Error Correction Model which revealed long run causality running from individual lagged variables of balance on services, food export earnings, foreign exchange rate to current account deficit.

The study's regression analysis established that all the variables (balance on services (0.975), food export earnings (0.823) and foreign exchange rate (0.637)) were insignificant with their p-values being more than 0.05 per cent when tested at 95 per cent confidence level. The insignificance in all the variables in the study might be attributed to the use of proxy data.

The study recommended the need for the government to adopt policies that can enhance earnings from food exports and balance on services in order to curtail the growing current account deficit. These policies include, value addition and diversification of food exports as well as improvement of infrastructure to aid the development of the service sector.

CHAPTER ONE

1.0 INTRODUCTION

The background of the research is highlighted in this section that includes; definition of different parameters used in the study, evolution of Kenya's current account and food exports. It also covers the problem statement, research questions, study objectives, relevance of the research and the organization of the research.

1.1.1 Background

The global pattern of CA imbalances has received considerable attention in recent times. Economists and policymakers alike have been preoccupied with understanding the ever-recurring and persistent current account deficits experienced by most global economies amidst periodic current account surpluses. Studies such as Obstfeld and Rogoff (2004); and Arghyrou and Chortareas (2008) have delved into the subject with the former looking at the persistent US deficits and the potentially sharp exchange rate movements any future adjustments toward current account balance may have, while the latter focuses on CA imbalances in the Euro Area, the dynamics of CA adjustments and the task of the exchange rate in CA determination. Both of these studies agree that current account imbalances constitute a major concern due to the ballooning current account deficits driven by a deteriorating trade balance that ends up resulting in increased borrowing from all over the world to finance the deficits and thus adding onto net external liabilities.

The current account therefore portrays the performance of key economic indicators and is thus a crucial pointer of a country's macroeconomic health and stability. Kenya on its part has not been left out of this discussion having predominantly recorded high current account deficits of upto 12.2% of GDP as witnessed in 1974 against a backdrop of occasional surpluses recorded on only four instances during the 48-year period covered by this study. The unsustainable nature of these deficits has ended up impacting negatively on the country's economic prospects with potentially harmful consequences on the economy.

The current account is a component of the BOP which records businesses of imports and exports of services and goods, net current transfers and factor income payments and receipts. The CA

can either record a deficit or a surplus. A surplus in this case will occur if receipts from abroad for the businesses mentioned above exceed payments for the same. On the other hand a deficit will occur if payments made abroad for the above transactions exceed receipts.

A large proportion of the current account emanates from net exports (variance between the cost of imports and cost of exports of services and goods) since the other elements of the CA (net factor incomes and current transfers) are usually deemed as negligible. In this case a deficit will occur when payment for imports exceed receipt from exports and vice versa for a surplus.

Persistent current account deficits are a common phenomenon in most of the developing countries and have mostly contributed to macroeconomic instability due to their link to key economic performance indicators. This has elicited much interest from economic scholars who continually strive to understand the significance and role of CA imbalances in macroeconomic outcomes of developing countries.

Growing CA deficits are a major concern for many countries that are developing. The problem is that large and persistent CA deficits may create an economic crisis, burgeoning decrease in international reserves and large external debts (Deistaings et al, 2013).

Disequilibrium in the CAB in many countries that are developing has turned out to be a highly deliberated on topic in international and regional economics. There is an agreement that CA balance stability is vital for macroeconomic policy decision making. CA is used by countries in the BOP as a substantial macroeconomic pointer of the feasibility of the economy. This is a valuable economic pointer since it denotes other significant variables of the economy. These economic pointers include; investment, savings and balance of budget. All these pointers have a direct influence on economic development, foreign rate of exchange and economic competitiveness (Boljanovic, 2012).

A global outlook on the performance of the current account in 2018 reveals that deficits were experienced in most economies in Southern and South-Eastern Asia, America, Oceania and Africa where payments surpassed receipts. However, great surpluses were only realized in petroleum exporting economies while the accounts of Eastern Asia and European economies were more balanced. In the Caribbean Island economies of Dominica and Anguilla CA deficits

were almost half of GDP at 47% and 45% respectively. Great deficits relative to GDP were also recorded in Maldives, Lebanon and Mozambique. In absolute terms, the USA and Germany had the world's biggest current account deficit and surplus respectively. The United States of America recorded a deficit of US$490 billion while Germany recorded a surplus of US$291 billion (UNCTADstat, 2018).

In Kenya, the CA has generally been in deficit since 2004 when it recorded a deficiency of 0.82% of GDP. By 2012, the deficit had broadened to about 10% of GDP which basically reflected a rapid surge in imports of goods into the country relative to exports. Imports greatly emanated from oil products for industrial purposes, transport equipment, machinery and manufactured goods. On the other hand, the growth in exports which was lacking was accredited to minimal diversification away from the traditional exports of horticulture, tea and coffee. However, the performance of international trade in services has been exemplary over the years recording a surplus due to enhanced earnings in export of communication services, transportation services and many others. This was similarly the case with net current account transfers which increased largely due to emigrant remittances. Nevertheless, the surplus recorded in the services account and net current transfers was inadequate to counterbalance the decrease in the merchandise account. If unchecked the country's vast reliance on imports through increased payments in comparison to receipts from exports could result in the rise of the desire for foreign currency thus exerting pressure on the exchange rate to depreciate (CBK 2014).

Food exports are defined by the United Nations as "food products produced in a country and purchased by residents of another country. They constitute the goods in SITC sections 0 (live animals and food), 1 (beverages and tobacco), and 4 (animal and vegetable oils and fats) and SITC division 22 (oil kernels, oil nuts and oil kernels)" (UNESA 2006).

In 2017, global food exports were valued at US$1.03 trillion with Europe being the largest exporting continent at $ 428 billion and the Americas the largest net exporter at US$ 303 billion. They were followed by Asia, Oceania and Africa which had exports valued at US$ 206 billion, US$50 billion and US$39 billion respectively. The five top countries that export food included; Germany, Brazil, Netherlands, China and the USA. Food exports from the United States were

valued at US$117 billion while those from China were valued at US$54 billion in 2017 (FAO, 2019).

In Sub-Saharan Africa food exports were valued at US$54.37 billion in 2018 which constituted 12.90% of the continent's total exports (World Bank, 2018). Kenya's total food exports on the other hand were valued at US$ 2.78 billion which constituted 13.57% of her total exports (World Bank, 2018).

Food exports are captured under the trade balance of the CA. The trade balance is the largest constituent of the CA and thus any disturbance on this component will largely determine whether the current account records a deficit or a surplus. It is therefore important to ensure that receipts from exports are enhanced and sustained so as to keep up with the ever-growing import costs. This will aid in stabilizing the trade balance and thus improve the current account. Increase in earnings from food exports can thus perform a critical task in enhancing the status of the CA thus ensuring macroeconomic stability.

Most nations indulge in food trade with the sole aim of ensuring food security for their population while at the same time targeting foreign exchange earnings that can help improve their foreign reserves and by extension their CA through the trade balance. The world trade in food is a diverse and multifaceted process which most countries endeavor to participate in. Governments identify that a robust national food industry is a vital supplier of food to the inhabitants and a substantial supplier to food security. They also view food exports as an imperative source of foreign exchange (FAO 1997).

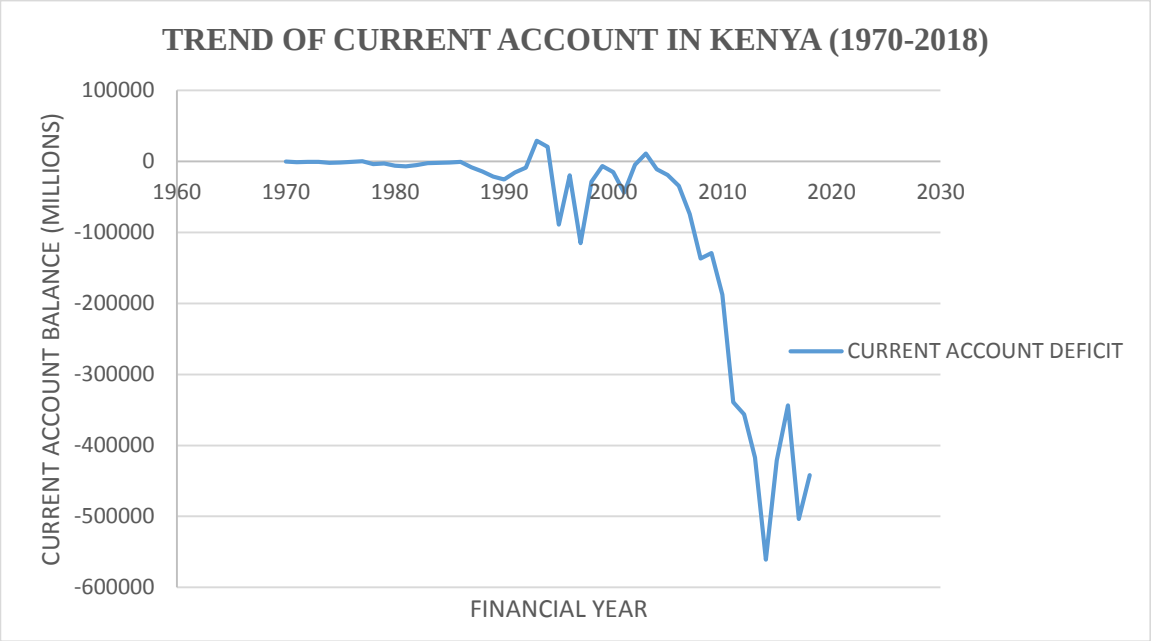
However high exposure to food and agricultural exports which are vulnerable to negative externalities tends to have harmful consequences on the balance of payments. Food and agricultural exports can be exposed to weather related shocks and price fluctuations. Weather conditions can be very unstable and besides leading to famine in most adverse cases, they can make agricultural export earnings very volatile. Lack or excess of rain, as well as too cold or too warm temperatures can damage agricultural produce. Adverse weather conditions can turn net exporters of food into net importers of food, with negative implications for the current account balance (Casagrande, 2017).

Least Developed Countries (LDCs) more so in Africa rely heavily on raw agricultural food exports for foreign exchange earnings and growth of their respective economies. This has affected the pace of growth of these economies in that the ever-changing climatic conditions have contributed to a deterioration in their trade balance and with it led to current account deficits. A case in point is Malawi which has faced harsh economic times occasioned by a high persistent current account deficit in 1988. Generally, the country's economic dependence on the export of supplies of agriculture makes it susceptible to exterior shocks. This has caused a decline of its terms of trade for the last ten years, as the prices of its principal agricultural exports (sugar, tobacco and tea) have not maintained pace with stable increasing import costs. As a result, the trade balance has been negatively affected and hence current account balance (Kwalingana and Nkuna, 2009).

Kenya's economy has been largely dependent on agricultural food exports for most of her foreign income earnings over the years with these exports accounting for 51.2% of its merchandise exports in 2018 (World Bank, 2018).Through traditional exports such as tea, coffee and horticultural produce (mainly fruits and vegetables) which have been the key foreign export earners for a long time the country has been able to narrow the gap of receipts from exports and payments for imports thus contributing towards macroeconomic stability. These exports are however vulnerable to diverse externalities that include weather change and price fluctuations which continue to influence the country's trade balance and with it the CA through random variations of receipts from exports and payments for imports. Despite the positive growth of food exports over the years the country still grapples with the problem of recurring persistent current account deficits. This has been aggravated by higher payments for finished food import products vis-a-vis receipts from raw food export products.

1.1.2 Evolution of Kenya's Current Account (1970-2018)

Kenya's current account has been experiencing a persistent deficit during the study period 1970-2018. The country only recorded a surplus on four occasions; that is in 1977, 1993, 1994 and 2003.



Source: Republic of Kenya: KNBS Economic Survey (Various)

From the graph above, the current account deteriorated significantly in 1970 from a deficit of Kshs.123.2 million in 1969 to Kshs. 265.6 million in 1970. This was due to a major growth in merchandise imports despite an improvement in the invisible balance of Kshs. 116.8 million. The situation was aggravated further in 1971 when the deficit on current account increased substantially to Kshs. 860.8 million since unlike the previous years the movements on capital account did not yield a sufficiently large increase in net receipts to counter-balance the deficit. There was however a reprieve in 1972 when the deficit declined sharply to Kshs.388.8 million due to a decline in the adverse merchandise transactions and a slight improvement in invisible earnings. A similar occurrence to the one experienced in 1971 was witnessed in 1974 when the unfavorable balance on current account rose sharply from Kshs. 760 million to Kshs. 1.79 billion as a result of a deterioration in the deficit on merchandise account. This deficit on current account was equivalent to 12.2% of the total GDP an increase from the previous years 1972 and 1973 when it stood at 3.4% and 5.8% of total GDP respectively (KNBS, 1974).

The performance of Kenya's balance of payments in 1977 was exceptional and the current account recorded a surplus for the first time in 13 years of Kshs.361.5 million in comparison to a deficit of Kshs.588 million registered the previous year. The surplus on current account

was attributed to a decline in the deficit on merchandise account. This was because of an increase in the value of exports that arose mainly from receipts of coffee and tea sales that accounted for 58.7 % of total exports in 1977. The deficit on merchandise account was also more than offset by the increase in net credit on all invisible earnings (KNBS, 1978).

The current account improved over the period 1984 to 1986 when its deficit declined from Kshs.1.73 billion in 1984 to Kshs.1.53 billion the following year before receding further to Kshs.668 million in 1986. The gradual improvement was attributed to better performance of the service sectors such as transport and tourism as well as increased income flows and high transfers. The overall balance of payments and specifically the CA however worsened in 1987 due to decreased export earnings that impacted heavily on the merchandise account. The decrease in export earnings was ascribed to a drastic decline in the world market prices of coffee and tea, a decline in the volume of coffee exports and some other export commodities as well as a rise in the price of crude petroleum (KNBS, 1988).

The country had a surplus on current account of Kshs. 29.0 billion and Kshs. 20.4 billion in 1993 and 1994 respectively since the last one recorded in 1977. The surplus was attributed to the good performance of the export and tourism sectors, improved inflow of short-term capital and grants, arrears on foreign debt servicing and massive depreciation of the Kenyan Shilling. The exports that resulted to the resurgence of the CA during this period were coffee, pyrethrum, horticultural products and cement (KNBS, 1994). In 1997, the current account deteriorated sharply by recording a deficit of Kshs.115.2 billion compared to Kshs.19.5 billion recorded the previous year. This was due to a considerable rise in import payments compared to a sluggish export performance characterized by a merchandise account deficit. The current account however improved to a surplus of Kshs.11.1 billion in 2003 from a deficit of Kshs.4.72 billion the previous year. The surplus position was accredited to increased tourism earnings and grants inflows from abroad (KNBS, 2004). In 2010, the widening of visible trade deficit caused by a marked surge in the cost of imports led to a deficit of the current account of Kshs.187.6 billion which increased in the subsequent years to 2014 when a deficit of Kshs.560.8 billion was recorded.

The deficit in the current account narrowed by 11.9% to Kshs. 343.6 billion in 2016 partly due to declines in merchandise exports and imports on free on board basis respectively. This was followed by widening of the account by 38.3% to a deficit of Kshs. 518.9 billion in 2017 before it improved by 12.2% to a deficit of Kshs.441.8 billion in 2018 (KNBS, 2019).

1.1.3 Evolution of Kenya's Food Exports (1970-2018)

During the period covered by the study 1970 - 2018 food exports continued to present a significant influence on the country's general export performance. The traditional exports of tea, coffee and horticulture (mainly fruits and vegetables) continued to be the dominant export earners contributing more to the country's total domestic exports.

Source: Republic of Kenya: KNBS Economic Survey (Various)

As depicted by the graph above earnings from Kenya's food exports have been largely depicting a rising trend during the study period with the exception of 1971, 1978-80, 1987, 1990,1995,1999,2002 and 2013 when they recorded a decline. They grew from Kshs. 1.04 billion in 1970 to Kshs. 42.44 billion in 1993 when there was an appreciable increase. This was later followed by further marginal increases from 1994 when they recorded earnings of Kshs. 50.22 billion to 2001 when they witnessed a decline to Kshs.7.99 billion. There were substantial increases in the following years from Kshs. 8.61 billion in 2003 to Kshs.9.91 billion

in 2005 and Kshs.10.14 billion in 2006. From 2006 there were steady increases experienced culminating to higher earnings of Kshs. 21.39 billion in 2012 having recorded Kshs.18.78 billion in 2010. In 2018, earnings from food exports stood at Kshs.28.39 billion.

At the onset of the period covered by the study food exports earnings were dominant in determining the value of domestic exports with coffee and tea being the major export earners for the country. A notable decline in food export earnings was witnessed in 1971 as an outcome of a decrease in the value of coffee, tea and cashew nuts exports which were affected by low prices and low export volumes. There was however an upsurge in earnings between 1974-76 when despite a deepening recession in industrial countries which led to lower prices for primary commodities, coffee, tea and tinned pineapples recorded increased earnings. Coffee exports benefitted from high world prices increasing by 165% from Kshs. 704 million in 1975 to Kshs. 1.8 billion in 1976 and as a result doubling receipts from food exports from Kshs. 1.64 billion in 1975 to Kshs.3.19 billion in 1976 (KNBS, 1977). Food exports increased their share of total exports from 35.8% to 65.6% in 1977 as a result of the high commodity prices prevailing in the global market. There was a decline however in 1978-79 when their share of total exports decreased from 65.6% to 54.8% due to a decline in the exports of tea, coffee, meat and meat products, maize and cashewnuts (KNBS, 1980).

In the eighties, the government scaled up its efforts to boost the export sector as a strategy for overall economic development through the fourth development plan of 1979-1983. This was through agencies such as the Kenya External Trade Authority (KETA). There was an increase in food export earnings from Kshs. 5.58 billion in 1982 to Kshs. 7.18 billion in 1983 due to a rise in the value of coffee, tea and other primary products. The government then declared 1984 an export year during which promotional measures were enhanced by the Ministry of Commerce and Industry that included; export compensation scheme, favourable treatment of exporters in foreign exchange allocation, use of export credit and tariff reforms. This directive by the government contributed to higher export receipts with food exports recording a 30% increase attributed mainly to higher quantities of coffee exports and a rise in cost of coffee and tea. The rise in earnings especially from coffee continued through to 1986 when food exports

registered the highest rise of 31% from Kshs. 9.86 billion in 1985 to Kshs. 12.94 billion. Their total share rose to a record 68% surpassing the previous peak experienced in 1977 of 65.6%. This situation however changed in 1987 when Kenya's external trade performed dismally recording a 20% decrease in exports due to a decrease in the prices of coffee and tea. Meat and meat products also declined sharply in value due to poor performance attributed to the reorganization of the KMC and the collapse of the Uplands Bacon factory, two of the main exporters of these products. Overall food exports recorded the worst return since 1983 with a diminished share of total exports of 60% compared to the share of 68% recorded the previous year (KNBS, 1988).

Depreciation of the Kenyan shilling at the onset of the nineties from 1990 – 1992 encouraged exports while discouraging imports. Higher quantities of agricultural food exports that included; coffee, tea, butter and ghee, meat and meat products were responsible for the rise in total export earnings in 1990. The government introduced export promotion programmes such as the establishment of Export Processing Zones (EPZs) in 1992 that encouraged exports including those of tea, fruits and vegetables. Export earnings rose appreciably in 1993 due to the devaluation of the shilling. The encouraging growth in the performance of exports also arose from the positive effect of the numerous export promotion guidelines that were laid down by the government in addition to the good performance realized from Kenya's trade with other members of the Preferential Trade Area (PTA). The increase in export earnings resulted mainly from substantial increases in export quantity and value of coffee, tea, beverages and tobacco, horticulture (fruits and vegetables included), animal and vegetable oils (especially to Somalia and Rwanda) (KNBS, 1994).

The Kenyan Shilling appreciated against other major world currencies in 1994 dampening demand for Kenyan exports which was depicted by a slowdown in exports that rose by 16.4% in 1994 as compared to 111.1% in 1993. The various export promotion policies put in place by the government resulted in increased trade with African countries especially those in COMESA. In 1995, liberalization of the exchange and trade regime helped to restore external competitiveness and with it encouraged exports. Food exports grew by 10.9% due to an increase in tea, coffee and horticulture (that included fruits and vegetables). The following year

exports of horticulture rose by 18.1% because of great demand for fresh vegetables and fruits from Kenya in the world market. The increase in export performance was ascribed to the influence of various export marketing guidelines and continued great demand for Kenya's exports in African countries (KNBS, 1998).

Tea, horticulture and coffee continued to be the leading export earners in 2000, they jointly contributed 64.7% of the total domestic export earnings. The amount of tea exported declined due to unfavorable weather conditions. The share of export earnings from food exports stood at 56.3%, of which 84.3% were from primary products. The following year the share of export earnings from food exports declined to 49.2% before increasing in the subsequent years of 2002 and 2003 by 51.9% and 51.3% respectively. This was followed by further decline in the share of export earnings culminating in a low of 39.9% in 2007 (KNBS, 2008). Despite improved export unit price of raw maize in 2008, there was a drop in the export quantities of maize due to famine encountered in many parts of the country coupled with the post-election violence which affected local production leading to a decline of 16% in export earnings. Export prices of coffee and tea which had posted declines in the previous year registered growth of 29.1% and 30.2% respectively in 2008. Foreign exchange earnings accruing from food exports in 2018 stood at 47.7% of domestic export earnings having decreased from 48.0% the previous year. This was largely on account of increased primary and processed food exports for household consumption (KNBS, 2019).

This paper lays emphasis on the influence food exports have on current account balance in Kenya during the period 1970 -2018. In addition, it provides policy options that can assist in improvement of the balance of payments thus achieving sustained macroeconomic stability.

1.2 Statement of the Problem

Over the years Kenya's food exports have contributed largely to the country's total export earnings through leading traditional exports such as tea, coffee and horticulture (mainly fruits and vegetables). In the year 1970, Kenya recorded Kshs.1.04 billion from food exports whereas in the year 2018 earnings from agricultural food exports had increased to Kshs.28.39 billion (KNBS, 2019). However, despite these higher earnings from raw agricultural food exports, the country has continued to record a persistent current account deficit to the tune of Kshs.441.84

billion in 2018 (KNBS, 2019). If agricultural food exports that include tea, coffee and horticulture (mainly fruits and vegetables) are regarded as major contributors of foreign exchange earnings in Kenya why a persistent CA deficit?

Understanding the link between agricultural food export earnings and CA balance in Kenya is thus critical in explaining the effect food exports have on current account position in Kenya. This paper therefore seeks to investigate the long run connection that exists between these two components with an aim of providing policy implications/recommendations to address the problem of recurring and persistent current account deficits.

1.3 Research Questions

Listed below are the research questions: -

a) What are the specific factors that affects Kenya's CA balance?
b) What is the effect of food exports on Kenya's CA balance?
c) What are the policy options that can be brought forward to improve current account balance in Kenya based on food export earnings?

1.4 Objectives of the study

1.4.1 General Objective

The study seeks to determine whether earnings from food exports can improve Kenya's current account balance.

1.4.2 Specific Objectives

Listed below are the specific objectives:

(a) To find out the specific factors that affect CAB in Kenya.
(b) To determine the effect of food exports on CAB in Kenya.
(c) To offer policy options that can improve CAB in Kenya based on food export earnings.

1.5 Relevance of the study

Most studies that have been undertaken on the current account balance have been centered on its determinants mainly its relationship with the depreciation of the exchange rate. However very few studies have focused on the subject of food exports and its effect on the current

account. The positive performance by Kenya's food exports through increased earnings over the years gives credence to this study which aims to establish whether food exports have had an effect on the CAB during the study period. In addition, the recommendations from this research will assist the government in development of policies related to agricultural food exports and current account balance in Kenya.

1.6 Organization of the Study

Literature review with a view to highlighting the theoretical literature, empirical literature and an overview of the literature on the subject is looked at in chapter two. It also endeavors to identify research gaps in the literature and justifies the current research. This is then followed by a presentation of the theoretical framework, empirical model estimation, definition of different variables, pre and post estimation tests and data types and sources. Data analysis and interpretation of the results then follow before conclusions and policy implications are made based on the study findings.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Theoretical literature related to the current account balance as well as empirical literature based on previous research and their findings on the effect of food exports and other variables on current account balance have been highlighted in this section.

2.2 Theoretical Literature Review

The connection between food exports and the current account can be explained by two theoretical approaches pegged on the outcome of currency devaluation on the CA. These approaches include; the elasticity and absorption approach.

Currency devaluation is deemed as necessary in trying to address imbalances related to the balance of payments in this case the CA. Models that relate to the MLC and the J-Curve suggest that devaluation is associated with cheaper exports and expensive imports thus leading to a reduction in current account deficits and stimulation of the economy through the growth of exports (Piñeres and Jorda´, 2010).

Proponents of the Marshall-Lerner Condition assert that this method offers the essential and adequate environment for an enhancement of trade balance. Nonetheless, there are times when this environment was established yet the balance of trade kept on worsening (Bahmani-Oskooee, 1985).

Theoretical works on the J-Curve effect associate the retort of the balance of trade to currency devaluation with a deterioration in the initial stages before it eventually appreciates. This is usually pegged on an alteration in the rate of exchange and purchase of goods in transit and under contract during the currency contract of currency and pass-through periods. Papers on the subject are mainly twofold with some focusing on aggregate trade data while others look at bilateral trade data (Magee (1973); Kruger (1983)). The former is classified under currency contracts signed prior to devaluation, those signed after devaluation, and those with sluggish quantity adjustments. In the first instance, economic agents tend to pursue capital gains as

opposed to losses based on future currency devaluation. There is a preference by exporters to receive payment in currencies that are bound to strengthen while the importers opt for those that are bound to weaken (Froot and Klemperer (1989)). Secondly, those that focus on newer currency contracts signed after devaluation are drawn on variations of the domestic price index (DPI) for trading partners where higher domestic currency prices tend to result in a J-Curve effect based on an enhancement in the balance of trade due to curtailing of imports at the onset before worsening due to delayed purchases by agents (Gerlach 1989). Thirdly, those on sluggish quantity adjustments outline an adjustment path that is dependent on the pass-through period during which exports tend to appreciate while imports decline leading to enhancement of the trade balance and attainment of the Marshall-Lerner Condition (Bacchetta and Gerlach (1994); Levin (1983)).

Consequently, under the MLC currency devaluation will tend to improve the CA balance if price elasticity of net exports exceeds unity ($PED_{nx} > 1$). This implies that the variation in the number of exports and imports required together need to be adequately great so as to counterbalance the loss in foreign earnings consequent upon reducing the cost of exports in foreign currency (Marshall (1923); Lerner (1944)).

In recent times, studies on the MLC have adopted cointegration analysis. The Concept by Engle and Granger (1987) has had a significant impact on time series econometrics. Cointegration suggests that although variables may all be non-stationary i.e. I (1), there may be a linear amalgamation of these variables that are stationary, which represents a long run cointegrated connection.

Research that have been based on cointegration analysis to test for Marshall-Lerner condition include; Andersen (1993) who referred to the original Engle-Granger two-step cointegration method and in the process established that from the 16 countries that were studied a number exhibited an insignificant coefficient or the "wrong" sign from what was established in theory. This was attributed to the change of guidelines of the international system especially the volatile variations in the real effective rate of exchange of countries. Rose (1991) on the other hand examined five industrial countries using a similar approach and encountered a lack of evidence of cointegration thus leading to failure in reviving backing for the Marshall-Lerner condition.

The cointegration method by Johansen and Juselius (1990) which has been widely used in time series literature over the years, has been adopted by other studies that include; Bahmani-Oskooee and Niromaand (1998) used it to test the trade flows of 30 countries. Having established the presence of cointegration they arrive at an estimate point that could be used to justify that the MLC is met.

Studies based on conventional models that relate to exports and devaluation have focused on the exchange rate pass-through which postulates that in periods after devaluation has occurred exports prices go down, comparative to other exports, and the rising export market will eventually revive the economy. Thus, any differential effect arising from devaluation would then imply that countries can assume diverse results based on their portfolios. Meaning that the elements of export portfolio for a country has to be put into consideration in any meaningful devaluation analysis. Van der Meulin Rodgers (1998) in her study on the outcome of the rate of exchange management on export performance across sectors in Indonesia between 1972 and 1994, establishes that non-oil exports have a positive response to better price incentives that includes exchange rate devaluation. A strong effect was found in exports from sawn wood, garments and textiles. She further discloses that variances in adjustment lags and production functions tend to explain why there is a more than positive response of manufactured exports to deviations in price incentives in comparison to primary products exports. Piñeres and Jorda´ (2010) on the other hand examined the Short Run Effects of Devaluation through a disaggregated analysis of Latin American Exports (i.e. 59 commodities that included products in the SITC export categories (including food exports) exported by16 Latin American countries) using pooled time series estimation that revealed a negative short-run link amid real devaluation and growth of exports for most exports at a disaggregated level.

However, most papers that assert to examine the Marshall-Lerner condition do not achieve the required elasticities to do so. Exports may be the focus like Kumar (2009) or imports like Deyak et al, (1989), or a single equation for the trade balance is estimated. Since the Marshall Lerner condition entails that two elasticities are equivalent to one in total value. In case one of them is bigger than the other one, then the status might be met either through only exports or imports. , Eventually, a researcher might approximate a single elasticity and assert that the status is met if it surpasses one (Bahmani et al, 2013).

From the above discussion it is evident that most of the studies have delved on the subject of currency devaluation and its effect on the balance of trade while pegging their approach on the J-Curve effect and the Marshall-Lerner condition. A majority have looked at how currency devaluation can be useful in enhancing the balance of trade through increased exports and reduced imports leading to the MLC being met. On the other hand, cointegration has been cited by most of the studies as the preferred method of analysis to test for the MLC with varied results. The studies have also included a broad classification of sectors such as the non-oil, manufacturing and primary products exports while looking at the impact of currency devaluation on export performance. However, most of the studies conducted have mainly focused on many countries while covering a shorter duration of time. This study seeks to borrow and add to previous studies by focusing on food export earnings as a reference in enhancing export performance and improving current account balance in Kenya. It covers a longer period as compared to previous studies.

2.3 Empirical Literature

Literature on the subject of the CAB points towards few studies on the issue of food exports and its effect on the CA balance. This section of the paper will highlight empirical literature on the effect of food exports and other variables on the CA balance.

Studies on food exports and its relationship with the CA point towards a negative outcome on the CA. Casagrande (2017) investigated the drivers of the CA balance of 125 developing countries (including Kenya) through a pooled ordinary least squares estimation with clustered standard errors. The study established that fiscal balance, GDP Per Capita, net foreign asset position, stock of FDI liabilities as well as the shares of fuel and high technology manufactures on total exports have a positive outcome on the CA balance. Conversely, the shares of young and old population, foreign direct investment inflows together with the shares of food and agricultural raw materials on total exports had a negative outcome on the CA balance.

Literature on the real rate of exchange devaluation and the CA indicates otherwise with devaluation of the rate of exchange having either a positive or negative relationship on the CA from the studies reviewed. In his study on whether real rate of exchange devaluation improves the CAB of four highly indebted countries in Eastern Africa. Ayele (2019) established that real

rate of exchange devaluation has an insignificant impact on the CAB, in both short and long range. Nevertheless, the time series analysis using bound testing and restricted ARDL estimation suggested that real rate of exchange devaluation revamps the CAB in the long run for only Ethiopia. He resolved that currency devaluation could not be an appropriate policy tool to correct CA deficits or trade imbalances for countries with unwarranted external debt and badly diversified export structure.

Through their study on the outcome of the cost of oil and the rate of exchange on CAB in Nigeria using yearly time series data for the periods 1986 to 2016. Omoregie and Ikpesu (2019) realized a long-run link amid the variables. Their research also exposed that devaluation of the real rate of exchange would lead to enhancement of the CAB, while a shock in cost of oil would yield an optimistic response in the CAB.

FDI was found to have either a positive or negative outcome on the CA from the studies reviewed on these variables. Sahoo et al (2016) examined the link amid globalization, institutional quality, FDI and CA for 23 Asian countries over the period 1998 to 2013. He established that FDI inflows and institutional reforms have a negative and significant outcome on the CA balance.

On the contrary, Kovačević (2017) examined the link between the CAB and its elements for a sample of 9 South East European (SEE) countries, (Moldovia, Serbia, Bosnia, Herzegovina, Croatia, Romania, Albania and Montenegro) over the period 2000 to 2015. After establishing the presence of panel cointegration in the sample, they estimated cointegration equations using FMOLS and DOLS estimator. Outcomes from the study showed that real rate of exchange appreciation had a negative outcome on the CA, while the net inflow of direct foreign investments had a positive influence, as private remittances. The survey established that the CA deficit in the SEE countries was persistent.

On the other hand, a positive relationship is established by studies on remittances and CA balance. Hassan and Holmes (2015) in their study on whether remittances enable a sustainable CA deficit established that; higher payments enables a weakly sustainable CA balance, expedites a rapid alteration or lower tenacity of the CA in response to shocks and countries

where sustainability is weakest with an already high persistence of the CAB tend to have a strong positive outcome of remittances on CA sustainability.

Services and the CAB according to reviewed studies have a negative relationship. Celik et al. (2012) through their study on the outcome of the industry of tourism on the balance of payments deficit for Turkey found that an increase in tourism revenues had a negative effect on BOP deficit.

Other studies such as; Longe et al, (2018) investigated the link amid the price of oil fluctuations and the CAB in Nigeria. Using time series data from 1977 to 2015 the study projected the short- and long-run link amid the CA and cost of oil variations by using Autoregressive Distributed Lag (ARDL). The results revealed that temporarily, the cost of oil had a positive but insignificant impact on the CA balance, while in the long haul it negatively impacted but was found to be a significant determinant of CA balance in the economy. Other variables such as Population, Gross Domestic Product and Trade had an insignificant connection with the CA in the short run, while in the long run only GDP and Oil Price were found to be significant determinants of the CA balance.

Equally, Yurdakul and Cevher (2015) examined causality link between macro aggregates that affect CA deficit using conditional and partial granger causality test. Using quarterly data for Turkey's economy the results of the conditional and partial granger test showed that the real effective exchange rate variable had the greatest impact on CA deficit, it was followed by the growth rate, energy import, and openness variables. Direct Foreign Capital Investment was the variable with the least impact.

Analysis conducted by Oshota and Adeleke (2015) on the connection between the CAB and its determinants for the period 1978 to 2008 in Nigeria, Cote d'ivoire and Ghana revealed that relative income, real effective rate of exchange and domestic investment for the three countries are vital in explaining the long-run connection with the CA balance. Nevertheless, there was no short term link amid the variables and the CAB. The study was based on the saving-investment theory and also in line with the intertemporal approach while using a linear Vector Autoregressive (VAR) approach.

On their part Lin and Kueh (2019) scrutinized the potential determinants of CA balance. The link between CAB and numerous diverse variables that included; fiscal balance, public debt, real GDP and age dependency ratio were examined. The study covered the period 1990 to 2016 and used estimation of panel unit root, panel Vector Error Correction Model (VECM) and panel granger causality. The results showed that all variables are cointegrated in the long run and there are also unidirectional and bidirectional causal connections in the short run.

2.4 Overview of the Literature

Most of the studies reviewed on the current account point towards a relationship with its determinants more so the exchange rate and foreign direct investment. Exports, like those from food and agricultural raw materials which constitute a considerable proportion of the current account of most developing countries through the trade balance component have not been given much consideration by these studies. To a large extent the variable related to oil or hydrocarbons has formed the basis of previous research that includes; Longe et al (2018) and Omoregie and Ikpesu (2019). This research therefore aims to fill the gap by focusing on food exports on which Kenya depends on for most of her foreign exchange. This is especially through exports such as tea, coffee and horticultural produce (mainly fruits and vegetables) which have been the country's leading merchandise exports for a long time.

Literature on the subject further reveals that most studies have used panel data drawn from a number of countries to establish the link between the various variables studied and the CA. For instance, Casagrande (2017) in her study on the key determinants of CA imbalances opted to use panel data for a sample of 125 countries that are still developing including Kenya. As a result, most of these studies have provided an insight on the outcome of various variables on the CA based on a number of countries as opposed to looking at the relationship that exists in specific countries. The study uses secondary time series data to establish the link between food exports and the CA with key reference to Kenya so as to aid policy formulation based on the findings.

Studies such as Ayele (2019) used the elasticity approach, absorption approach and Marshall Lerner Condition to establish if currency devaluation could improve the CA balance of extremely indebted countries with low income. The study draws lessons from and adds to these

studies by establishing whether the Marshall Lerner Condition holds for a country like Kenya during the study period. This was done through finding out whether the findings by studies such as Ayele (2019) that devaluation of currency might not be a suitable policy instrument to address the implacability of CA deficits for countries that have poorly diversified exports holds. This is especially since Kenya which is the focus of this study has been largely dependent on poorly diversified exports in the form of agricultural food exports such as tea, coffee and horticultural produce (mainly fruits and vegetables) for most of her foreign exchange earnings over the years.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

Theoretical framework upon which the study is based is presented in this section. The theoretical model and the estimation model are also discussed. We also define the variables to be used including their measurements and expected a priori relationships to the dependent variable. Finally, a brief discussion of the data, their sources and pre estimation tests are also presented.

3.2 Theoretical Framework

The CA stems from the balance of payments comprising the capital account;

BOP = CA + KA …… (1)

Current account balance indicates whether the CA is in deficit or a surplus and includes; net exports (exports of services and goods excluding imports of services and goods), net factor income receipts (income from salaries, portfolio investments or direct investments) plus net current transfers (workers remittances, donations, aids, grants, and pensions);

CAB = (X-M) + (NY + NCT)…… (2)

CAB = TB + (NY + NCT)……. (3)

Net exports (X-M) also referred to as the trade balance of the CA is the largest component of the CA balance and forms the basis of the theoretical framework for this study. This is because we are interested to find out whether a change (increase or reduction) in the trade balance components can aid in the overall enhancement of the CA balance.

The theoretical framework of the research draws on the elasticity approach of the current account with key emphasis on the MLC states that, the summation of trade elasticities should be greater than one for a change in rate of exchange to have an influence on the BOP for a country. This implies that, in the event that the total gross of import and export trade elasticities are bigger than one then the trade balance will improve and thus the CA.

The major intention of diminishing a country's currency is to close the gap amid a country's exports value and that of its Imports. Devaluation will thus result to a decrease in excess claim for foreign currency. It will decrease the foreign values of the devaluing country's exports and upsurge the foreign need for local products. Elasticity methodologies to devaluation stipulate that the outcome of devaluation on the trade deficit depends on the demand flexibility of imports and the supply flexibility of foreign goods. Alterations in local proceeds from exports depend on the flexibility of foreign demand for exports, from the country and on the flexibility of local supply of exports.

The Marshall - Lerner (MLC) (Caves, 1999) describes the parameters for the devaluation of the rate of exchange to improve the TB. Based on four basic assumptions; (a) The price elasticities of supply for imports and exports are immeasurable and the demand elasticities are not;(b) imports and exports alike adjust to an exchange rate change immediately; (c)there is no foreign debt; and (d) the trade balance is zero.

Based on this Ahearn (2002) derives the ML condition beginning with equation (4) below; where the TB expressed in foreign currency equals the difference between demand for Exports (X_D) and demand for Imports (M_D)

$$TB = X_D - M_D \text{ ..... (4)}$$

The requirement for exports is expressed in foreign currency by multiplying the volume of exports (EX_V) by the domestic price of goods (P_D) while the requirement for imports is expressed in domestic currency by multiplying the volume of imports (IM_v) by the foreign cost of a good (P_F) and the rate of exchange (E). The trade balance in foreign currency is therefore expressed in equation (5) as;

$$TB = EX_V.P_D - IM_V.P_F.E \text{ ..... (5)}$$

Equation (6) is then derived in reference to the first assumption of the Marshall Lerner condition which states that the foreign and domestic prices remain constant such that there is no difference between nominal and real rate of exchange. X and M being the nominal prices of exports and imports.

$$TB = X - M.(E) \text{ ..... (6)}$$

Differentiating equation (6) with respect to (E) will lead us to equation (7)

$$\frac{dTB}{dE} = \frac{dX}{dE}.E - M.\frac{dE}{dE} \text{..... (7)}$$

Devaluation of the domestic currency will result into an increase in the trade balance and thus equation (8) that indicates a positive relation amid trade balance and the rate of exchange.

$$\frac{dTB}{dE} > 0 \text{..... (8)}$$

Implying that;

$$\frac{dX}{dE} - \left(\frac{dM}{dE}\right).(E) - (M).(1) > 0 \text{..... (9)}$$

Leading us to equation (10) and (11);

$$\frac{dX}{dE}.\left(\frac{E}{X}.\frac{X}{E}\right) - \left(\frac{dM}{dE}\right).(E).\frac{M}{M} - (M).(1) > 0 \text{..... (10)}$$

$$\frac{dX}{dP}.\left(\frac{E}{X}.\frac{X}{E}\right) - \left(\frac{dM}{dE}\right).\frac{E}{M}.(M) - (M) > 0 \text{..... (11)}$$

Equation (12) then defines the elasticity of export and import as follows;

$$E_x = \left(\frac{dX}{dE}\right).\left(\frac{E}{X}\right),\ E_m = \left(\frac{dM}{dE}\right).\left(\frac{E}{M}\right) \text{..... (12)}$$

Substituting E_x and E_m into equation (13) gives us;

$$E_x.\left(\frac{X}{E}\right) - E_m.(M) - M > 0 \text{..... (13)}$$

Then dividing equation (13) by M gives us;

$$E_x.\left(\frac{X}{ME}\right) - (E_m) - 1 > 0 \text{..... (14)}$$

Drawing from assumption three of the MLC that states that at the time of devaluation of the trade balance should be equal to zero (i.e. TB=0) then we derive equation (15) below;

$$X - M.(E) = 0 \; and \; thus \; X = M.(E) \text{..... (15)}$$

As a result, equation (13) will be then be expressed as;

$$E_x - E_m - 1 > 0 \; or \; E_x - E_m > 1 \text{..... (16)}$$

From the above theoretical framework our focus is mainly to establish whether the Marshall Lerner condition expressed by equations (15 and 16) does indeed hold for a country like Kenya through ascertaining whether a devaluation in currency will eventually lead to enhancement of the balance of trade and with it the CAB.

It has been established from the theoretical framework that CAB is influenced by; the trade balance (exports minus imports), net factor income, current transfers and the exchange rate. The study therefore adopted the theoretical framework variables where; balance of trade was represented by balance on merchandise (net food exports) as the main variable while the control variables included; balance on services, exchange rate, income per capita and current transfers.

3.3 Model Specification and Estimation

The model specification adopted by the study is based on an empirical model by Feriyantoa, (2020) whose study on the determinants of Indonesia's CA Balance looked at the effect of the independent variables; exchange rate (ER), domestic money supply (M2), real GDP and FDI on the dependent variable CA Balance using a systematic time series econometrics approach.

The study based its approach on earlier studies on the effect of the independent variables mentioned on the CA balance. These included; the exchange rate (Wanjau, 2014), domestic money supply (Kasasbeh, 2018), Gross Domestic Product (Roy, 2012) and Foreign Direct Investment (Kandil, 2012). From these studies' ER was hypothesized to have a negative relationship with CAB while M2, realGDP and FDI were hypothesized to positively influence CAB;

The empirical model by Feriyantoa (2020) is represented as follows;

$$CAB_t = f(ER_t, M2_t, realGDP_t, FDI_t) \quad \text{..... (17)}$$

Where CAB_t is the CAB as a function of Exchange Rate in US Dollars (ER_t), Domestic Money Supply ($M2_t$) that includes narrow money plus savings and time deposits, Real Gross Domestic Product ($realGDP_t$) and Foreign Direct Investment(FDI_t).

The model then becomes;

$$CAB_t = \beta_0 + \beta_1 ER_t + \beta_2 M2_t + \beta_3 realGDP_t + \beta_4 FDI_t + \varepsilon_t \quad \text{..... (18)}$$

Where;

CAB_t = dependent variable measured by the CAB

β_0 = Intercept

$\beta_1, \beta_2, \beta_3, and\ \beta_4$ = Parameters to be estimated

ER = Exchange Rate in US Dollars

M2 = Domestic Money Supply that includes narrow money plus savings and time deposits

Real GDP = Real Gross Domestic Product

FDI = Foreign Direct Investment

ε = Error Term

Taking the logarithm of both sides gives the linear equation of the form:

$$LogCAB_t = \beta_0 + \beta_1 LogER_t + \beta_2 LogM2_t + \beta_3 LogrealGDP_t + \beta_4 LogFDI_t + \varepsilon_t \ldots\ldots\ldots (19)$$

This study therefore modifies the above empirical model by Feriyantoa (2020) to include other variables not included in the model such as; food export earnings (FE), balance on services (BS), current transfers (CT), exchange rate (ER) and per capita income (Y) which have formed the basis of studies discussed earlier in the empirical literature on the CAB that include; Casagrande (2017), Ayele (2019), Omoregie and Ikpesu (2019), Celik et.al (2012), Hassan and Holmes (2015) and Oshota and Adeleke (2015).

The empirical model for this study therefore takes the following functional form:

$$CAB_t = f(FE_t, BS_t, CT_t, EXR_t, Y_t) \ldots\ldots\ldots\ldots\ldots\ldots (20)$$

Where CAB_t is the Current Account Balance as a function of Food Export Earnings (FE_t), Balance on Services(BS_t), Current Transfers(CT_t), Exchange Rate(EXR_t), and Per Capita Income(Y_t).

The model for this study then takes the form:

$$CAB_t = \beta_0 + \beta_1 FE_t + \beta_2 BS_t + \beta_3 CT_t + \beta_4 EXR_t + \beta_5 Y_t + \mu_t \ldots\ldots\ldots\ldots (21)$$

To estimate the contribution of food exports to CAB we log the variables in equation (20) so that the coefficients are interpreted as elasticities in equation (22) below. The estimated

equation is derived from the theoretical framework and adopted from an earlier study by Feriyantoa (2020) and has been modified for the specific purpose of this study. Kenya's Current Account Balance model can thus be expressed as:

$$LogCAB_t = \beta_0 + \beta_1 logFE_t + \beta_2 logBS_t + \beta_3 logCT_t + \beta_4 logEXR_t + \beta_5 logY_t + \mu_t \ldots\ldots (22)$$

In the estimated equation (22) above all the variables are captured in time period t, with CA Balance being expressed as a percentage of GDP, Food Export Earnings (FE), Balance on Services (BS) and Current transfers (CT) being expressed in Kshs., Exchange Rate(ER) being the real exchange rate and Income per Capita (Y) being expressed as a percentage of GDP. μ_t is the stochastic disturbance term.

The research uses Ordinary Least Squares (OLS) to estimate the link between the variables specified in equation (21) above due to the time series properties of the data.

3.4 Pre-Estimation Tests

These tests are investigated to ascertain the validity of the results from the study and to find out if the data meets important statistical criteria for the type of data used which in this case is time series data.

3.4.1 Unit Root/Stationarity Test

Unit root is a characteristic of some stochastic processes that can cause problems in statistical inference such as spurious problem in regression analysis involving time series models. This study adopted Augmented Dickey Fuller (ADF) test while testing for unit root. This test assists in checking for stationarity so as to avoid the problem of spurious regression (unrelated variables appear to be correlated) which can restrict the study to the time period under consideration thus curtailing forecasting for the future. The test is appropriate for time series data since it is able to detect the presence of unit root which is associated with this type of data. To establish presence of unit root in time series data, the ADF test compares its Mackinnon critical value at 5 per cent with its ADF absolute test value where if the absolute test value is higher than the Mackinnon critical value then the variable is assumed to be stationary at lag zero (I(0)) thus possessing short run characteristics. On the other hand variables that tend to have an ADF absolute test value less

than the Mackinnon critical value at 5% possess unit root thus non-stationary at lag zero (I(0). These variables require first differencing (I (1)) to make them stationary using ADF test and are then deemed to possess long run characteristics. This in turn aids in making the variables useful for the purpose of estimation.

3.4.2 Cointegration Test

Cointegration test is conducted to check if two or more non stationary series dataset; have a long-run equilibrium, move together in such a manner that their linear combination results in a stationary time series and share an underlying common stochastic trend. This study adopted the Johansen Juselius cointegration test since it allows one to estimate the long-run parameters or equilibrium in systems with unit root variables. Johansen Juselius cointegration test involves two tests namely; trace statistic and maximum Eigen value test to determine the number of cointegrating vectors. The number of cointegrating vectors to be selected is determined by comparing the lower trace statistic value to the critical value at 5 per cent. Cointegration test therefore assists in establishing the presence of long run association between variables that possess unit root and when first differenced become stationary.

3.4.3 Vector Error Correction Model

The Vector Error Correction Model (VECM) describes the dynamic interrelationship among stationary variables. Thus, it is useful in our study if the variables being tested are stationary and if not they are integrated of order one to make them stationary. Once the variables are stationary in their differences i.e. I (1) we then estimate using least squares. If the variables are cointegrated then the model is modified to allow for the cointegrating link amid the I (1) variables. Therefore, the Vector Error Correction Model enables us to cater for the variables that are stationary in their variances that is integrated of order one and are cointegrated in our study. The test assists to establish if there exists a long-run causality effect amid the lagged variables and CA deficit in this study. This shall be guided by the sign of the coefficient of the error correction term.

3.4.4 Granger Causality

This Granger Causality test enables us to establish causality amid two variables in a series. It thus provides a probabilistic account of causality through empirical datasets meant to establish patterns of correlation. However, it is worth noting that Granger Causality is not necessarily a cause and effect relationship but it targets to establish if a particular variable comes before another in a time series.

It can be established through the f-test which involves testing the null and alternate hypothesis e.g. $Y_{(t)}$ does not granger cause $X_{(t)}$. This is followed by choosing the lags, finding the f-value and calculating the f-statistic. It is then possible to reject the null hypothesis if the f-statistic is greater than the f-value.

This test is useful in trying to find out whether one time series can lead to the prediction of another time series in future i.e. for forecasting purposes. In this case it enables us to determine whether food exports earnings in the study can be used to predict current account balance in Kenya in future. This test is conducted so as to determine if the lagged variables combined have a significant influence on the dependent variable and whether there exists a bidirectional or unidirectional causal link amid CAB and food export earnings in Kenya.

3.4.5 Diagnostic Test for Serial Correlation

Serial correlation is the relationship between variables and their lagged versions overtime in a model. It usually results in the level of a variable affecting its future level. The study tests for serial correlation to ascertain that each of the variables is independent of the other. To check for it the serial correlation test is run after the regression and it entails finding out whether the probability value is greater than 0.05 when tested at 95 per cent confidence level. A model with no serial correlation exhibits a probability that is higher than the critical value when tested at 5 per cent using either the Breusch-Godfrey or Durbin-Watson test. The Study adopted the Breusch – Godfrey test test while testing for autocorrelation since it is able to detect autocorrelation up to higher orders and also supports a broader class of regressors. It also aids in testing for autocorrelation in the errors in a regression model and is applicable in regression

models where lagged values of the dependent variables are used as independent variables in the model's representation for later observations.

3.5 Definition of Variables and Expected Signs

Variable Name	Definition and Measurement	Expected Sign	Source
Dependent Variable			
Current Account Balance (CAB)	The CAB is measured by summing up the transactions that include; the variance between exports and imports of services and goods, factor income receipts and payments and net current transfers. The data is captured as a percentage of GDP and is in Kshs.		KNBS Economic Survey and Statistical Abstracts
Independent Variables			
Food Exports Earnings (FE)	FE is measured as the total foreign exchange earnings received annually from food exports and is expressed in Kshs.	(-ve)	World Bank Open Data, UNCTADstat and UN COMTRADE websites Casagrande (2017)

Balance on Services (BS)	The Balance on Services are the invisible part of the current account and are measured as earnings received from services such as international tourism, transport and communication. It is expressed in Kshs.	(-ve)	World Bank Open Data website Celik et al. (2012)
Current Transfers (CT)	CT is measured as the unrequited transfers of income from nonresidents to residents minus the unrequited transfers from residents to nonresidents. It is expressed in Kshs.	(+ve)	World Bank Open Data website Hassan and Holmes (2015) Kovačević (2017)
Exchange Rate (EXR)	EXR is measured as the price of the domestic currency compared to the currency of other trading partners. It is expressed in percentage form.	Indeterminate	World Bank Open Data website Omoregie and Ikpesu (2019) Ayele (2019)

Income Per Capita (Y)	Y is measured by dividing the country's national income by its population. It is expressed as a percentage of GDP.	Indeterminate	World Bank Open Data website Oshota and Adeleke (2015)

3.6 Data Type and Sources

The data used in this research is secondary time series data on both the dependent and independent variables namely; current account balance, food export earnings, balance on services, exchange rate, current transfers and income per capita. The data spans the period 1970-2018 and is sourced as follows; data on the dependent variable which is the CA balance is sourced from various issues of the Kenya Economic Survey and Kenya Statistical Abstract of the KNBS. On the other hand, data on food export earnings, balance on services, current transfers, and the exchange rate is sourced from World Bank Open Data, UNCTADstat and UN COMTRADE database websites.

Data sourced from the Kenya Economic Survey and Kenya Statistical Abstract on the CA balance is derived from the section on Balance of Payments Statistics which captures data on the country's cross border transactions.

Data on food export earnings is derived from the UNCTADstat, UN COMTRADE database and the World Bank Open data websites and is derived from the goods in SITC sections 0 (live animals and food), 1 (tobacco and beverages), and 4 (animal and vegetable oils and fats) and SITC division 22 (oil kernels, oil seeds and oil nuts).

Data on exchange rates is derived from the World Bank Open Data website and is based on foreign exchange rates which include the exchange rate of the Kenyan Shilling against other world major currencies.

Data sourced from the World Bank Group website (World Bank Open Data) on income per capita is based on World Bank estimation sources and methods in World Bank's "The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium" (2011). On the other hand, data on net current transfers from abroad is based on World Bank National Accounts and OECD National Accounts data files.

Data sourced from the World Bank Open Data, UNCTADstat and UN COMTRADE database websites have been converted into Kenya shillings from US dollars using the average exchange rate.

CHAPTER FOUR

4.0 DATA ANALYSIS, RESULTS AND DISCUSSIONS

Summary of the results obtained from empirical econometric testing and analysis is discussed in this section. It covers the descriptive statistics, statistical test results and regression results. It also provides an interpretation of the results which informs the conclusion and policy implications of the study.

4.1 Descriptive Statistics

This section discusses the descriptive statistics based on the variables used in the study. This includes the observations, mean, standard deviation and the minimum and maximum values. The descriptive statistics are meant to show that the data is well primed for analysis and tests to be carried out as well as to provide confidence in the validity of our results. Table 1. below provides a summary of the descriptive statistics.

Variable	Obs	Mean	Std.Dev.	Min	Max
Current account	49	-85.24363	158.0038	-560.76	11.1
Balance on services	49	49.41304	65.1452	-.11495	251.9171
Food export earnings	49	11.78	10.61581	.0959	50.21829
Current Transfers	49	84.55735	129.5658	.0757143	506.9974
Income per capita	49	29703.72	38191.27	894.1461	142492.5
Foreign Exchange Rate	49	46.79735	34.15036	7	103.41

Table 1: Summary of Descriptive Statistics

The summary of descriptive statistics depicted above includes observations which is the total number of data entries for each variable. The mean on the other hand is the average of the data derived by summing up all the observations and dividing them by the number of observations. It is therefore a standard measure of the centre of the distribution of the data. The standard deviation is important in determining how spread out the data are from the mean where a higher standard deviation value indicates greater spread in the data. The minimum and maximum values represent the smallest and the largest data values

respectively and they are key in assessing the spread of the data through comparing the two values.

From Table 1. above a total of 49 observations were made for each variable. The current account is depicted as ranging between a deficit of Kshs.560.76 billion and a surplus of Kshs. 11.1 billion while maintaining a mean deficit of Kshs.85.24 billion and a standard deviation of Kshs.158 billion. Food export earnings on the other hand range between a minimum value of Kshs.959 million and a maximum value of Kshs.50.22 billion with a mean value of Kshs.11.78 billion and a standard deviation of Kshs.10.62 billion. Balance on services range between a minimum value of Kshs.1.14 billion and a maximum value of Kshs.251.91 billion with a mean value of Kshs.49.41 billion and a standard deviation of Kshs.65.14 billion. Current Transfers had a minimum value of Kshs.7.57 billion and a maximum value of 506.99 billion with a mean value of Kshs.84.56 billion and a standard deviation of 129.57 billion. Foreign exchange rate had a minimum value of Kshs. 7 and a maximum value of Kshs.103.41 with a mean value of Kshs.46.80 and a standard deviation of Kshs.34.15.

The standard deviation for Income per capita, Current account deficit and current transfers were greatly spread out from the mean while the other variables food export earnings, balance on services and foreign exchange were clustered around the mean. A comparison of the minimum and maximum values indicates spread in the data while the mean values provide the average values for the variables used in the study.

4.2 Unit Root Test Results

This test was conducted in order to check for the presence of non-stationarity in the variables used in the study and avoid the occurrence of spurious estimates. The Augmented Dickey Fuller test was used in this case to check for stationarity in the time series. The test was done by comparing the ADF test value and the Mackinnon critical value at 5% level. The results of the unit root test are depicted in Table 2. below

LEVEL				FIRST DIFFERENCE		
Variable	ADF test statistics	ADF critical value	P Value	ADF test statistics	ADF critical value	P Value
Current account deficit	1.299	3.508	0.8882	7.808	3.512	0.0000
Food Export Earnings	3.264	3.508	0.0724	7.251	3.512	0.0000
Balance on Services	2.277	3.508	0.4466	5.944	3.512	0.0000
Foreign Exchange Rate	2.299	3.508	0.4343	6.222	3.512	0.0000
Current Transfers	1.429	3.508	1.0000			
Income per capita	6.483	3.508	1.0000			

Table 2: Unit root test results

The computed statistics from the table above indicates that at lag zero Current Account Deficit, Balance on Services, Food Export Earnings and Foreign Exchange Rate had an absolute value of ADF test less than the critical value which postulated presence of unit root and non-stationarity at 5% level. It was however noted that after being first differenced the variables became stationary that is integrated at order 1 (I (1)). The findings further revealed that two of the variables that is Current Transfers and Income per Capita were stationary at level one. The study proceeded to test for cointegration on the variables that possessed unit root at level one.

4.3 Cointegration Test Results

This test was conducted so as to find out whether there exists a long run link amid the variables that were found to be stationary at first difference. These variables include; Current Account Deficit, Food Export Earnings, Balance on Services and Foreign Exchange Rate which had unit root at level one. The study adopted the Johansen and Juselius Cointegration test which aided in identifying the existence of multiple cointegrating relationships between the variables. The results of the cointegration test are depicted in Table.3 below

Johansen test for cointegration				
Trend: constant			**Number of Obs = 44**	
Sample: 1975-2018			**Lag = 4**	
Hypothesized			**Trace**	**5%**
Maximum rank	**parm**	**Eigen Value**	**Statistics**	**Critical value**
0	52		49.8432	27.07
1	59	0.67787	**19.3335***	**20.97**
2	64	0.35558	8.5584	14.07
3	67	0.17676	3.1923	3.76
4	68	0.06998		

Table 3: Cointegration test results

The Trace test statistics show cointegration at 5% level at maximum rank1.

The results in Table 3. above indicate that the trace statistics value at maximum rank 1 was less than the critical value at 5% level thus implying the existence of a long run relationship between the variables used in the study. Due to the trace and maximum test values being less than the critical value at 5% significant level this pointed to the existence of cointegrating vectors which indicates that the variables tend to move together in the long run.

The study then proceeded to use the Vector Error Correction Model based on the presence of cointegrating vectors. It involved checking for the existence of a long-run causality amid the first differenced current account deficit and the individual lagged explanatory variables. This was done through looking at the coefficient of the error correction term which had to have a negative sign while its p -value had to be less than 0.05. The number of lags to be used in the Vector Error Correction Model was derived through a lag selection criterion depicted in Table 4. below

selection-order criteria								
sample:1975-2018								
							Number of Obs=44	
lag	LL	LR	df	p	FPE	**AIC**	HQIC	SBIC
0	-719.728				2.3e+09	32.8967	32.9569	33.0589
1	-704.47	30.516	16	0.016	2.4e+09	32.9305	33.2312	33.7415
2	-679.616	49.71	16	0.000	1.6e+09	32.528	33.0693	33.9878
3	-622.554	114.12	16	0.000	2.6e+08	30.6615	31.4435*	32.7701*
4	-601.711	41.684*	16	0.000	2.3e+08*	**30.4414***	31.464	33.1988
Endogenous: current account deficit, balance on services, food export earnings, foreign exchange rate								

Table 4: Lag selection criteria

From the above table the study was able to cater for upto four lags based on the Akaike Information Criterion (AIC). The maximum lag length which was selected under AIC was lag four. The Vector Error Correction Model was then conducted.

Dependent	**Description**	**Coef.**	**Std.Err.**	**Z**	**p>[Z]**
First differenced Current account deficit	**_Cel L1**	**-0.7221001**	**0.2270261**	**-3.18**	*0.001
First differenced Balance on Services	Lag one	1.129216	0.6424325	1.76	*0.079
	Lag two	0.4070151	0.4247351	0.96	0.338
	Lag three	0.3773219	0.3423912	1.10	0.270
First differenced Food Export Earnings	Lag one	2.045047	0.6181489	3.31	**0.001
	Lag two	2.956268	0.6913061	4.28	0.000
	Lag three	1.295014	0.5293757	2.45	0.014
First differenced Foreign Exchange Rate	Lag one	-0.7209393	0.8795432	-0.82	0.412
	Lag two	-3.790303	1.028376	-3.69	*0.000
	Lag three	-2.901548	1.266081	-2.29	0.022

Table 5: Vector Error Correction Model (VECM)

Negative coefficient indicates presence of long run causality with prob < 0.05

*** indicate significance at 0.05 and * indicates significance at 0.10*

Table 5, depicts long run causality running from individual lagged variables of balance on services, food export earnings, foreign exchange rate to CA deficit. This is because the coefficient of the error correction term is negative **(-0.7221001**) with a standard error of (**0.2270261)** and a z value of (**-3.18)**. The lagged variable indicated presence of short run causality. The study proceeded to conduct granger causality test.

4.4 Granger Causality

This test is conducted so as to check if one time series could be used to predict another time series. The test can be used to forecast current account deficit in Kenya. This can be done by checking for the presence of either bidirectional or unidirectional links amid the dependent variable and the independent variables. To check on this, both t test and F test in lagged values

were included. The results of granger test are reported in Table 6 below.

Equation	Excluded	F	df	df_r	Prob>F
Current account Deficit	Balance on Services	14.321	4	27	0.0000
Balance on Services	Current account Deficit	5.2922	4	27	0.0028
Current account Deficit	Food Export Earnings	4.9848	4	27	0.0039
Food Export Earnings	Current account Deficit	0.7071	4	27	0.5941
Current account Deficit	Foreign exchange rate	5.3656	4	27	0.0026
Foreign exchange rate	Current account Deficit	2.3061	4	27	0.0840

Table 6: Granger Causality

The results from the analysis shows that after lagging the values four times, there was statistical evidence of a unidirectional granger causality relationship running from food export earnings to current account deficit and foreign exchange earnings to current account deficit with a F test probability value of 0.0039 and 0.0026 respectively which is below 5 percent significance level. While balance on services had a bidirectional granger causality relationship running from current account deficit to balance on services and vice versa with an F test of 0.000 and 0.0028 respectively which is below 5 percent significance level. After the granger causality test, the study proceeded to run the regression line using the first differenced variables.

4.5 Regression Results

The main objective of the study was to determine whether food export earnings improves Kenya's current account balance. Ordinary least square method was used to examine this linkage. The estimation of the model is shown in table 7 below.

Variable	Coef.	Std.Err	t	P>[t]
Differenced Balance on Services	-0.0105661	0.3355051	-0.03	0.975
Differenced balance on Food Export Earnings	-0.2337826	1.041279	-0.22	0.823
Differenced Foreign exchange rate	0.8013664	1.687439	0.47	0.637
Constant	-10.60253	8.107024	-1.31	0.198

Number of observations	**48**
R-Squared	**0.0052**
Durbin Watson	**2.220451**

Table 7: Regression Analysis

The results from the regression analysis indicated that R squared is 0.52 percent. This means that the explanatory variable explains approximately less than one percent of the variation in current account deficit. The study further established that the value of Durbin Watson at 2.220451 confirms that the coefficient are statistically different from zero. In addition the study through Breusch Godfrey test found out that there was no serial correlation in the model.

4.6 Discussion of Estimation Results

From the analysis it is evident that the main independent variable food export earnings had a negative effect on CA deficit with a coefficient of -0.2337826. This coefficient was statistically insignificant based on its corresponding p value of 0.823 which is above the significance value of 0.05. The insignificant relationship of food export earnings and current account deficit contradicted the findings of Casagrande (2017) study on empirical analysis of the determinants of CA imbalances in developing countries. According to her food export earnings had a negative influence on current account imbalance in that one per cent increase in food export earnings decreased the current account deficit by 1.912899 units. The relationship of food export and current account imbalance in her study was significant with a p-value of 0.021 when tested at 95% confidence level. It was further established in her study that food export earnings play a key role in the correction of current account imbalance.

The effect of balance on services on CA deficit was also negative with a coefficient of -0.0105661. The coefficient was statistically insignificant since its p value 0.975 was above the 0.05 significance value. The insignificant relationship of balance on services and current account deficit contradicted the findings of Celik et.al (2012) study on the effects of the tourism industry on the balance of payments deficit. According to their study the tourism industry had a negative influence on the balance of payments deficit in that one per cent increase in tourism revenues will cause a 0.569 unit decrease in the balance of payments deficit. The relationship of tourism industry and balance of payments deficit in their study was significant with a p-value of 0.049 when tested at 95% confidence level. It was established in their study that the tourism industry plays a critical role in addressing the balance of payments deficit.

The variation between this study's findings and those of previous studies on the significance relationship between food exports, balance on services and current account deficit may be attributed to variation in data which was captured from different sources and the inclusion of a number of service sectors that were considered by this study such as international tourism, transport and communication compared to other studies such as Celik et.al (2012) that focused on a single service sector (tourism).

On the other hand, foreign rate of exchange had a positive effect on CA deficit with a positive coefficient of 0.8013664. The coefficient was statistically insignificant since its p value 0.637 was greater than the 0.05 significance level. The derived coefficient was partly in agreement with the expected indeterminate sign and studies such as Ayele (2019) which established a positive sign between the variables. Other studies such as Omoregie and Ikpesu (2019) had a contrary finding of a negative sign between the variables. The study by Ayele (2019) on whether real rate of exchange devaluation improves the CAB of highly indebted developing countries in East Africa established that real exchange rate devaluation had no significant impact on the CAB in the short run and long run. He attributed the insignificance to badly diversified and inflexible export structure, slow agricultural productivity, high trade costs with bad trade logistics and infrastructure, incessantly rising external debt load, unsound global market demand for farm exports and colossal dependency of non-substitutable consumption imports.

This study having established similar findings of an insignificant impact amid the exchange rate and the CAB concurs with some of the reasons provided by Ayele (2019) study on the insignificance amid the rate of exchange and the CAB. These reasons which are applicable to Kenya include; badly varied and rigid import structure, inactive agricultural productivity, ceaselessly mounting external debt burden and unreliable global market demand for farming products. They may thus be partly inferred to while explaining the insignificance findings amid the rate of exchange and the CAB for Kenya.

CHAPTER FIVE

5.0 CONCLUSIONS AND POLICY IMPLICATIONS

The study conclusion and policy implications are presented in this chapter. It also highlights the limitations of the study.

5.1 Conclusions

This research was aimed at determining the link between food export earnings and CAB in Kenya and to further establish the specific factors that affect CAB in Kenya. This was done by looking at the behaviour amid the studied variables and the CA deficit in Kenya. It was established from our findings that food export earnings which was the main independent variable had an outcome that was statistically not significant on the dependent variable the CAB.

The research further established that balance on services and the foreign exchange rate had an impact that was statistically not significant on the CAB. These findings were in contradiction to previous studies such as Casagrande (2017) on the link amid food export earnings and the current account balance and Celik.et al (2012) on the link amid the tourism industry and the balance of payments deficit which established a significant relationship between the variables. The study was however in agreement with studies such as Ayele (2019) on the connection amid the foreign rate of exchange and the CAB by establishing that the real rate of exchange had an impact that was statistically not significant on the CAB.

The variations in the findings could be attributed to the use of proxy data as well as the varied approach that was used in the study as compared to the other studies. This includes focusing the study on Kenya as compared to a pool of countries as adopted by the other studies such as Casagrande (2017) and Ayele (2019) and focusing on a varied number of service sectors as compared to one service sector (tourism) in the case of Celik et.al (2012).

5.2 Policy Implications

From the findings of the study it is evident that the independent variables studied i.e. food export earnings, balance on services and the foreign exchange rate cannot be solely be relied upon to improve Kenya's current account balance. This is because they all have a statistically insignificant effect on the CA deficit. It is therefore vital to adopt policies that will be able to

boost the country's earnings from both food exports and balance on services so as to curtail the growing deficit arising from the merchandise account and thus improve the current account balance.

The government needs to ensure that the country moves away from its over reliance on unprocessed traditional food exports such as coffee, tea and horticulture (mainly fruits and vegetables) which earn meagre earnings as compared to finished products that are processed from these exports by other countries. There is need therefore to look at ways of adding value to these exports through processing them locally and exporting them as finished products so that they can fetch higher earnings and thus improve the current account balance.

Secondly, food export earnings can be enhanced through diversifying the country's food exports. Kenya has been majorly dependent on the traditional exports of coffee, tea and horticulture (mainly fruits and vegetables) which though they have been earning the country the required foreign exchange earnings, they have not been able to efficiently compete with similar exports from other countries in the international market in terms of volume, quality and price. There is therefore need to fill this void by diversifying our food exports to include other food produce that have not yet been fully exploited and continue to have a sizeable demand in the international market such as maize and other cereals, beef and dairy products. This can be done through supporting production of these produce through enhanced agricultural extension services, offering incentives such as government subsidies to aid production and improving on the quality and branding of our produce through authorities such as the Kenya Export Promotion and Branding Agency (KEPROBA).

Finally, there is need for the government to scale up its investment in the services sector through development of adequate and quality infrastructure that can aid services such as international tourism, transport and communication so as to increase earnings from these sectors and bridge the current account deficit gap emanating from merchandise exports. This can be done through channeling more funds to the development of road, rail and air facilities as well as information communication technology for these sectors to operate efficiently.

6.0 REFERENCES

Ahearn, J. (2002). "Should South East Asia Devalue?". *Issues in Political Economy*, 11, pp.1-17.

Alexander, S. (1952). Effects of a Devaluation on a Trade Balance. *Staff Papers (International Monetary Fund), 2*(2), 263-278.

Andersen, P.S. (1993), "The 45-rule revisited", *Applied Economics*, 25, pp. 1279-1284.

Arghyrou, M. G., & Chortareas, G. (2008). "Current account imbalances and real exchange rates in the euro area". *Review of International Economics, 16*(4), pp.747-764.

Ayele, G. M. (2019). "Does real exchange rate devaluation improve the current account balance of highly indebted low income countries?". *African Journal of Economic and Management Studies*, 6(34), pp.118-124

Bacchetta, P. and Gerlach, S. (1994) Sticky import prices and J-curves, *Economic Letters*, 44(3), pp. 281–5.

Bahmani-Oskooee, M. and Brooks, T.J. (1999), "Cointegration approach to estimating bilateral trade elasticities between US and her trading partners", *International Economic Journal*, 13(4), pp. 119-128.

Bahmani, M., Hanafiah, H., and Hegerty, S (2013),"Empirical tests of the Marshall-Lerner Condition: a literature review", *Journal of Economic Studies*, 40(3), pp. 411 – 443

Bahmani-Oskooee, M. (1985) Devaluation and the J-curve: some evidence from LDCs, *The Review of Economics and Statistics*, 67, pp.500–504.

Bahmani-Oskooee, M. and Niromaand, F. (1998), "Long-run price elasticities and the Marshall-Lerner condition revisited", *Economics Letters*, 61(1), pp. 101-109.

Boljanovic, S. (2012): "A Sustainability Analysis of Serbia's CA Deficit, Serbia". *European Economic Review Journal*, 57(195), pp. 0013-3264.

Casagrande, N. (2017). *An empirical analysis of the determinants of current account imbalances in developing countries*. (Unpublished MSc. Thesis).Universitat Wien, Vienna, Austria.

Carbaugh, R. J. (2011). International Economics: textbook. *USA: South-Western Cengage Learning*.

Çelik, A. K., Özcan, S., Topcuoğlu, A., & Yildirim, K. E. (2013). "Effects of the tourism industry on the balance of payments deficit". *Anatolia*, *24*(1), pp. 86-90.

Destaings, N.N., M.S. Mohamed and M. Gideon (2013): "Is Kenya's CA Sustainable? A Stationarity and Cointegration Approach". *European Scientific Journal*, 9(25), pp.1857 - 7881.

Deyak, T. A., Sawyer, W. C., and Sprinkle, R. L. (1989). "An empirical examination of the structural stability of disaggregated US import demand". *Review of Economics and Statistics*, Vol.71, pp. 337-341.

Eita, J. H., Manuel, V., & Naimhwaka, E. (2018). "Macroeconomic variables and current account balance in Namibia". *Munich Personal RePEc Archive (MPRA)*, paper.no.88818, pp.79-92

Engle, R. and Granger, C. W. J. (1987) Cointegration and error correction: representation, estimation, and testing, *Econometrica*, 55, pp.251–76.

FAO.2014. *Africa Food and Agriculture* –Statistical Yearbook 2014.Accra.

FAO. 2019. World Food and Agriculture – Statistical Pocketbook 2019. Rome.

Feriyanto, N. (2020). Determinants of the Indonesia's current account balance: an error correction model approach. *Entrepreneurship and Sustainability Issues*, *7*(4), pp.3410-3425.

Froot, K. A. and Klemperer, P. D. (1989) Exchange rate pass-through when market share matters, *American Economic Review*, 79(4), pp.637–54.

Gerlach, S. (1989) Intertemporal speculation, devaluation, and the J-curve, *Journal of International Economics*, 27(3–4), pp.335–45.

Hassan, G. M., & Holmes, M. J. (2016). "Do Remittances Facilitate a Sustainable Current Account?". *The World Economy, 39*(11), pp.1834-1853.

Hirschman, Albert O., (1949). Devaluation and the trade balance: A note. *The Review of Economics and Statistics*, 31, pp.50-53.

Jaffri, A., Asghar, N., Ali, M., & Asjed, R. (2012). "Foreign Direct Investment and Current Account Balance of Pakistan". *Pakistan Economic and Social Review, 50*(2), pp.207-222.

Johansen, S. and Juselius, K. (1990), "Maximum likelihood estimation and inference on cointegration, with applications to the demand for money", *Oxford Bulletin of Economics and Statistics*, Vol. 52, pp. 169-210.

Kasasbeh, H. A. (2018). The Effect of Budget Deficit Financing on the Current Account of the Balance of Payments Using a Macroeconomic Simulation Model. *International Research Journal of Applied Finance, 9*(7), pp.336-350.

Kandil, M. (2012). Determinants of cyclicality in the current account balance. *International Journal of Development Issues, 11*(3), pp.235-258.

Khan, M. S. (1974). Import and export demand in developing countries. *Staff Papers*, *21*(3), pp.678-693.

Kovačević, R. (2017). "Current Account determinants in Southeast European (SEE) countries–panel approach". Proceedings of Rijeka Faculty of Economics, *Journal of Economics and Business, 35*(2), pp.391-424.

Krugman, P., & Taylor, L. (1978). "Contractionary effects of devaluation". *Journal of International Economics*, *8*(3), pp.445-456.

Kwalingana, S., & Nkuna, O. (2009). "The determinants of current account imbalances in Malawi". *Munich Personal RePEc Archive (MPRA)*, paper.no.14694, pp.2-23.

Levin, J. H. (1983) The J-curve, rational expectations, and the stability of the flexible exchange rate system, *Journal of International Economics*, 15, pp.239–51.

Lin, S. X., & Kueh, J. (2019). Determinants of Current Account Balance in Six ASEAN Countries: A Panel Analysis Approach. *International Journal of Economics and Finance*, *11*(7), pp.129-129.

Longe, A. E., Adelokun, O. O., & Omitogun, O. (2018). The current account and oil price fluctuations nexus in Nigeria. *Journal of Competitiveness*, *10*(2), pp.118.

MAFAP (2013). Review of food and agricultural policies in Kenya. MAFAP Country Report Series, FAO, Rome, Italy.

Magee, S. (1973). *Currency Contracts, Pass-Through, and Devaluation*. Brookings Papers on Economic Activity, 1973(1), pp.303-325.

Machlup, F. (1955). Relative Prices and Aggregate Spending in the Analysis of Devaluation. *The American Economic Review, 45*(3), pp.255-278.

Melvin, M., & Norrbin, S. (2017). *International Money and Finance*. Academic Press. London

Obstfeld, Maurice and Kenneth S. Rogoff, "The Unsustainable US Current Account Position Revisited," National Bureau of Economic Research working paper 10869 (2004).

Omoregie, O. K., & Ikpesu, F. (2019). Effect of Oil Price, And Exchange Rate On Current Account Balance In Nigeria. *The Journal of Developing Areas*, *53*(4), pp.86-99.

Oshota, S. O., & Adeleke, A. (2015). Determinants of the Current Account Balance in Nigeria, Ghana and Cote d'Ivoire. *Acta Universitatis Danubius. OEconomica*, 11 (3), pp.127-145.

Ostry, J. D., & Rose, A. K. (1992). An empirical evaluation of the macroeconomic effects of tarrifs. *Journal of international Money and Finance*, *11*(1), pp.63-79.

Reinhart, C. M. (1995). Devaluation, relative prices, and international trade: Evidence from developing countries. *IMF Staff papers*, *42*(2), pp.290-312.

Republic of Kenya. *Economic Survey* – Various Issues. Kenya National Bureau of Statistics. Nairobi.

Republic of Kenya. *Statistical Abstract* – Various Issues. Kenya National Bureau of Statistics. Nairobi.

Republic of Kenya (2014). The Exchange Rate and the Current Account Deficit Implications. Central Bank of Kenya. Nairobi. Accessed from website http://www.centralbank.go.ke/exchange rate and current account deficit implications.pdf

Rose, A.K. (1991), "The role of exchange rates in a popular model of international trade: Does the 'Marshall-Lerner' condition hold?", *Journal of International Economics*, Vol. 30, pp. 301-316.

Roy, A. G. (2012). U.S. Foreign Indebtedness, Monetary Policy, and Economic Growth. *International Journal of Economic Perspectives*, *6*(2), pp.196-205.

Sahoo, M., Babu, M. S., & Dash, U. (2016). Effects of FDI flows on Current Account Balances: Do Globalisation and Institutional Quality Matter. In *Forum for Research in Empirical* International *Trade*. 4(2), pp. 94 - 116

Saten Kumar, (2009),"An empirical evaluation of export demand in China", *Journal of Chinese Economic and Foreign Trade Studies*, 2(2), pp. 100 - 109

Sheila Amin Gutiérrez de Piñeres & Manuel Cantavella-Jordá (2010) Short-run effects of devaluation: a disaggregated analysis of Latin American exports, *Applied Economics*, 42(2), pp.133-142

Türkay, H. (2014). The validity of Marshall-Lerner condition in Turkey: A cointegration approach. *Theoretical & Applied Economics*, *21*(10), pp.142-158.

UNCTAD.2019. Handbook of Statistics 2019. Geneva. Accessed from UNCTAD Website: https://unctad.org/en/Pages/Publications/Handbook-of-Statistics.aspx.

UNESA.2006.Standard International Trade Classification, Revision 4-Statistical Papers, Series M No.34/Rev.4. Accessed from UNESA Website: https://unstats.un.org/unsd/trade/sitcrev4

Van der Meulen Rodgers, Y. (1998). Empirical investigation of one OPEC country's successful non-oil export performance, *Journal of Development Economics*, 55, pp.399–420.

Wanjau, Boniface M. (2014). The Relationship among Real Exchange Rate, Current Account Balance, and Real Income in Kenya. *International Journal of Business and Social Science, 5*(9), pp.86-88.

Yurdakul, F., & Cevher, E. (2015). Determinants of current account deficit in Turkey: the conditional and partial Granger causality approach. *Procedia Economics and Finance*, *26*, pp. 92-100.

7.0 APPENDICES

APPENDIX 1 SERIAL CORRELATION TEST

estat bgodfrey			
Breusch-Godfrey LM test for auto correlation			
lag(p)	chi2	df	prob>chi2
1	0.916	1	0.3385
H0: no serial correlation			