DETERMINANTS OF CURRENT ACCOUNT BALANCE IN THE EAST AFRICAN COMMUNITY

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DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and to the best of my knowledge has not been presented for the award of a degree, diploma or certificate in this or any other university.

Signature.. Date……………………………

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Recommendation

This thesis is submitted with our approval as University Supervisors.

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DEDICATION

I dedicate this work to my Mother, Jane Namalwa.

ACKNOWLEDGMENTS

ABSTRACT

The East African Community has recorded rising and persistent current account balance in the last ten years. The countries namely, Kenya, Uganda, Tanzania, Burundi, and Rwanda have maintained current account deficits which were above five percent of their Gross Domestic Product. This trend has raised the concerns among economists and trade experts regarding the sustainability of the imbalances and the measures of alleviating them. If not addressed, the deficits may erode the bloc's competitiveness as well as hampering the economic growth of the member countries. This study, therefore, sought to find out the determinants of the current account balance for the East Africa Community countries. The general objective of the study was to establish the determinants of current account balance in EAC while the specific objectives were built on selected macroeconomic variables, they included: to establish the effect of external debt on the current account balance in the EAC, to examine the effect of financial liberalization on the current account balance in the EAC, to investigate the effect of fiscal balance on the current account balance of the EAC, to determine the effect of terms of trade on current account balance in the EAC. The study period spanned from 1970 to 2017, the period was selected based on availability of data and the period being ample to measure both the long-run and short-run effects. The study sourced the data from secondary sources and used dynamic panel data regression techniques i.e. the Pooled Mean Group in analysis of the data. The study established that external debt had a positive effect on the current account balance in the long-run and no significant effect in the short-run. Similarly, financial liberalization had a positive effect on the current account balance in the long-run but there was no significant effect in the short-run. Fiscal balance had a positive effect on the current account balance both in the long-run and in the short-run. Real effective exchange rate had a negative effect on current account balance both in the long-run and in the short-run. Finally, the study established a negative long-run effect of terms of trade on the current account balance while in the short-run there was no significant effect. This study is useful to the East African secretariat in designing of policies aimed to reduce the soaring current account balance. The study recommends that EAC countries should improve their fiscal balance by minimizing fiscal profligacy by regulating public spending. Additionally, EAC governments should pursue policies and programs that support the growth of exports as well as the economies' productive capacities to reduce the current account deficit. One such measure includes devaluation of exchange rate to boost demand for exports and reduce the demand for imports.

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LIST OF ABBREVIATIONS AND ACRONYMS

AfCFTA-Africa Continental Free Trade Area

ARDL-Autoregressive Distributed Lag

ASEA- Africa Securities Exchange Association

EAC-East Africa Community

HLM- Harberger-Laursen-Meltzer effect

IFS-International Financial statistics

MABP- Monetary Approach to Balance of Payment

MG-mean Group

NARC- National Alliance Rainbow Coalition

PMG-Pooled Mean Group

PPP-Purchasing Power Parity

SADC-South African Development Cooperation

SGMM-System Generalised Method of Moments

TFP-Total Factor Productivity

USD- United States Dollar

WB-World Bank

WDI-World Development Indicators

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

The balance of payment is made up of two key elements, one being capital account and the other current account. The primary components of current account balance include; net cash transfers, net exports as well as net factor income. The current account balance is a vital pointer of the international performance of a nation. A surplus denotes that the foreign assets of a nation are greater than its foreign liability and a deficit denotes the reverse. Additionally, it is crucial in depicting the magnitude and flow of international borrowing. A country with a surplus is lending out more while that with a deficit is borrowing more from foreigners, as most countries finance the deficit with foreign debts (Krugman & Obstfeld, 1996).

The global current account balance should ideally add up to zero, a principle known as multilateral consistency, this is mainly because an export in one country is an import in another country. However, in practice, the case is far from this. Figure 1.1 displays the global trend for the world's current account balance. The Figure shows a disparity between the value of international imports and exports. According to a 2016 International Monetary Fund report, there are various factors that drive the disparity, the main one being the shipment lags, which could results to a nation reporting that it has exported products in the current year whereas the importing country records the imports in the following year. The other likely, factor for this according to the IMF is the norm of underreporting especially among developing and least developed countries for the purposes of evading taxes.

A 2017 United Nations Conference on Trade and Development (UNCTAD) research established that the discrepancy mostly occur from inaccuracies in the measurement of services. The report further stated that services are easily identified from the exporters' side than the importers especially if they emanate from large service providers offering their products to small scale clients. The IMF, however, projects that by 2022 the global current account balance disparity will reduce resulting in a negative balance. The institution opines that it is a cumbersome process to account for the international imbalances of current account balance, however, it is crucial to understand its existence. Figure 1.1 displays the global trend in current account balance. From the Figure below, it can be pointed out that the world operated a current account deficit from 1980 to 2004, with an amount ranging between 181414.8 million

US dollars and 20093.61 million US dollars. This trend then reversed, with the world running a current account surplus of between 12421.1million US dollars and 444450.8 million US dollars in the period between 2004 and 2016.
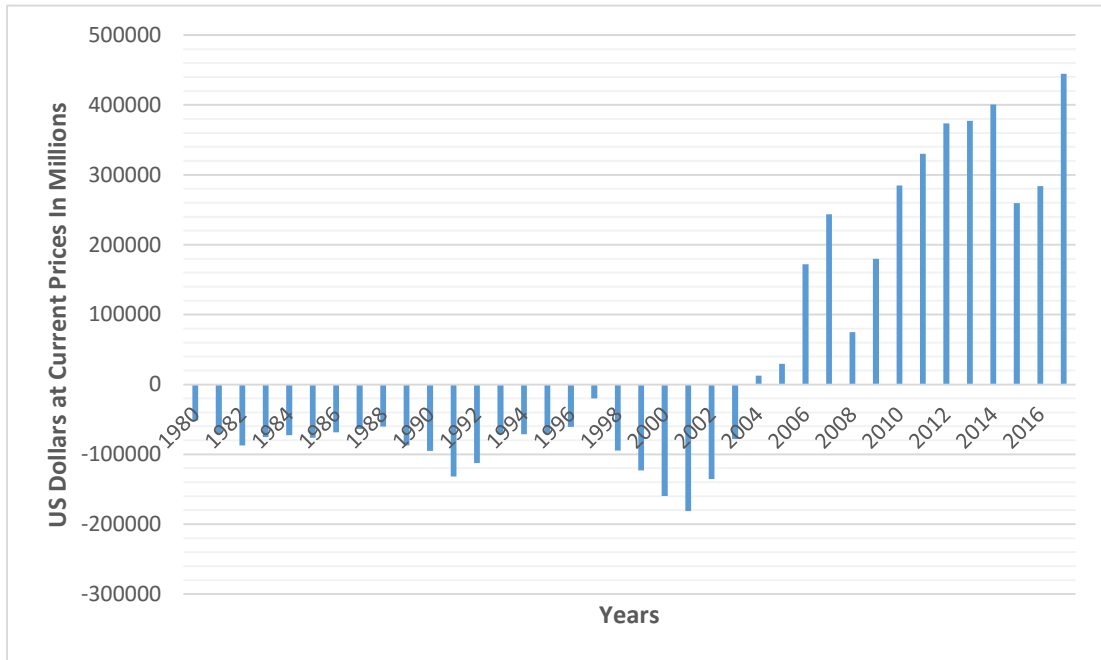
Figure 1.1: Global Current Account Balance

Source: United Nations Conference on Trade and Development Statistics, 2018.

1.1.1 Africa's Current Account Balance

Vast literature has pointed out unrelenting current account deficits to be among a plethora of difficulties facing African economies. Additionally, the current account deficit has been linked with more problems that it is likely to cause, among these being weakening of the currencies, proliferation of the external debt balances, and shrinkage of foreign exchange reserve. Persistence in the deficit has spurred interest among economist and policy makers, raising concerns regarding their probable effects and macroeconomic disequilibrium that are likely to arise from these imbalances. Figure 1.2 displays the current account balance trend in Africa between 1980 and 2018.

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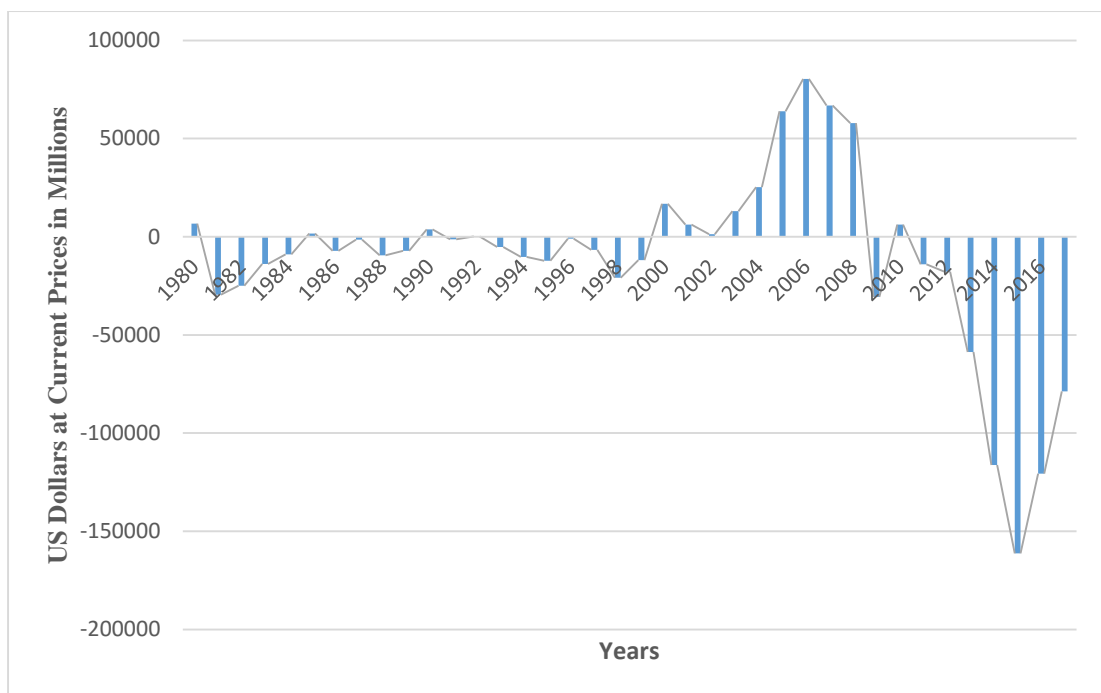
Figure 1.2 Africa's Current Account Balance

Source: United Nations Conference on Trade and Development Statistics, 2018

Figure 1.2 shows the current account balance trend in Africa. The trend has been varying over the years, with a deficit between 1982 and 1999, with a surplus balance between the years 2000 and 2008, and a deficit balance between 2010 and 2017. The 1982 to 1999 deficit can mainly be attributed to investment income payments. The ratio of net investment income payments to GDP more than doubled over the two decades (the 80's and 90's): from an average of 1.7 percent in the 1980s to 3.5 percent in the 1990s, and 3.7 percent between 2010 and 2017. The surplus between 2000 and 2008 can be attributed to the long-run effects of structural adjustment policies that paved way to trade liberalization, which was further exacerbated by the increase in commodity prices in that period. The situation reversed between 2009 and 2017 and Africa's current account balance was in deficit once more. The dismal performance can be linked to the global financial crunch that took place in 2008 and 2009 that saw the collapse of many industries and a reduction in the Foreign Direct Investment flow. The global financial crisis led to reduced production capacity and exports in many African nations.

1.1.2 Trend for EAC's Current Account Balance as a Percentage of GDP

East Africa community just like other Africa's regional blocs is among those worst influenced by the current account deficit. The countries constituting the EAC have similar economic dynamics, such as market based with some government-owned infrastructure firms as well as

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a liberalized trading system. These countries also gained independence around the same time (1960-1964). In their first 10 formative years as independent states, their economies recorded remarkable trajectory, with their GDP growing by more than 6 percent on average. Their current account deficits were low at an average of 2.9. This outstanding performance was however, short-lived after a series of exogenous shocks affected the economies, this was further exacerbated by the lack of adequate macroeconomic policies to maintain the economic prosperity. The events saw the current account deficit rising from a decade average of 2.9 percent of GDP to 6.9 percent over the period between 1974 and 1979. This deterioration was partly attributed to the macroeconomic shocks such as the oil embargo of 1973, and the countries' currencies which were relatively overvalued.

The current account deficits situation reduced slightly between late 80's and early 2000's, this was attributed to the structural adjustment programs that led the EAC states to open up their markets to foreign market through trade liberalization. The countries also adopted export promotion strategies that replaced the import substitution that had previously aimed to protect the infant local firms. The 2007-2008 however gave a huge blow to the improved current account balance position and it further worsened leading to an unprecedented low of 11.25 percent of the GDP. If left unchecked, the deficits may pose a challenge to the long-term economic prospects of the EAC bloc; it risks destabilizing the investment-saving balance that will consequently result in an upsurge in external debts and plummeting foreign reserves ratios. The trend of the proportion of current account balance to GDP is as shown in Figure 1.3 below.
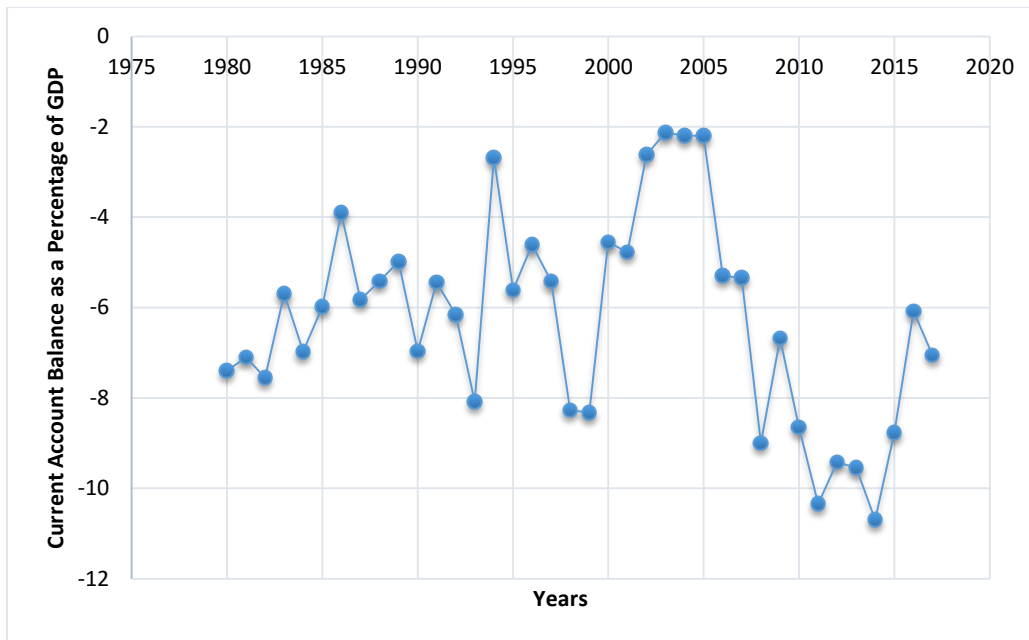
Figure 1.3 Current Account Balance as a Percentage of GDP Trend for EAC

Source: United Nations Conference on Trade and Development Statistics, 2018

1.1.3 Kenya's Current Account Balance Position

Figure A1 in the appendix displays the trend of the current account balance position in Kenya since 1980. There was an impressive growth in the current account balance between 1980 and 1983, the deficit reduced significantly from a deficit of 876.26 million US dollars in 1980 to 47.25 million US dollars in 1983. This significant improvement can be largely attributed to the economy recovering from the 1977-78 coffee boom and severe external shocks (oil shocks) that were experienced in 1970 and had adversely affected the economy.

This steady decline was followed by a period of current account balance which was maintained at less than 44.99 million US dollars until 1987 when the current account balance started deteriorating and maintained at an average of 448.92 million US dollars between 1987 and 1995. This dismal performance can be attributed to the decline in development assistance that was witnessed in the late '80s and early '90s which was occasioned by a perception of poor governance and mismanagement of public resources.

The current account balance worsened in 1998, where it recorded a deficit of 2632.73 million US dollars. This performance was largely triggered by the August 1998 bomb blast. The situation slightly improved in the next few years to the point of recording a surplus of 132.42 million US dollars in 2003. However, the deficit started to increase in 2004, this was due to the

massive infrastructure development that took place after the NARC administration took over. The situation further worsened between 2010 and 2011 and this can mainly be ascribed to the 2008-2009 financial and economic meltdowns.

In 2014 the current account balance worsened by 17.1 percent or 818.4 million US dollars to a 5,604 million US dollars deficits in the year to December 2014 from 4,786 million US dollars deficits in the year to December 2013. This deterioration was due to the deficit in the merchandise account which widened by 1,121.3 million US dollars to 12,351 million US dollars in the year to December 2014 reflecting a 7.9 percent growth in payments for merchandise imports in relation to a 3.9 percent growth in the value of merchandise exports (African Security Exchange Association, 2015). Though Kenya current account balance has varied considerably in the past ten years, it showed a downward trend between 2010 and 2017 period ending at -5 billion US dollars in 2017, down from -3.7 billion US dollars, representing a 35.81 percentage fall (AfDB, 2018).

1.1.4 Uganda's Current Account Balance Position

Figure A2 in the appendix shows the trend in the current account balance in Uganda. Between 1980 and 1984 the current account balance was improving significantly and even recorded a surplus of 103.58 million US dollars in 1984. However, the current account balance started declining from 1985, this was due to a sharp drop in export receipts as a results of the falling prices of coffee and unfavourable trading terms. The decline in prices dealt a blow to coffee export of Uganda which was its major export product, the country recorded annual export reduction between 1985 and 1990.

From 1990 to 2005 Uganda maintained a low current account deficit of 281.41 million US dollars on average. However, the current account balance started deteriorating from 2005. In 2014 the merchandise account deficit increased from 577.5 million US dollars in 2013 to 598.0 million US dollars in 2014. The volume of exports increased by 1 percent as a 20 percent increase in coffee exports was partly offset by a 7 percent decrease in tea exports. Coffee, the country's largest export commodity, benefited from an increase in international prices. Imports registered a 2 percent increase on account of higher machinery and petrol imports. In 2017 Uganda's current account deficit was 1271.7 million US dollars up from 907.583 million US dollars representing a 40.1% decline (AfDB, 2018)

1.1.5 Tanzania's Current Account Balance Position

Since early 1970's Tanzania has faced multiple economic holdups that resulted in an accumulation of high trade and fiscal deficits. However, according to figure A3 in the appendix there was improvement in the current account balance from 1980 all through to 1990, which was followed by series of fluctuations between 1991 and 2001. In 2002, there was an improved performance in the current account balance; it declined to a deficit of 45.78 million US dollars from 174.86 in 2001.

The current account balance then deteriorated in 2003, and started worsening in 2010 recording a high current account deficit of 4650.34 million US dollars in 2013. In 2018, the current account deficit increased by 21 percent this was largely attributed to a 54 percent decline in current transfers which was the result of delayed disbursements from development partners and the decline of gold export value mainly on account of a fall in the gold prices in the world market. The escalation in the deficit might be further attributed to an 18 percent increase in capital goods imports.

1.1.6 Rwanda's Current Account Balance Position

According to the 2016 African Securities Exchange Association (ASEA) report, the current account deficit of Rwanda widened by 7.5 percent from 1,674.38 million US dollars in 2013 to 1,799.54 million US dollars in 2014 due to an increase in the country' imports. Exports value increased by 4.7 percent standing at 599.8 million US dollars from 573 million US dollars in 2013 while imports increased by 6.8 percent during the period. Total exports increased by 4.7 percent in value amounting to 599.8 million US dollars lower than 18.7 percent recorded in 2013 as a result of poor performance in the mining sector (-9.9 percent) and tea exports (-6.7 percent).

The slight increase in export earnings was driven by coffee exports (8.7 percent), tin (17.8 percent), re-exports (22.5 percent) as well as non-traditional exports (26.5 percent). The increase in volume of imports was driven by consumer goods (4.9 percent), capital goods (3.0 percent), intermediary goods (2.9 percent) as well as energy and lubricants 3.4 percent, (ASEA, 2016). Figure A4 in the appendix presents the trend in current account balance in Rwanda between 1980 and 2017.

1.1.7 Burundi's Current Account Balance Position

Figure A5 in the appendix shows the current account balance trend for Burundi, it shows that Burundi has been operating a current account balance deficit since 1980, however, the deficit has always been low and fluctuating. It recorded a surplus of 10.5 million US dollars in 1995 and USD 6.13 million in 1997. In 2005 it recorded a low deficit of USD 5.7 million. The deficit went as low as USD 3.28 million in 2002 and USD 5.7 million in 2005. However, the situation changed from 2005 where it started experiencing declines in the current account balance. Worst performance being a deficit of USD 632.16 in 2013 (ASEA, 2016).

1.1.8 Determinants of Current Account Balance

In spite of the comparatively broad hypothetical and experiential literature on current account balance, there is no general consensus on the aspects that affect the current account balance particularly among the nations that have come together to form regional integration such as the EAC community. Therefore, the performance, character, and determinants of the current account balance is still an experimental issue amongst economists and trade practitioners. To appraise the causes of the current account balance for the East African Community region, it imperative, therefore, to make use of some models of current account balance determination (Arize, *et al.*, 2017).

Traditionally, economists have relied on elasticity, monetary and absorption methodologies as they try to establish evidence for the factors that impact the current account balance. These approaches have been widely used with the notion that the chief constituent of the current account balance is trade balance, namely, value of imports and exports of commodities. Consequently, much emphasis has been placed on the movement of exchange rate and Gross Domestic product by relating them with the substitution and income effects in consumer demand theory. From a theoretical standpoint however, the inadequacy of this process is that it relies on the postulation that the changes in exchange rate are not a critical factor in trade balance, and that the effect in the growth of income due to exogenous upsurge in demand is the same as that caused by the expansion of supply. This assumption poses an empirical challenge as it may become harder to isolate stable association among current account balance, exchange rate, and changes when it comes to income.

Faced with problems that emanate from the weaknesses of elasticity and monetary approaches, economists led by Sachs (1981), developed an alternative approach that concentrates on an

economy's saving-investment nexus. The assertion was that the current account balance reflects the aggregate net savings in the financial system. The proponents of this proposition postulated that net savings draw attention to the factors that directly influence it. Specifically, they assert that the real interest rate, as well as the variations in the current and future have a higher likelihood of significantly affecting the saving behaviour of households and investment decisions of firms.

Another variable that are likely to be significant influence on the current account balance is the financial policies such as corporate and personal income taxes. The current account balance and the fiscal policies relate vividly using this approach as opposed to the traditional approaches. The justification for this is that the net saving can be loosely interpreted as the fiscal surplus plus the private savings minus private investment (Kosimbei, 2012).

1.2 Statement of the Problem

Current account balance is a critical part of the economy as it aids in determining its macroeconomic health. Specifically, cross-country evidence suggest that current account balance affect other macroeconomic variables such as the balance of payment, gross Domestic Product and private investment. Since 2005 the current account balance in the EAC has been recording declining current account balances. The situation was further made worse by the 2008-09 economic crisis, and further exacerbated by macroeconomic shocks that affected the member states. If not addressed, the persistent deficits may gradually wash away the bloc's competitiveness in Africa and globally. Furthermore, the deficit is likely to hamper economic progress of the member states leading to low welfare improvement for the citizens. These effects are more probable to be felt in the long-term as most of the measures adopted for the reduction of the deficit especially in the reverberation of the financial crisis are considered to be mostly recurring and transitory.

Despite the relatively broad theoretical works on this subject, limited empirical works have been conducted on this subject. Specifically, there are limited studies that have attempted to explore the macroeconomic influences on the current account balance especially on countries that have come together to form a regional economic bloc such as the EAC. In the EAC region limited research has been undertaken to investigate the determinants of current account balance, one was done by Kosimbei (2012) who analysed the nexus between fiscal deficit and current account balance in Kenya. Another notable study was conducted by Saruni (2006), the

study analysed the determinants of trade balance in Tanzania. It is crucial to note that these studies are country specific and do not explain the current account balance in the EAC bloc. Additionally, the latter study is relatively old and has concentrated on the trade balance which is just a feature of the current account balance. It is against this backdrop therefore, that this study sought to establish the determinants of current account balance in EAC.

1.3 Objectives of the Study

1.3.1 General Objective

The overall objective of the study was to establish the determinants of current account balance for the EAC countries.

1.3.2 Specific Objectives

     i.   To establish the effect of external debt on current account balance in the EAC.

    ii.   To examine the effect of financial liberalization on current account balance in the EAC.

   iii.   To investigate the effect of Fiscal Balance on current account balance in the EAC.

   iv.   To examine the effect of real effective exchange rate on current account balance in the EAC.

    v.   To determine the effect of terms of trade on current account balance in the EAC.

1.4 Hypotheses

     i.   External debt has no effect on current account balance in the EAC.

    ii.   Financial liberalization has no effect on current account balance in the EAC.

   iii.   Fiscal balance has no effect on current account balance in the EAC.

   iv.   Real effective exchange rate has no effect on current account balance in the EAC.

    v.   Terms of trade has no effect on current account balance in the EAC.

1.5 Significance of the Study

From the empirical literature discussed it is clear that there is a scarcity of research that point out the contributing factors for the deterioration current account balance of an economic bloc let alone the EAC. Deficiency of empirical analysis is worrying considering that current account balance is a critical pointer of the present and future economic growth. Therefore, there

is a need to understand the selected macroeconomic aspects that influence the current account balance in the EAC bloc. This information may help the EAC secretariat as well as the respective member's governments to consider policies that would improve current account balance situation and hence improve trade competitiveness and boost economic growth.

Secondly, understanding the determinants of current account balance is crucial, both from an academic and practical standpoint. This is because current account balance forms an important basis for understanding trade theories and developing trade models. However, despite this rich intellectual importance, the scantiness of concrete research in this area is alarming. The findings and recommendations for this study will inevitably be useful in contributing to the academic discourse. In particular, they will add on to existing body of empirical knowledge in current account balance and its determinants especially on countries that have come together to form a bloc.

1.6 Scope and Limitations of the Study

The concentration of this study was on the EAC's current account balance position. The study was restricted to the period 1970 to 2017 where relevant time series data was available, and the period was long enough to capture the short-run and long-run effects. The period was also chosen because this was the period where current account balance in most of East African countries started deteriorating due to the oil shock of the 1970s, the coffee boom in late 70's and the 2008 global economic and financial crisis. The study was confined to five EAC countries, namely, Kenya, Uganda, Tanzania, Burundi and Rwanda. It excluded South Sudan due to lack of data because South Sudan became a state in 2011 after seceding from Sudan.

There were several challenges encountered in the course of developing this work. For one, the study was limited by time constraints and it therefore, limited itself to East African community countries, hence the finding may not be applicable to the African Continental Free Trade Area which was recently formed by African economies due to the smaller scope.

Secondly, the study used secondary data hence limited by availability of some data therefore used a span of 38 years. On the same note, the study was limited by absence of data on various variables in some years. One of this instance was experienced on Burundi's data on real effective exchange rate and terms of trade. Burundi has been marred by internal conflicts in the last two decades which contributed to the unbalanced data.

Finally, due to the unavailability of the data, the research used annual data, leading to a relatively smaller data point. It would have been more prudent if the data was collected on a quarterly or semi-annually basis to increase the scope of the study.

1.7 Definition of Terms

Autocorrelation - an econometric problem that arises when two successive error terms seem to be correlated, a situation also referred to as serial correlation (Greene, 2012).

Current Account Balance- as an aggregate combination of the savings behaviour of households as well as firms' investments decisions that factors in the future expectations of the economy's trajectory (Gandolfo, 2002).

External Debt - all the debts that a country owes the foreign nations as bilateral government loans or syndicated loans to foreign banks, Sovereign bonds and loans to multilateral institutions (Bulut, 2008).

Financial Crisis- a phenomenon whereby there is a sudden loss of nominal value in some financial assets. Remarkable crisis were experienced in 1929, 1987, and 2008 (Blanchard, 2009).

Financial Liberalization- it is the removal of stringent regulations in the financial market making it easier for the citizens to access credit (Blanchard & Giavazzi, 2002).

Fiscal Balance - the government's budget that is obtained by deducting all the revenue collected to the expenditure (Vamvoukas & Spilioti, 2015).

Heteroscedasticity - An econometric problem that arises when the variance of the error terms differs across observations (Greene, 2012).

HLM effect- The HLM effect envisages an increasing association between the terms of trade and aggregate saving it is brought about by the households desire to maintain a steady consumption path (Chia & Alba, 2005).

J Curve Effect- A phenomenon where after currency devaluation, it is often witnessed that the trade balance initially deteriorates for a while before getting improved (Pilbeam, 1998).

Marshall Lerner Condition – A state where the summation of imports and exports elasticity must exceed one to enable currency devaluation to positively impact the trade balance (Pilbeam, 1998).

Panel data- A type of data where more than one case/entity is analyzed at a more than one time period (Greene, 2012).

Real Effective Exchange Rate- weighted mean of a country's currency in relation to a combination of major world currencies (McGuian, Moyer & Harris, 2013).

Ricardian Equivalence – a theorem that postulates that the aggregate demand in the economy will largely remain constant if the government attempts to trigger economic growth through increasing borrowing (Kosimbei, 2012).

Terms of Trade- The proportion of price of exports to the price of imports (Chia & Alba, 2009).

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This section reviews pertinent literature related to this study. Specifically, the following are addressed; theoretical literature, empirical literature on current account balance. The literature review also comprises the theoretical and conceptual frameworks.

2.2 Theoretical Literature Review

This subsection involves a review of several theories that are applicable to the sphere of this study and which inform the theoretical background of the subject of research. The theories reviewed in this section include Elasticity, absorption and monetary approaches to current account balance.

2.2.1 Elasticity Approach

This proposition was developed in 1937 by Joan Robinson. It is an extension of the Marshall-Lerner's partial equilibrium analysis of the trade market which was developed by Bickerdike (1920). Its main preoccupation is in analyzing the influence of currency devaluation in balance of trade and in determining the condition under which a devaluation can positively contribute to the enhancement of the balance of payment. The simplest formulation of the model stems from a partial equilibrium analysis. In this situation, trade balance is presented as the exports less the imports. Using simple export and import demand functions in which the exchange rate and the prices of trade are important explanatory variables, the conditions under which devaluation can influence the trade balance are derived in form of the elasticity of supply and demand for a country's imports and exports.

These elasticities are formulated in terms of the Marshall-Lerner condition which proposes that for currency devaluation to positively influence current account balance, ex + em should be greater than one. This is based on the assumption of a stable foreign exchange market. The sum exports' and imports' elasticity should be more than one for the condition to be met. A sum that is exactly equal to one would lead to no influence on the exchange rate, while a value lower than one would lead to favourable trade balance in the event of devaluation and unfavourable trade balance in the case of appreciation.

The elasticity proposition has been criticized on several grounds. Firstly, it is based on a partial equilibrium framework that assumes full employment, price flexibility, and initial equilibrium. The approach assumes that the economy is originally in a stable state and thus ignores the fact that devaluation is mainly undertaken when there are disproportions in the current account. Whether devaluation leads to improved performance in the balance of payments or not is dependent on the summation of the external elasticity for exports and imports and home elasticity for exports and imports respectively.

2.2.2 Absorption Approach

The Absorption proposition puts emphasis on the income effects of devaluation. As developed by Alexander (1952), the country's foreign surplus depends on the extent to which domestic output supply exceeds absorption. From his description of current account as the excess of income over expenditure, it was reasoned that for depreciation to enhance the current account, it needed to have an impact on either income or absorption.

The primary inference drawn from this approach is that the current account can improve if devaluation can generate expenditure reducing and expenditure switching effects. Expenditure switching can occur only if elasticity are sufficiently high. On the other hand, expenditure reduction occurs through changes in real income. Expenditure switching occurs as a result of devaluation affecting the relative prices of foreign and domestic products. Through augmenting the relative prices of foreign to domestic products, a depreciation increases the demand of domestic goods by foreigners and concurrently reducing import demand. This improves the current account.

The primary dissimilarity between elasticity and absorption approaches is that the latter incorporates the general equilibrium features and non- tradable, while the former does not. Though the two approaches are different, they have the same weakness of not taking consideration of the inflationary effects of devaluation. Also they do not take account of the influence of money in determining the balance of payments.

2.2.3 Monetary Approach

The origins of the MABP can be traced to the works by Hahn (1959) and further developed by Mundell (1968) and Johnson (1979). The approach follows the price specie flow mechanism, which links the domestic and foreign sector of a country through the monetary sector. The

leading rationale behind the monetary approach is that balance of payments determination is purely a financial occurrence. A balance of payments deficit or surplus would occur if there were are imbalances in money demand and supply. These imbalances would be reflected in changes in international reserves. In a fixed exchange regime, an oversupply of money would induce aggregate demand which is manifested through importation of foreign products by the national households. These importations are predominantly financed by depleting foreign exchange reserves consequently leading to corrosion of trade balance. The exhaustion of foreign exchange reserves results in reduction of money supply up to a point whereby it matches the money demand thus bringing the money market back into equilibrium.

The monetary approach has not gone without criticisms like the other theoretical approaches. Its applicability to developing countries has been questioned based on the assumptions implicit in the approach. The following criticisms have been made: long run situation with fully flexible prices, and ignorance of short run adjustment while taking consideration of only equilibrium points. It is also assumed that money demand is stable and that the money market clears automatically which is not realistic especially in emerging economies. Also, the monetary approach has been criticized on the grounds that, it doesn't distinguish between traded and non-traded products because monetary market of the assumption that domestic prices of all goods are in line with the international prices.

The theory is applicable in this study as it explains the overall balance of payment and its key determinants. The current account balance is an element of balance of payment and therefore, the theory is relevant in explaining its determinants as well. Among the major determinants of the balance of payment postulated by this theory is the exchange rate. This theory informed the choice of real effective exchange rate as one of the key variables influencing the current account balance.

2.3 Empirical Review

This section comprises of a review of the pertinent empirical studies that are closely related to the subject matter of this study. The subsections are thematically organized based on the specific objectives of the study.

2.3.1 External Debts and Current Account Balance

The empirical studies on the external debt and current account nexus have largely produced mixed results. Bulut (2008) takes a simulation approach to investigate on 57 countries comprised of 21 OECD and 36 developing countries. The study shows that in a national accounting statistics, external debt holding significantly results in the worsening of the current account balance. The study specifically established that a 1 percent external debt to GDP ratio would cause a 0.1 % decline in the current account balance. One of the shortcoming of this study was that it focused only on the medium-term effects while it is crucial to look at the long-run relationship for long-term policy formulation.

Alam (2013) examined the association between foreign debt and current account balance in a group of 14 Asian pacific emerging economies by incorporating dummy variables analysis. The findings of this study depict an increasing connection between external debt and current account deficit. Calderón *et al*. (2002) adopted a reduced-form technique in analysing the causes of current account deficits in emerging economies. The study drew a pool of data comprising of 44 nations over a period of 29 years. External debt was one of the explanatory variables. The study nonetheless, failed to significantly link it to current account.

Ibhagui (2018) investigated the adjustments of external debt and current account balance through the trade openness channels in sub-Saharan Africa. The study drew data from 1985 to 2013 which was further divided into three sample periods; 1985 to 2013, 1985 to 2008 and 1990 to 2013. The study used fixed effect approach in estimation. The study failed to obtain significant results for the effects of the lags of external debt on current account balance. This could be attributed to the choice of methodology because fixed effect approaches do not account for the possible endogeneity of intervening variables.

Regionally, Muli and Ocharo (2018) carried out an analysis of the nexus between external debt servicing and current account balance in Kenya. The duo applied Vector Error Correction and Granger Causality techniques. The study established that external debt does not granger-cause current account balance. Similarly current account balance does not granger cause external debt. The study however, went ahead to reject the null hypothesis despite obtaining a Chi-square value of 0.00414 of causality from external debt to current account balance which is too low to reject the null. This means that there is a need for further examination of this relationship.

It is clear that empirically, the outcomes of external debts are mixed; some of the research presented established that external debt is positively correlated with current account deficit in some nations, negatively related in some countries while some found no relationship at all.

2.3.2 Financial Liberalization and Current Account Balance

Lessening of stringent regulations in the financial markets enhances the advancement of loan facilities to the private sector. The loans are provided mainly for consumption and investment purposes leading to an upsurge in the aggregate domestic credit and a significant degeneration in investments and hence current account balance. There are tons of empirical analysis in developed and developing economies alike that support the assertion.

Blanchard and Giavazzi (2002) conducted a theoretical analysis to highlight the conduit that the current account deficit is influenced by financial integration. The study showed that the borrowing cost is likely to plummet due to the exacerbation of financial liberalization. The resulting effect of this is that, lower income economies which are primarily characterized by lower capital levels and unstable investment levels and higher prospects for growth are likely to increase their external debts in order to fund local expenditure. This situation probably leads to a deterioration in their current account balances. On the other hand, economies with a higher income levels, those that are characterised by a lower marginal productivity and stable investment environment are more likely to record favourable current account balances because they will lend and export capital to their poorer counterparts.

Kose, *et al.* (2006) examined credit booms in 28 rising market economies for a 32 year period, using various econometric techniques such as panel and cross-sectional regression. The findings of this study suggest that credit booms are frequently linked to investment booms, current account deficits, and banking and currency crises and they typically precede a surge in economic meltdown and series of financial crisis. Kumhof *et al.* (2012) applied Dynamic stochastic general equilibrium modelling (DSGE) on a pool of developed and emerging economies in Europe and America. They established that financial liberalization negatively affects current account balance, however, their result was not significant.

Kraft and Jankov (2005) examined the fast credit expansion in Croatia in early 2000s and revealed that the hasty growth in credit facility was likely to hamper economic development as a result of the worsening of current account stabilities. Mendoza and Terrones (2008) used the data belonging to 21 industrial countries that experienced 27 credit booms and 28 emerging

market economies that experienced 22 credit booms for the period of 1960–2006. They used a new threshold method to measure credit booms and document that credit booms, especially in industrial economies, were preceded by financial reforms and Total Factor Productivity gains. Results from regression analysis show that credit boom negatively impacted the current account balance in both the industrial nations and emerging markets.

2.3.3 Fiscal Balance and Current Account Balance

A vast majority of research that have paid attention to the link between fiscal balance and current account balance have not offered a conclusive evidence to associate the two variables in the majority of the economies. To analyse this relationship, most authors have adopted the twin deficit hypothesis that expects an upsurge in current account balance to cause a resultant proliferation in the fiscal balance and vice-versa. This assertion however, did not turn out as expected in many studies either due to differences in the economic structures of the countries under study or due to the econometric approach utilized.

Vamvoukas and Spilioti (2015) assessed the impact of budget deficit on current account balance of the Economic and Monetary union. They adopted panel data approach to analyse this association. Specifically, they estimated a two stage generalized model on data spanning for a period of 30 years. The data was divided into two distinct epochs namely the pre-Maastricht and the post-Maastricht. The study established that budget deficit resulted in a reduction in the current account deficit and thus their study reinforced the twin deficit hypothesis.

Moving closer to the region, Bakkar (2014) assessed fiscal and external imbalances in Sierra Leone. The study adopted a Bounds cointegration approach and Yamamoto's causality test. The study utilized annual timeseries data spreading over a period of 32 years, from 1980 to 2012. The study established that there exists a unilateral causation from budget deficit to current account deficit. The study also established an existence of both long-run and short-run relationship between the two deficits.

In Kenya, Kosimbei (2012) evaluated the budget and trade deficit nexus. They utilized time series data that covered a period of 36 years. The research was guided by the Keynesian and Ricardian proposition. Keynes proposed that the two deficits are associated while Ricardo postulated that they are uncorrelated. The study failed to establish a relationship between the

two deficits both in the long-run and in the short-run. They concluded that the Ricardian proposition hold for the case of Kenya.

Perpetua, Odunga and Opiotho (2018) conducted a research to assess the impact of budget deficit on current account balance in Kenya. The data covered a 47 year period spanning from 1970 to 2018. The study was underpinned by Ricardian and Keynesian propositions. By the use of Autoregressive Distributive Lag modelling (ARDL), the study established that current account balance and fiscal budget move in the same direction. The findings were additionally confirmed by the Granger causality test that established a bidirectional causation between them. They proposed that fiscal deficit and current account policies should be intertwined.

2.3.4 Real Effective Exchange Rate and Current Account Balance

The association between exchange rate and current account deficit is investigated by numerous researchers in the existing literature. The researchers employ different econometric methods as well as different time periods. In early studies of Sarchinell (1982), Khan and Knight (1983), Howard (1989) and Dornbusch (1988) find similar findings concerning the effect of current account deficit. According to Dornbusch (1988) exchange rate is effective on current account deficit, it however depends on several criteria. One of them is its ability to redirect demand for exports and imports in the right direction and by the right magnitude may determine whether an open economy benefits from trading with the rest of the world.

Bagnai and Manzocchi (1999), Boyd *et al.* (2001), Calderon *et al.* (2002) and Herwatz and Siedenburg (2007) employed panel data analysis methods in order to investigate different country groups. The common conclusion with the country groups is that real exchange rate is a monumental indicator of current account balance. Kandil and Greene (2002) for United States, Erbaykal (2007) and Yucel (2003) for Turkey, Ogwuru (2008) for Nigeria, Britte and McCombia (2009) for Brazil. The results imply the relation for these countries. Şahbaz (2011) applies the Turkish economy on the sustainability of the current account deficit and finds positive results for the sustainability of the deficit.

In Kenya, Wanjau (2014) conducted a study on the nexus between real exchange rate and current account balance. The study analysed both the long-run and short-run dynamics by utilizing cointegration and Error correction techniques. The main findings revealed that import is sensitive to changes in prices of imports and exports. Secondly, estimated level of import elasticity of income is very high. Responsiveness to import prices and high level of import

growth rate is an indicator of high demand for imports and consequently relatively lower demand for exports in Kenya. Thus the study concluded that both the J-curve phenomenon and Marshall Lerner Condition hold for Kenya.

2.3.5 Terms of Trade and Current Account Balance

Studies on the connexion between current account balance and terms of trade have produced inconclusive results. Otto (2003), while trying to analyse the Harbeger-Laursen-Metlzler effect of terms of trade shocks on current account balance of 55 small open economies, established that terms of trade positively affects current account balance. A study by Aristonvik (2008) on a panel data of Eastern Europe countries established that corrosion in terms of trade resulted to an enlargement of the current account balance deficit. In the same line, Bayrakutan and Demitras (2011) using panel data on European Union countries observed that as terms of trade improved, the current account balance deficit reduced. A study by Oktar and Dalyanc (2012) by the use of cointegration approach on data from Turkey found a long-run cointegration relationship between terms of trade and current account balance. The study concluded that deterioration in terms of trade would result in a proliferation in the current account deficit.

Several studies have established a negative or no effect between current account balance and terms of trade. Chin and Prassad (2003) in their study that comprised 18 industrialized economies and 71 developing countries established that terms of trade were positively related with current account balance in developing countries. The relationship was conversely negative in OECD countries. Taglibue (2005) using cointegration approach on Italy's data which spanned from 1991 to 2001 found that there was no long-run connexion between terms of trade and current account balance. Bouakez and Kano (2008) in their study on the current account balance and the terms of trade fluctuation using the Harbeger-Laursen-Metlzler effect on panel data of three countries, found out that terms of trade fluctuations did not affect the current account balance of the three countries.

2.4 Overview of the Literature and Research Gaps

Generally, literature shows a mostly descriptive approach to the subject. Several studies have adopted a reduced-form approaches as opposed to adopting a specific structural model. Moreover, substations from the studies presented in this chapter have not reached a consensus

regarding the determinants of current account balance in emerging economies and by extension African nations. This is evidenced by the fact that some of the studies provided conflicting findings on similar set of variables. Accordingly, this paper attempted to explore the relationship of current account deficit with real effective exchange rate, financial liberalization, terms of trade, fiscal balance and external debt in East Africa community using a Panel ARDL approach, in order to capture both the long-run and the short-run effects of the independent variables on the current account balance.

2.4 Theoretical Framework

2.4.1 Intertemporal Approach to Current Account Balance

This study is guided by the intertemporal approach to the current account balance theory. The earlier proponent of this theory were Sachs in (1981) and Butler (1981). Their works were subsequently advanced by Obstefeld and Rogoff (1995) and Gandolfo (2002). The current account balance is viewed as an aggregate combination of the savings behaviour of households as well as firms' investments decisions that are take into account the future expectations of the economy's trajectory. The theory therefore assumes that the current account balance has its basis on the intertemporal decisions of both households and firms. The theory moved to a more savings-investment definition from the trade view of the current account.

The theory defines current account balance as net savings. It asserts that current account balance is given by the addition of fiscal surplus and aggregate private savings less private investment. The theory has drawn much of its assertion from the rational expectation hypothesis as households as well as firms make their decisions by analysing and speculating the future macroeconomic climate. The intertemporal approach, therefore, tries to establish an analysis of the pattern of current prices and macroeconomic factors and use that information to forecast the impact they are likely to have on future prices of investments and savings and consequently the current account balance (Edwards, 2001).

The intertemporal approach to current account balance has been adjusted severally over the years. Among the new proponents of the approach are Debelle and Faruqee, (1996) and Bussière *et al*. (2005). These scholars attempted to empirically investigate the applicability of the model by using modern econometric techniques and augmented the model to include other macroeconomic factors deemed imperative in the determination of the current account balance.

These scholars, in their application, started by stating the bookkeeping identity of the current account balance as the discrepancy between national savings and investment. They went ahead to disaggregate net savings into net private saving, given by the variation between private saving and private investment, and the net government saving which is given by fiscal surplus. The model illustration of this is shown in equation 2.1.

$$S - I = (S_P - I_P) + (S_G - I_{G)}$$ (2.1)

The model is normalized by expressing all the variables as ratios of the GDP. From this analysis, the current account balance can be said to be made up of private savings to Gross Domestic Product ratio, less private investment to Gross Domestic Product ratio plus fiscal budget as a percentage of Gross Domestic Product. The model illustration is shown in equation 2.2.

$$\frac{CA}{Y} = \frac{S_P}{Y} - \frac{I_P}{Y} + \frac{S_G - I_G}{Y}$$ (2.2)

Gandolfo (2002) postulated that the current account balance's main determinant is the private savings, this is particularly the case in developing economies. Going by this assertion, there is a need to investigate the determinants of private savings and link them to the current account balance. In this regard, a new equation is developed which specifies the proportion of private saving to GDP as a function of several macroeconomic variables which include, real Gross Domestic Product per capita, real effective exchange rate, the proportion of fiscal balance to GDP, the proportion of private investment to GDP and Terms of Trade. The private saving equation is therefore specified of the form:

$$\frac{S_P}{Y} = f\left\{\frac{Y^*}{N^*}, REER, TOT, \frac{S_G - I_G}{Y}, \frac{I_P}{Y}\right\}$$ (2.3)

In addition to the basic specification above, Net domestic credit and External debt (both as percentages of GDP) are incorporated into the model as they are important financial factors in explaining the private saving rate. Therefore, the extended private saving specification will read as:

$$\frac{S_P}{Y} = f\left\{\frac{Y^*}{N^*}, REER, TOT, \frac{S_G - I_G}{Y}, \frac{I_P}{Y}, NDC, ED)\right\}$$ (2.4)

Substituting equation 4 into 2 yields:

$$\frac{CA}{Y} = f\left\{\frac{Y^*}{N^*}, REER, TOT, \frac{S_G - I_G}{Y}, \frac{I_P}{Y}, NDC, ED\right\} + \frac{S_G - I_G}{Y} - \frac{I_P}{Y} \qquad (2.5)$$

Going by the aforementioned models, the possible determinants of the current account balance can be summarised as per capita GDP, real effective exchange rate, fiscal balance, external debt, private investment, and net domestic credit.

2.5 Conceptual Framework

Conceptual framework is symbolic depiction of an abstract idea. Figure 2.1 displays the presentation of the interaction of the independent variable and dependent variables. The variables on the left-hand side are treated as independent variables, they include, external debt, financial liberalisation, government fiscal balance, real effective exchange rate, and terms of trade. The variable appearing on the right-hand box (Current account balance) is the dependent variable, whereas those variables in between the dependent and independent variables are the intervening variables, they include: Foreign policy, Government policy, Environmental effects and Natural resource.

Independent Variables   **Dependent Variable**
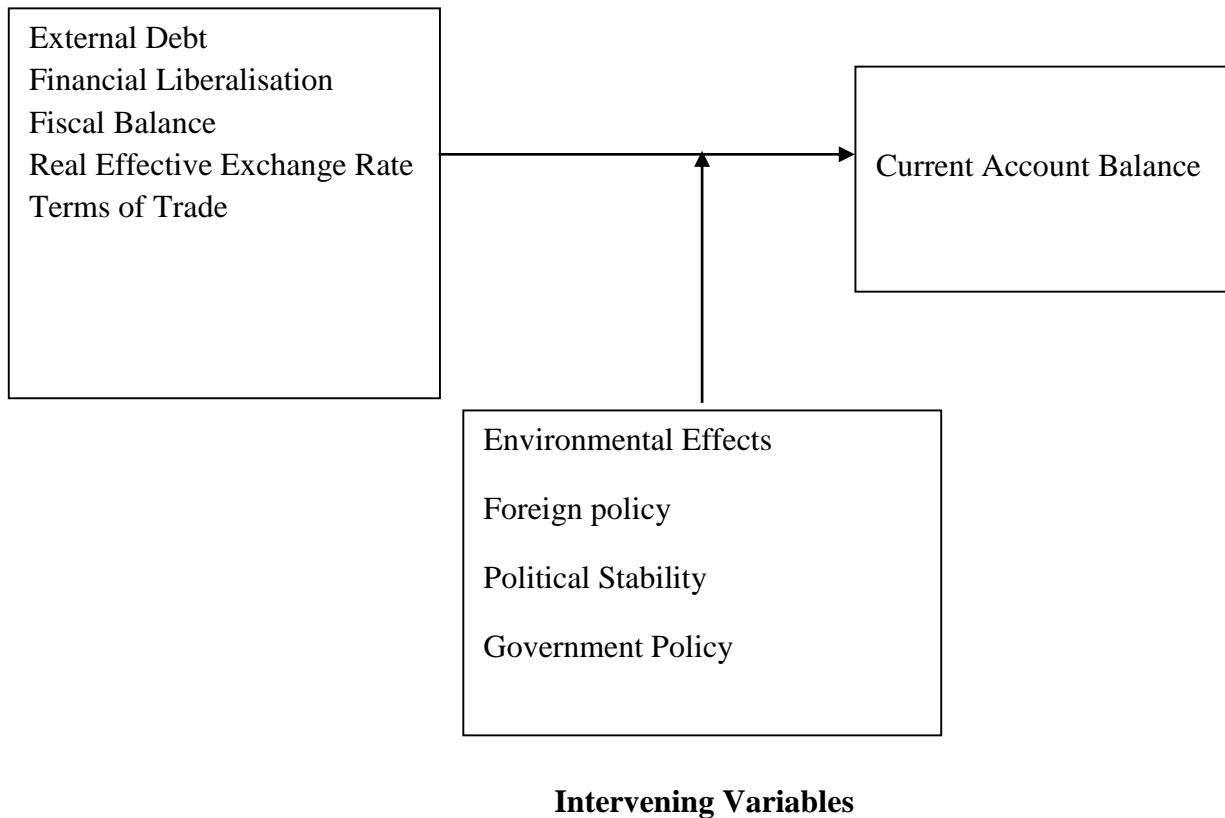
Figure 2.1 Conceptual Framework
Source: Author, 2019

The independent variables include external debt which are all the debts that the EAC member state owe foreign nations as bilateral government loans or syndicated loans to foreign banks, Sovereign bonds and loans to multilateral institutions. External debt was expected to have a dampening effect on current account balance particularly of emerging countries. This is primarily because accrued external debt holding are used in infrastructure development where capital and key labour are imported creating imbalances in the current account balance (Alam, 2013).

Financial Liberalization is the lessening of stringent regulations in the financial markets. One of the main consequences of this is that it enhances the advancement of loan facilities to the private sector. The loans are provided mainly for consumption and investment purposes leading to an upsurge in the aggregate domestic credit and a significant degeneration in investments and hence current account balance (Blachard & Giavazzi, 2002).

Fiscal balance refers to the government's budget that is obtained by deducting all the revenue collected to the expenditure. In the analysis of the fiscal balance and current account nexus, most authors have adopted the twin deficit hypothesis which expects an upsurge in current account balance to cause a resultant proliferation in the fiscal balance and vice-versa (Vamvoukas & Spilioti, 2015). Thus fiscal balance was projected to have a positive influence on current account balance.

Real effective exchange rate is the weighted mean of a country's currency relative to a combination of major world currencies (McGuian, Moyer & Harris, 2013). According to the monetary approach to current account balance REER affects the current account balance through the changes in the international reserves. The fluctuations in the international reserves is caused by the depreciation or appreciation of the exchange rate. Appreciation of exchange rate would make imports cheaper and exports expensive. The cheaper imports will induce aggregate demand making imports to increase and exports reduce. These importations are predominantly financed by depleting foreign exchange reserves consequently leading to corrosion of trade balance (McGuian, Moyer & Harris, 2013).

The debate of association of current account balance and terms of trade changes has been extensively analysed using the Harberger-Laursen-Meltzer (HLM) effect. The HLM effect predicts a positive connexion between the terms of trade and national saving through consumption smoothing behaviour. They argued that a decline in the terms of trade would lead to a decrease in a country's real income that is larger than its fall in permanent income, thus contributing to the worsening of current account balance (Chia & Alba, 2005).

CHAPTER THREE
METHODOLOGY

3.1 Introduction

This chapter presents the methodological base that was used in this study. The subsections contain the research design, study area, data analysis and presentation technique. The chapter also discusses

3.2 Research Design

The study adopted a historical design. According to Kothari (2015), historical design is essential in showing past and current trends with the intention of drawing inferences and explaining future trends. This design was chosen since it enabled current account balance trend to be captured appropriately among the countries under study. The study period span from 1970 to 2017 where relevant quantitative data was available. Panel data methods of analysis were employed in the quest to answer the question on the determinants of current account balance in East Africa Community.

3.3 Study Area

The study was conducted in the East African Community trade bloc. The bloc consist of 6 countries namely Kenya, Uganda, Tanzania, Burundi, Rwanda and South Sudan. These countries are close to each other, and have similar economic, sociological, and cultural dynamics. The countries' current account balances have also been deteriorating over the years. Additionally, the talks for the countries to become an economic union and eventually a political federation are underway. A further worsening of the region's current account balance poses a greater risk for the weakening of the trade bloc's economic competitiveness. It is for this reason that the region was picked for this study. South Sudan was however excluded in the study due to lack of availability of data.
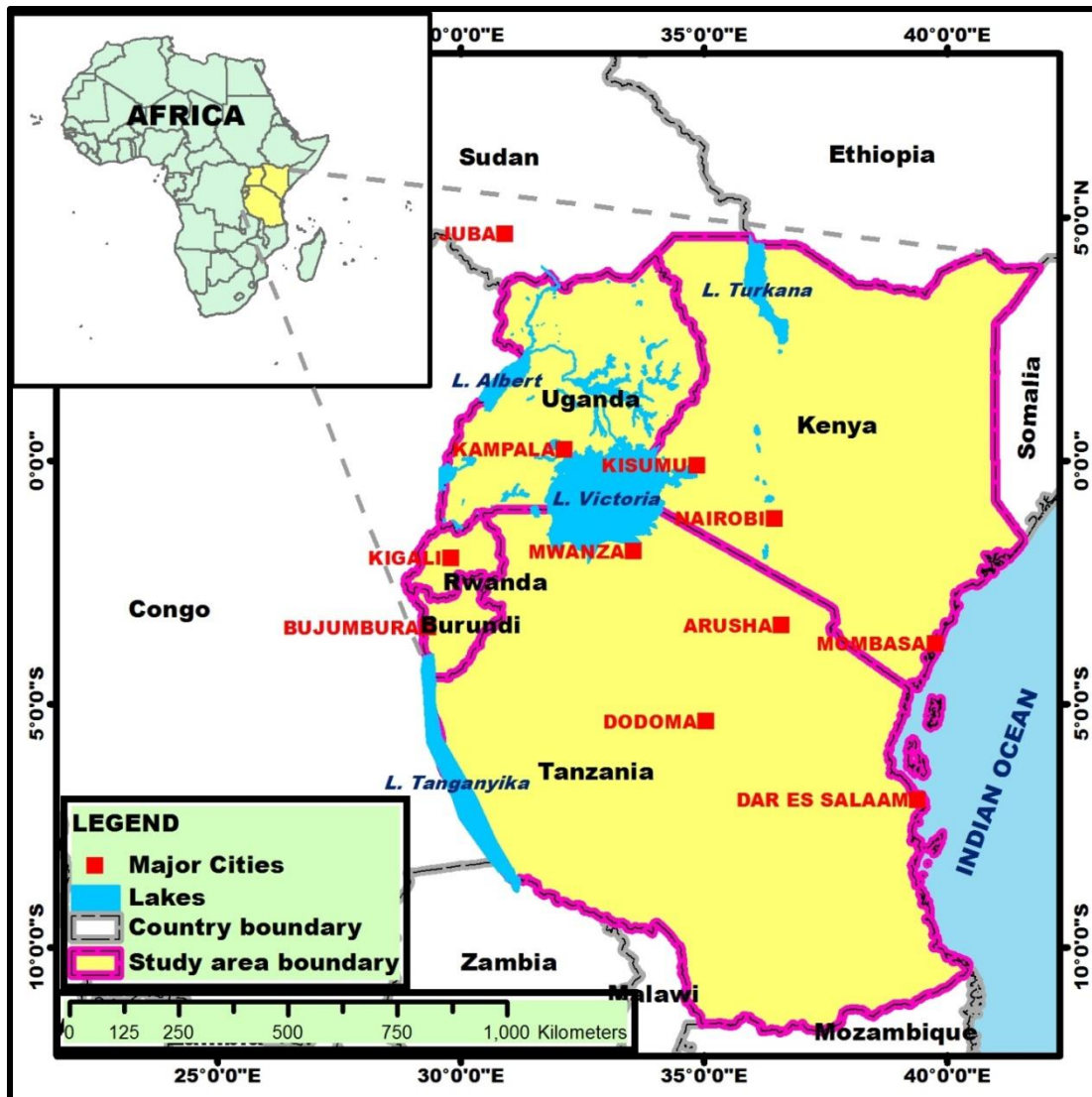
Figure 3.1: Map of the Study Area

Source: Geography & Map Division, Library of Congress

3.4 Data Analysis and Presentation

Descriptive methods were applied to show the relevance of the information. Data were analysed using STATA. The data was presented in tabular form.

3.4.1 Empirical Model

This study used panel data regression analysis; a basic regression equation was used to specify the selected macroeconomic factors identified from the literature review that affect current account balance of the East Africa community. The current account balance is described as a

function of credit to the private sector, real effective exchange rate, fiscal balance, terms of trade, and external debt. As a result, the empirical model is stated as follows

$$CAB_{it} = \propto_{0i} + \alpha_{1i}CPS_{it} + \alpha_{2i}REER_{it} + \propto_{3i} ED_{it} + \propto_{4i} TOT_{it} + \propto_{5i} FB_{it} + u_{it}$$

(3.1)

i=1... N; t=1, ...T

Where:

CAB$_{it}$ is the current account balance as % of GDP,

CPS$_{it}$ is Credit to the private sector as % of GDP,

REER$_{it}$ is the Real Effective Exchange Rate as a % of GDP.

ED$_{it}$ is External Debt as % of GDP,

FB$_{it,}$ is Fiscal Balance as % of GDP,

TOT$_{it}$ is Term of Trade.

,uit is the error term.

α_0 is the intercept term

And α_1, α2, α3 and α4 are slope coefficients

However, this study intended to capture the long-run association between current account balance and various macroeconomic variables. Therefore, the basic regression equation used to estimate the relationships while taking into account individual effects was as follows:

$$CAB_{it} = \sum_{j=1}^{p} \lambda_{ij} CAB_{i,t-j} + \sum_{j=0}^{q} \acute{\delta}_{ij} X_{i,t-j} + \mu_i + \varepsilon_{it}$$

(3.2)

Where:

CAB$_{it}$ –is the dependent variable (Current Account Balance).

X$_{it}$ – set of explanatory variables which includes, real effective exchange rate, credit to private sector, external debt, fiscal balance and terms of trade.

μ_i - country-specific effects.

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δ_{it} – $k \, x \, 1$ coefficient vector,

ε_{it}- is the error term.

i – the number of countries

t-the time period of the study

If the variables in equation 3.2 become stationary after the first difference and cointegrated, then the white noise error is said to be stationary or integrated of order zero for all panels. A peculiar characteristic of cointegrated variables is their ability to restore themselves back to equilibrium in the long-run whenever they are subjected to a shock. This characteristic depict an error correction process where the short-run dynamics are affected by disruption from equilibrium. Therefore, it is ideal to reparameterize equation 3.2 into the error correction equation.

$$\Delta CAB_{it} = \emptyset_i\left(CAB_{i,t-1} - \theta_i'X_{it}\right) + \sum_{j=1}^{p-1} \lambda_{ij}^* \Delta CAB_{i,t-1} + \sum_{j=0}^{q-1} \delta_{ij}'^* \Delta X_{i,t-j} + \mu_i + \epsilon_{it}$$

$$(3.3)$$

Where;

$\phi_i = -\left(1 - \sum_{j=1}^{p} \lambda_{ij}\right)$ Represents the error correction adjustment speed term. If the term is zero then there would be no confirmation of a long-run association.

$$\theta_i' = \sum_{j=0}^{q} \delta_{ij} / \left(1 - \sum_{k}^{p} \lambda_{ij}\right),$$ and represents the long-run estimates of the model,

$\lambda_{ij}^* = -\sum_{m=j+i}^{P} \lambda_{im}$, $j=1,2,…,p$-1,

$\delta_{ij}'^* = -\sum_{m=j+1}^{q} \delta_{im}$, $j=1,2,…,q$-1.

Pesaran *et al.* (2003), suggested the adoption of Akaike information Criterion in choosing the optimal lag-length because it showed better performance on small samples as compared to other criteria. Further, they recommend a maximum lag-length of 2 in the case of annual data.

3.5 Diagnostic Tests

3.5.1 Panel Unit Root Test

To avoid erroneous estimation problems, the Im, Pesaran and Shin (2003) procedure was used for panel unit root testing. The IPS tests are based on heterogeneity of autoregressive parameters and it is the mean of individual Augmented Dickey fuller test without trend and follows a normal distribution. Unlike other panel unit root testing approaches such as Levin-Lin-Chu's (2002), Harris and Tzavalis (1999), Breitung and Das (2005) and Hadri (2000), this method was more appropriate for the study because in principle, the test is versatile and compatible with other parametric unit-root tests, provided the panel data in question is strongly balanced and all the t-statistics for the unit-root in every cross-section are independently and identically distributed (iid). The implication of this is that the mean and the variance will be constant. This study's variables met the above-mentioned criteria and therefore, Im, Pesaran and Shin (2003) method was ideal for the study.

3.5.2 Cointegration Test

The cointegration test is an integral part of panel regression analysis as it is useful in showing whether the series exhibits a long-run property. This study used Pedroni's (2004) approach whose null stipulates that there exists no cointegration in the series while the null states that there is presence of cointegration in the series. The test starts by computing the residuals of the regression equation which is given in the form:

$$Y_{i,t} = Y_i + \beta_{1i}\chi_{1i,t} + \beta_{2i}\chi_{2i,t} + \cdots + \beta_{Mi}\chi_{Mi,t} + \varepsilon i, \qquad (3.4)$$

Where;

t= years covered

i= number of panels

M= all independent variables.

The main assumption is that the intercept and coefficients vary across panels.

The initial step of calculating the appropriate test statistic for cointegration is by estimating the cointegration equation (3.4) using the Ordinary Least Square for each cross-section. Secondly, the within-dimension based test statistics, i.e., panel ρ and panel t statistics are calculated by estimating the residuals of the following regression;

$$\Delta Y_{i,t} = \beta_1 \Delta \chi_{1i,t} + \beta_{2i} \Delta_{2i,t} + \cdots + \beta_{Mi} \Delta \chi_{Mi,t} + \acute{\upsilon}_{i,t} \tag{3.5}$$

Using the residuals from equation (3.5), the long-run variance is calculated. The non-parametric values, panel ρ and group ρ, are calculated using equation;

$$y_{i,t} = \acute{\alpha} \hat{e}_{i,t} - 1 + \hat{u}_{i,t} \tag{3.6}$$

Finally, the long-run variance $\hat{u}_{i,t}$ is calculated. The residual $\hat{e}_{i,t}$ comes in handy in estimating the parametric test value, panel t and group t.

3.5.3 Test for Heteroscedasticity

Panel analysis is mainly based on the Ordinary Least Square assumptions which if violated, they are likely to lead to serious econometric problems such as biased and inconsistent estimates. The study carried out tests for heteroscedasticity and autocorrelation to check for validity of the model. Heteroscedasticity refers to an econometric situation that arises when the variance of the error term is not constant. It results in the violation of Ordinary Least Square (OLS) which requires the error term to have a constant variance, this is likely to lead to inefficient regression predictions. The study used Modified Wald test for GroupWise Heteroscedasticity.

3.5.4 Test for Autocorrelation

Autocorrelation is an econometric problem that arises when two successive error terms seem to be correlated, a situation also referred to as serial correlation. Ordinary least square requires that error terms in a time series be independent of each other as this would lead to biased and inconsistent estimates rendering the inferences invalid. The study employed the Woodridge test for serial correlation.

3.6 Measurement of variable, Sign, and Sources of Data

This study used secondary data, collected from websites of various organizations such as International Financial Statistics (IFS) year book of the International monetary Fund (IMF), World development indicator (WDI) reports of the World Bank as well as World Economic Outlook (WEO) data. These institutions are the major sources of information concerning most aspects of East Africa community member countries both economically and socially. The

methodology for calculating each variable, the a priori coefficient signs and sources are given by Table 3.1

Table 3.1: Measurement, Sign and Source of Data

Variable	Measurement	Sign	source
CAB	Current Account Balance as a percentage of GDP		World Economic outlook
ED	External debt stock as a percentage of GNI	(-)	World Bank IFS
CPS	The proportion of private credit to GDP. Its arrived at summing up loans advanced to individuals and private entities by commercial banks and other financial institutions	(-)	World Bank Financial Structure Database
FB	Central government Fiscal balance, percentage of GDP. Arrived at by deducting revenues collected from the expenditures by the government and then expressed as a percentage of GDP.	(+)	MFI's International Financial Statistics
TOT	The proportion of price of exports to the price of imports. Given by the exports' price index over import price index multiplied by 100. $(\frac{X_p}{M_p} * 100)$	(+)	World Bank, International Financial statistics
REER	Real effective exchange rate. It is the price of the local currency against a weighted mean of a basket major world currencies divided by cost index.	(-)	World Banks, International Financial Statistics

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents descriptive properties which give the general characteristic of the variables in form of mean, standard deviation, Skewness and Kurtosis to test for normality of the data. It also presents data on correlation analysis that give the association between the variables, unit root test to check for stationarity, cointegration test as well as regression analysis using the panel ARDL Pooled Mean Group approach.

4.2 Descriptive Statistics

Descriptive statistics have been described as fundamental and starting point to any empirical analysis. This is because it gives a simple quantitative summary of the dataset at hand and therefore, informs the researchers about the things that they need to put into perspective prior to carrying on with the analytical process. Descriptive statistics mainly use two measures; measures of central tendency and measures of dispersion (Kothari, 2015). Results are presented in Table 4.1

Table 4.1: Summary Statistics

Variable	Obs	Mean	Std. Deviation	Skewness	Kurtosis	Max	Min
CAB	240	-6.048	4.7265	-0.4729	2.5603	13.15	-21.02
CPS	240	11.4608	7.1045	0.9221	2.2909	34.88	1.58
ED	240	55.2716	42.3031	0.9700	2.0899	175.85	0.896
FB	240	-3.6536	3.5573	-0.4260	2.1529	5.59	-14.79
REER	238	119.9394	68.4935	0.9117	2.2436	547.569	33.06
TOT	181	123.1124	48.02457	0.5221	2.0736	315.625	39.74

The results shown in Table 4.1 highlight on the mean, standard deviation, skewness and Kurtosis coefficients. The mean of the Current Account Balance as a percentage of GDP for EAC between 1970-2017 was -6.04%, Credit to the private sector as a percentage to GDP in EAC averaged 11.46% from 1970 until 2017, External Debt stock as a percentage of GNI in EAC averaged 55.2% from 1970 until 2017, the mean of Fiscal Balance as a percentage of GDP was -3.65 between 1970 and 2017, terms of trade averaged 123.11 USD, while the real effective exchange rate was 119.94 in the period 1970 to 2017.

Standard deviation is a measure that describes how spread out the data is from the mean. A higher standard deviation value indicates a greater spread on the data. The standard deviation of current account balance is 4.7264, credit to private sector is 7.104, external debt is 42.303, fiscal balance is 3.557, and terms of trade are 48.02, while that of real effective exchange rate is 68.49.

Skewness is a measure of degree and direction of asymmetry, that is, how far the mean is from the median. It is important in showing the distribution of the data set. The Results show that current account balance and Fiscal Balance are negatively skewed, with the coefficients of -0.4728 and -0.4260 respectively. On the other hand, Credit to the private sector (0.922), External debt (0.969), terms of trade (0.5221) and real effective exchange rate (0.9117) are positively skewed. However, since the values are less than one in absolute terms, the data can be said to be moderately skewed and therefore, symmetrical. In economic modeling, the less skewed the data, the more accurate the economic model will be.

Kurtosis is a measure of the heaviness of the tails relative to normal distribution. Kurtosis is important in showing whether the data have outliers which is also characterized by heavy tails. Heavy tails are shown by a kurtosis of more than 3, while light tails have a kurtosis of less than 3. A normal distribution has a kurtosis of 3. The findings of this study show that all the variables have a kurtosis of less than 3, a phenomenon referred to as platykurtic, thos means that they are all light tailed, and therefore, the data sequence is normally distributed. In economic modelling, if the distribution of historical data is platykurtic, then there is less chance of obtaining extreme outcomes.

4.3 Correlation Analysis

Correlation is the measure of association between two variables. It is denoted by a coefficient that shows the degree of linear association of any two variables with values ranging between

negative 1 and positive 1. A coefficient of +1 represents a perfect positive linear correlation, while -1 denotes a perfect negative/inverse linear correlation, and 0 indicates the absence of correlation. The study used Pearson's correlation technique because the data exhibited normal distribution properties. Correlation results are presented in Table 4.2

Table 4.2: Results of Pearson's Correlation

	CAB	CPS	ED	FB	REER	TOT
CAB	1					
CPS	-0.1389	1				
	(0.0315)					
ED	-0.1616	0.0725	1			
	(0.0122)	(0.2634)				
FB	0.4150	0.3034	-0.0237	1		
	(0.0529)	(0.0000)	(0.7148)			
REER	0.1246	-0.1638	-0.0605	-0.0639	1	
	(0.0539)	(0.0110)	(0.3506)	(0.3244)		
TOT	-0.0800	-0.3805	-0.1904	-0.3325	0.5730	1
	(0.2842)	(0.0000)	(0.0102)	(0.0000)	(0.0000)	

Note: The values in brackets are the P-values

Table 4.2 shows the results of Pearson's correlation of the variables. There is a negative correlation between current account balance and credit to the private sector (-0.1389) the coefficient is statistically significant. The sign and the level of significance are as expected by a priori; an increase in the credit to the private sector as a result of financial liberalization induces consumption and lowering the levels of private savings, consequently, current account balance reduces. External debt and current account balance too have a negative coefficient of -0.1616, and statistically significant at 1 percent, as expected. Bulut (2008), asserts that that in a national accounting statistics, external debt holding significantly results in the worsening of the current account balance.

On the other hand, there exists a significant positive correlation between current account balance and Fiscal balance (0.4150). According to Keynesian proposition, high government fiscal balance due to higher taxes or low expenditure, triggers current account surplus, as it reduces disposable income and consequently boosts aggregate demand. Additionally, real effective exchange rate has a positive and significant relationship with current account balance (0.1246), this could be explained by the depreciation of the EAC currencies relative to the US currencies leading to a proliferation in the value of exports emanating from the EAC. Finally, the correlation between terms of trade and current account balance has a negative coefficient (-0.0800), however, it is not statistically significant, an indication of the absence of the HLM effect of terms of trade on current account balance.

4.4 Panel Unit Root Test

The variables were examined for stationary prior to estimating the model to avert the cases of erroneous regression. In this context, this study adopted the Im, Shin and Pesaran (2003) approach to conduct unit root testing. The method was selected because it can be used on unbalanced data. The null-hypothesis of the IPS unit root approach states that all the series included in the model data are non-stationary while the null hypothesis states that they are stationary, meaning that they do not contain unit root. The results are as presented in Table 4.3.

Table 4.3: Panel Unit Root Test

Variable	Statistic	IPS Levels	P-Value	IPS First Difference	P-Value	Order of Integration
LogCAB	t-bar	-4.4919		-		
	t-tilde-bar	-3.6933	0.0000	-	-	I(0)
	Z-t-tilde-bar	-6.1424		-		
LogFB	t-bar	-4.8918		-		
	t-tilde-bar	-3.8629	0.0000	-	-	I(0)
	Z-t-tilde-bar	-6.6142		-		
LogCPS	t-bar	-2.4615		-		
	t-tilde-bar	-2.2932	0.0117	-	-	I(0)
	Z-t-tilde-bar	-2.2669		-		
LogED	t-bar	-1.9666		-7.3815		
	t-tilde-bar	-1.8683	0.1377	-4.7703	0.0000	I(1)
	Z-t-tilde-bar	-1.0908		-9.1266		
LogREER	t-bar	-2.1019		-6.7789		
	t-tilde-bar	-1.9715	0.0843	-4.7782	0.0000	I(1)
	Z-t-tilde-bar	-1.3765		-9.1485		
LogTOT	t-bar	-1.6162		-6.4537		
	t-tilde-bar	-1.5738	0.3681	-4.2649	0.0000	I(1)
	Z-t-tilde-bar	-0.3370		-7.9249		

Table 4.3 shows the results for panel unit root test. The p-value for the log of current account balance, fiscal balance, and credit to private sector are zero at levels, this is lower than the conventional critical value of 0.05, we therefore, reject the null hypothesis and conclude that the variables do not contain unit root and are thus stationary. The results also denote that the three variables are integrated of order zero I(0).

Conversely, the log of external debt, real effective exchange rate, and terms of trade were non-stationary in levels as shown by the p-values which were higher than the conventional critical value of 0.05. The null hypothesis was therefore accepted concluding that they contained unit root. The variables were then differenced and tested for panel unit root using IPS method, it was established that they were stationary after the first difference as shown by the p-values that

were below 0.05. All the variables are either integrated of order zero or one, this is the ideal condition for the Panel Autoregressive distributed lag (ARDL).

4.5 Panel Cointegration Test

The study used the panel cointegration test proposed by Pedroni (2004). Unlike other panel cointegration tests such as Kao (1999), Maddala and Wu (1999), and westerlund (2007), a peculiar feature of Pedroni (2004) test is that that the test is comprehensive and permits for heterogeneity in the intercepts and coefficients of the cointegrating equations and thus it is a superior technique. Additionally, the strength of the test lies in its ability to overcome the bias associated with small sample size as well as the problems of more than one cointegrating relationship. Pedroni cointegration measures seven statistics and all are normally distributed under a null of no cointegration and deviate to a negative infinity apart from the variance ratio statistic (V). Results are displayed on Table 4.4.

Table 4.4: Pedroni Cointegration Tests

Test statistic	Panel	Group
V	.7353	-
Rho	-3.641	-2.991
T	-5.514	-5.658
Adf	-2.41	-2.752

From the cointegration result in Table 4.4, six out of seven statistics have values which are larger than 2 in absolute terms, this is an indication that the tests are significant at 5 percent level and therefore, the null hypothesis of no cointegration is rejected. Thus the variables in the model move together in the long-run. Allowing for country-specific effect there is a long-run relationship between current account balance and the independent variables namely, credit to private sector, external debts, fiscal balance, real effective exchange rate and terms of trade in the EAC.

4.6 Hausman Specification Test

Pesaran, Shin and Smith (1999) provide two significant techniques for estimating non-stationary dynamic panels. These are the Pooled Mean Group (PMG) and the Mean Group (MG). The Mean group approach is obtained by analyzing the time series regression and afterwards calculating the coefficients, while the Pooled Mean Group technique simultaneously pools and averages the coefficients.

In order to determine the appropriate method between the two approaches, Pesaran Shin and Smith (1999) recommended the Hausman (1978) specification test. The Hausman test is based on Chi-square statistics that is used to make a choice between MG and PMG.

Table 4.5: Hausman Test

Variables	(b) Mean Group	(B) Pooled Group	(b-B) Mean Difference	sqrt(diag(V_b-V_B)) Standard Error
LogFB	1.3460	0.2050	1.141	1.0324
LogCPS	-2.8336	-0.8288	-2.0048	1.8423
LogED	-1.2987	0.2000	-1.4987	1.2342
LogREER	0.9333	-0.6966	1.6299	1.4271
LogTOT	2.0505	-0.4376	2.4881	2.2461

chi2(5) = (b-B)'[(Vibe-V_B) ^ (-1)] (b-B) = 0.02

Prob>chi2 = 0.9999

 (V_b-V_B is not positive definite)

The Hausman test results in Table 4.5 shows that the p- value is 0.9999 and is distributed Chi square (5) the null hypothesis of homogeneity cannot be rejected. Hence the model supports the Pooled Mean Group as the efficient estimator under the null hypothesis. The PMG constraints the long-run coefficients to be identical across all the panels. In this case a pool of

all the five East African Community countries will yield valid estimates as the restrictions are true as indicated by the Hausman test (Pesaran, Shin & Smith, 1999).

4.7 Pooled Mean Group Model Estimation

The model estimated a Panel ARDL (1, 0, 0, 0, 0, 0) model which was selected using the Schwarz-Bayesian Information Criteria (SBIC) for lag selection. Pooled mean group estimator was selected as the preferred estimator under the null hypothesis of the Hausman test. Since the study established that there exists a long-run association between current account balance and all the variables, the PMG will be useful in estimating the magnitude of the relationship. The output for the PMG include the long-run parameter estimates as well as the short-run parameter estimates. Long-run results are presented in Table 4.6 and short-run results in Table 4.7

Table 4.6: Long-run Regression Results

LogCAB	Coefficient	Standard Error	Z	P-value
LogFB	0.2050	0.0916	2.24	0.025
LogCPS	-0.8288	0.1917	-4.32	0.000
LogED	0.2000	0.0556	3.60	0.000
LogREER	-0.6967	0.2926	-2.38	0.017
LogTOT	-0.4376	0.1520	-2.88	0.004

Results in Table 4.6 shows that the long-run estimate of fiscal balance is significantly positive at 5% as expected. This is shown by the coefficient of 0.2050 implying that in the long-run, a 1 percent increase in fiscal balance will result in a 0.205 percent improvement in the current account balance and vice versa. These results are consistent with the twin deficit hypothesis and Keynesian proposition that the fiscal deficit and current account deficit are related. The results agree with the study by Katha (2010) who established a positive relationship between fiscal balance and current account balance in India. The results are also similar to Hakvo (2009) who found out that in Pakistan fiscal surplus contributed positively to current account surplus

through a channel that begins with the prices of the commodity which affects the interest rate which in turn affect the capital flow and finally current account balance. Finally, the results are also consistent with the works of Vyshnyak (2000) who found a cointegration between budget deficit and current account deficit in Ukraine.

The long-run estimate of credit to the private sector (a proxy to financial liberalization) is negative as expected and statistically significant at 1 percent. The long-run coefficient is -0.8288 meaning that a 1 percent increase in credit to the private sector would result in an 0.828 percent deterioration in the current account balance. The justification for this is that financial liberalization allows banks to lend more freely and at a lower cost to individuals, mainly for consumption and investment purposes which in turn leads to an increase in domestic credit and a significant decrease in saving hence current account balance. The results are consistent with the works of Kumbof *et al.* (2012) who by use of GMM established that the credit to private sector (used as a proxy to financial liberalization) is negatively related with the current account balance. It also agrees with the study done by Kraff and Jarkov (2005) which found that the two variables have a negative relationship, the study concluded that the rapid credit growth increased the probability of credit quality corrosion and as a result current account balance. Finally, the results are similar with Mendoza and Terrones (2008) who observed that there was a deterioration of the current account balance in 21 industrial countries that had experienced credit boom.

External debt had a coefficient of 0.200 which was statistically significant at 1 percent. This indicates that a 1 percent increase in external debt stock would result to a 0.200 percent increase in the current account balance. The sign, did not however come out as expected. The findings are in line with the works of Alam (2013) who obtained a positive and significant effect of external debt on 14 Asian pacific countries. The findings also agreed with the works of Balanchard and Giavazzi (2002) who asserted that external debt is likely to lead to a current account balance surplus in developing economies that have a higher financial integration such as EAC bloc.

The long-run estimate of real effective exchange rate is significantly negative as projected. These results are shown by the coefficient of –0.6967, meaning that a 1 percent increase in real effective exchange would results in a deterioration in the current account balance by 0.648 percent, and vice-versa An Appreciation of exchange rate would make imports cheaper and exports expensive. The cheaper imports will induce aggregate demand making imports to

increase and exports reduce. These importations are predominantly financed by depleting foreign exchange reserves consequently leading to deterioration of trade balance (McGuian, Moyer & Harris, 2013).

Finally, the coefficient for the log of terms of trade is negative (-0.4376) and statistically significant at 1 percent. This means that a 1 percent increase in terms of trade would lead to a 0.438 percent deterioration in the current account balance. The results are consistent with the works of Chin and Prassad (2003) who established a negative relationship between current account balance and terms of trade. The results further confirm that there is no HLM effect of terms of trade on current account balance in the EAC.

Table 4.7: Short-run Regression Results

	Coefficient	Standard Error	Z	P-value
Constant	9.5935	2.6391	3.64	0.000
ECT	-0.5613	0.1589	-3.53	0.000
ΔLogFB	0.0925	0.0313	2.95	0.003
ΔLogCPS	-0.4513	0.3290	-1.37	0.170
ΔLogED	-0.6199	0.3778	-1.64	0.101
ΔLogREER	-0.3885	0.2249	-1.73	0.084
ΔLogTOT	0.1574	0.3423	0.46	0.646

Table 4.7 shows the short-run coefficient results of the pooled mean group estimator. The error correction term (ECT) is -0.5613 and is statistically significant at 1 percent. This confirms the existence of long-run relationship which had previously been obtained using Pedroni cointegration test. Particularly, the result shows that any deviation from the long-run is corrected at 56.1% adjustment rate per annum.

The estimated short-run coefficient for fiscal balance is significantly positive (0.0925), meaning that a 1 percent increase in fiscal balance would result to a 0.09 percent improvement in current account balance. This percentage change is small; however, it still confirms the

existence of the twin deficit hypothesis in the short-run, that is, a rise in fiscal balance would result to a rise in current account balance and vice versa. The result is in line with Ratha (2010) whose study established a positive short-run relationship between current account balance and fiscal balance in India. The explanation is that whenever there is a budget deficit, the deficit flows to prices of commodities, to interest rate to capital flows to exchange rates and finally to current account deficit (Hakro, 2009).

The estimated short-run coefficient for real effective exchange rate is significantly negative at 10 percent (-0.3885), meaning that a 1 percent increase in real effective exchange rate would result to a 0.3885 deteriortion in the current account balance and vice versa. Depreciation in real effective exchange rate makes imports relatively cheaper and therefore the trade balance rises and thus current account balance. Credit to the private sector had a negative coefficient (-0.4513) but statistically insignificant, implying that trade liberalization does not affect current account balance in the short-run, the reason for this could be that the period is too short to influence consumption patterns especially in foreign products and thus imports remain unaltered.

The coefficient for external debt is also negative and insignificant (-0.6199), implying that external debts do not affect current account balance in the short-run. A possible explanation for this is that an increase in external debt leads to an increase in foreign exchange reserve in the short-run temporarily balancing the exchange rate and therefore no significant change in the trade balance and hence the current account balance. Finally, terms of trade had a positive coefficient (0.1574) but also statistically insignificant. An improvement of terms of trade is unlikely to affect current account balance in the short-run because it would result to an increase in counties' real income but this rise will be lower than the rise in permanent income.

4.8 Post-estimation Diagnostic Tests

Essential post-estimation diagnostic tests such as test for cross-section dependence, autocorrelation and heteroscedasticity, were conducted to check the validity and robustness of the data.

4.8.1 Test for Autocorrelation

This study used Woodridge approach to test for serial correlation. The test's null hypothesis states that there is no autocorrelation against an alternative hypothesis of presence of autocorrelation in the data. The serial correlation results are as presented below:

Wooldridge test for autocorrelation in panel data

H0: no first order autocorrelation

$F (1, 47) = 0.004$

$Prob > F = 0.9475$

A p-value of 0.9475 suggests that we fail to reject the null hypothesis and conclude that there is no first order autocorrelation.

4.8.2 Test for Heteroscedasticity

The study used the Modified Wald test for groupwise heteroscedasticity to check whether the variance of the error term in the estimated model was constant. The test's null hypothesis states that: $\delta_i^2 = \delta^2$, for all i=1,…,N_g, where N_g is the number of cross-sectional units. The results are as shown below:

Modified Wald test for groupwise heteroskedasticity in a dynamic panel regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (48) = 1977.12

Prob>chi2 = 0.0000

The p-value of 0.0000 above suggests that the null should be rejected and conclude that heteroskedasticity is present. However, Pesaran, Shin and Smith (1999) postulate that in Pooled Mean Group estimates, standard errors are corrected for possible heteroscedasticity, and therefore, this was not a serious problem in this study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of findings in relation to the research objectives, conclusion and policy recommendation.

5.2 Summary of the Study and Key Findings

The general objective of the study was to establish the determinants of current account balance in EAC while the specific objectives were built on selected macroeconomic variables, they included: to establish the effect of external debt on the current account balance in the EAC, to examine the effect of financial liberalization on the current account balance in the EAC, to investigate the effect of fiscal balance on the current account balance of the EAC, to determine the effect of terms of trade on current account balance in the EAC. The study period spanned from 1970 to 2017, the period was selected based on availability of data and the period being ample to measure both the long-run and short-run effects.

This study sourced the data from secondary sources employed the ARDL (1, 0, 0, 0, 0, and 0) approach using the pooled mean group estimator to analyse the effects of the independent variables (credit to private sector, external debt, fiscal balance, real effective exchange rate, and terms of trade) on the dependent variable (current account balance). The approach was mainly used in order to assess whether the effect was both in the long-run and short-run.

On the objective of external debt, the study results show that in EAC there is a positive relationship between external debt and current account balance in the long-run. This was shown by the long-run coefficients of 0.2000 which was statistically significant at 1 percent. The short-run coefficient of external debt was negative (-0.6199), however it was not significant at any level.

The study further revealed that financial liberalisation proxied by credit to the private sector has a negative long-run relationship with current account balance in EAC. The long-run coefficient was -0.8288 and significant at 1 percent while the negative short-run coefficient was -0.4513 but not significant.

The study found out that there exists a positive relationship between fiscal balance and current account balance in EAC both in long-run and the short-run, this was shown by the long-run coefficient of 0.2050 and the short-run coefficient of 0.0925. These results were significant at 5 and 1 percent respectively.

The study established a negative relationship between real effective exchange rate and current account balance both in the long-run and in the short-run. The long-run coefficient was -0.6967 while the short-run coefficient was -0.3885. These results were significant at 5 and 10 percent respectively.

Finally, the study established a negative long-run relationship between terms of trade and current account balance in EAC. The long-run coefficient was -0.4376 and significant at 1 percent. On the other hand, the short-run coefficient for terms of trade is positive (0.1574) however, it is not significant at any level.

5.3 Conclusions

It can therefore be concluded that the objective of the research has been met in analyzing the determinants of current account balance in EAC. The framework of this study had conceptualized that external debt, financial liberalization, fiscal balance, real effective exchange rate, and real effective exchange rate as major determinants of the deteriorating current account balance in EAC.

The study established that external debt has a positive effect on current account balance in the long-run. East Africa Community has over the years relied on external debts to finance the current account balance deficit and saving-investment gap. Additionally, the East African community countries have been pursuing massive infrastructural development and as a result they resorted to taking foreign debt to finance the development projects. A huge portion of these debts has been used in sourcing for foreign contracts and importation of capital goods. It is for the aforementioned reasons that the effect of external debt is not felt in the short-run and felt in the long-run.

It can also be concluded that financial liberalization in the East Africa Community has contributed to the deterioration of the current account balance. This is shown by the negative effect of it both in the short-run and the long-run. Financial liberalization in EAC has majorly been characterized by the ease in access to credit by households. In EAC households mostly

spend the loans in the purchase of consumer items. As a bloc that rely more on the importation of commodities as opposed to production of goods, the increase in loans to household means that they spend more on imported goods. This situation has a far-reaching implication on the current account balance both in the short term and in the long term as it directly affects the balance of trade.

The conclusion drawn from the third objective is that fiscal deficits of governments in EAC worsen current account balance in the long-run and therefore confirming the twin-deficit hypothesis in EAC. However, the effect is weaker in the short-run. The study also concludes that real effective exchange rate has a negative effect on current account balance. A depreciation in the real effective exchange rate will result in a current account surplus while its appreciation would result to a current account deficit. Appreciation of exchange rate makes imports cheaper and exports expensive. The cheaper imports will induce aggregate demand making imports to increase and exports reduce. These importations are predominantly financed by depleting foreign exchange reserves consequently leading to corrosion of trade balance.

Finally, terms of trade have a negative effect on the current account balance, an increase in terms of trade would lead to a reduction in the current account balance. The conclusion that can be drawn from this is that there is no HLM effect of terms of trade in EAC.

5.4 Policy Recommendations

As established by the findings, fiscal deficit has contributed to the weakening of the region's current account balance. It will, therefore, be of interest for the EAC governments to strive at improving their fiscal balance by minimizing fiscal profligacy through regulating public spending. The study also recommends that EAC governments should pursue policies and programs that support the growth of exports as well as the economies productive capacities to reduce the current account deficit, one of such measures include devaluation of exchange rate to boost demand for exports and reduce the demand for imports.

Finally, the governments should ensure that a better fraction of external debt borrowed is used to finance infrastructure development and investment as opposed to recurrent expenditure. Infrastructure development will create a capacity for a favourable investment environment that will be realized in the long-term and eventually result in increased trade facilitation and consequently current account surplus.

5.5 Suggested Areas for Further Research

Currently, there are talks about forming a Tripartite Free Trade Area that merges EAC, SADC and COMESA, the study should be extended to establish the determinant of current account balance in the trade bloc.

Future scholars should use either quarterly data or semi-annual data which will increase the number of observation since the current study collected data on an annual basis which has an effect of reducing the number of observation.

A study should be conducted in future and use an appropriate methodology with is suitable in analysing unbalanced panel data. One of this method could because of dynamic panel data technique such as the Generalised Least Squares approach which accounts for missing data as was experienced by data from Burundi on real effective exchange rate.

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APPENDICES

Appendix I: Current Account Balance Trend for Kenya
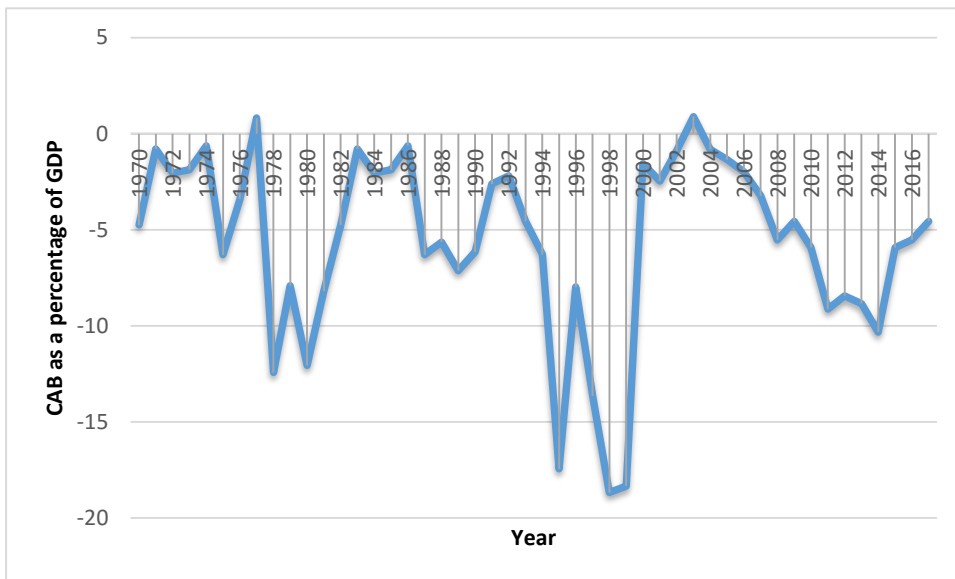
Figure A1. Kenya's Current Account Balance as a percentage of GDP

Source: EAC (2018), IMF, International Financial Statistics; various Issues

Appendix II: Current Account Balance Trend for Uganda
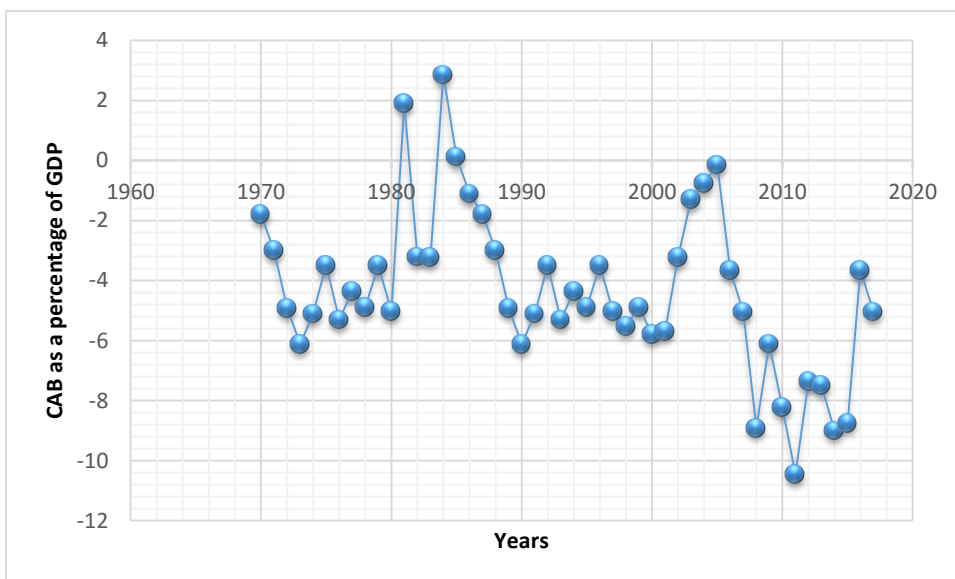
Figure A2. Uganda's Current Account Balance as a percentage of GDP

Source: EAC (2017), IMF, International Financial Statistics; various Issues

Appendix III: Current Account Balance Trend for Tanzania
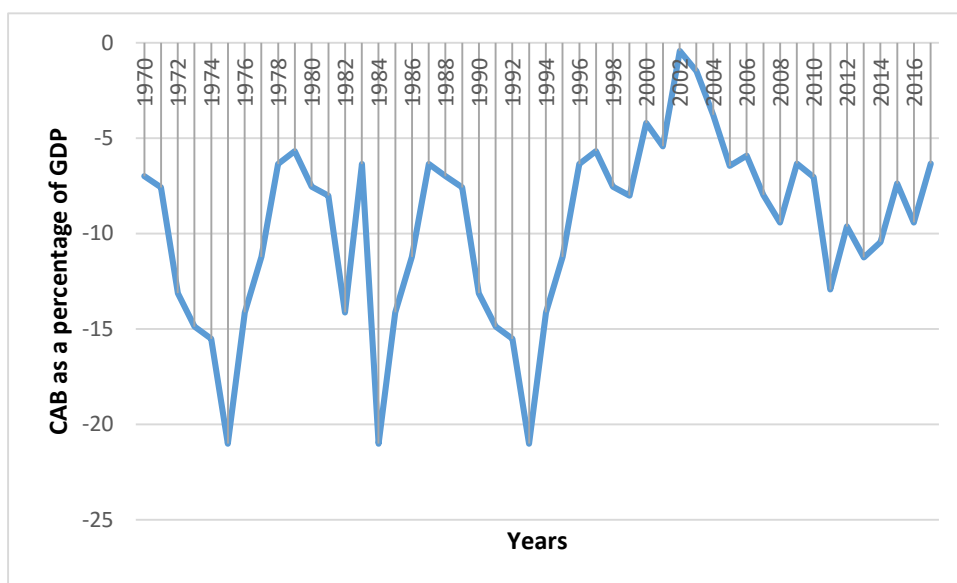
Figure A3. Tanzania's Current Account Balance as a percentage of GDP

Source: EAC (2017), IMF, International Financial Statistics; various Issues

Appendix IV: Current Account Balance Trend for Burundi
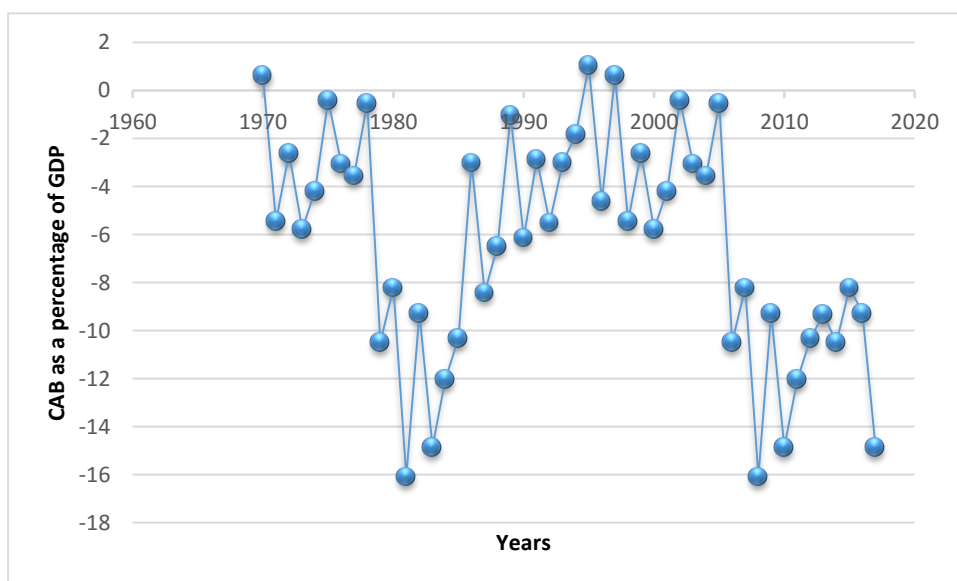
Figure A4. Burundi's Current Account Balance as a percentage of GDP

Source: EAC (2017), IMF, International Financial Statistics; various Issues

Appendix V: Current Account Balance Trend for Rwanda
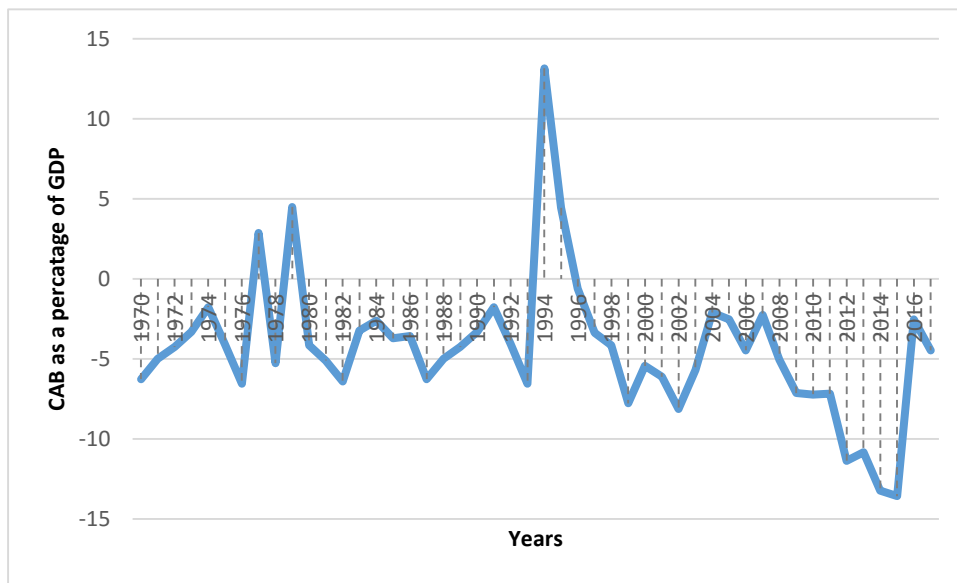
Figure A4. Rwanda's Current Account Balance as a percentage of GDP

Source: EAC (2017), IMF

Appendix VI: Data Analysis Outputs

Summary Statistics

```
. summarize  cab cps ed fb reer tot
```

Variable	Obs	Mean	Std. Dev.	Min	Max
cab	240	-6.04821	4.726476	-21.0161	13.1526
cps	240	11.46077	7.104468	1.58348	34.8865
ed	240	55.27175	42.30311	.8961559	175.8499
fb	240	-3.653647	3.557308	-14.7929	5.51886
reer	238	119.9394	68.4935	33.0633	547.569
tot	181	123.1124	48.02457	39.74359	315.625

Correlation Matrix

```
. pwcorr  cab cps ed fb reer tot, sig
```

	cab	cps	ed	fb	reer	tot
cab	1.0000					
cps	-0.1389	1.0000				
	0.0315					
ed	-0.1616	0.0725	1.0000			
	0.0122	0.2634				
fb	0.0529	0.3034	-0.0237	1.0000		
	0.4150	0.0000	0.7148			
reer	0.1488	-0.1990	-0.1559	-0.1697	1.0000	
	0.0217	0.0020	0.0161	0.0087		
tot	-0.0800	-0.3805	-0.1904	-0.3325	0.5730	1.0000
	0.2842	0.0000	0.0102	0.0000	0.0000	

Panel Unitroot Tests

```
. xtunitroot ips LogCAB

Im-Pesaran-Shin unit-root test for LogCAB
────────────────────────────────────────────

Ho: All panels contain unit roots        Number of panels  =       5
Ha: Some panels are stationary           Number of periods =      48

AR parameter: Panel-specific             Asymptotics: T,N -> Infinity
Panel means:  Included                                      sequentially
Time trend:   Not included

ADF regressions: No lags included
───────────────────────────────────────────────────────────────────────

                                             Fixed-N exact critical values
                    Statistic      p-value       1%      5%      10%
───────────────────────────────────────────────────────────────────────

  t-bar              -4.4919                   -2.420  -2.150  -2.020
  t-tilde-bar        -3.6933
  Z-t-tilde-bar      -6.1424        0.0000
───────────────────────────────────────────────────────────────────────



. xtunitroot ips LogFB

Im-Pesaran-Shin unit-root test for LogFB
────────────────────────────────────────────

Ho: All panels contain unit roots        Number of panels       =       5
Ha: Some panels are stationary           Avg. number of periods =   47.80

AR parameter: Panel-specific             Asymptotics: T,N -> Infinity
Panel means:  Included                                      sequentially
Time trend:   Not included

ADF regressions: No lags included
───────────────────────────────────────────────────────────────────────

                                             Fixed-N exact critical values
                    Statistic      p-value       1%      5%      10%
───────────────────────────────────────────────────────────────────────

  t-bar              -4.8918                        (Not available)
  t-tilde-bar        -3.8629
  Z-t-tilde-bar      -6.6142        0.0000
───────────────────────────────────────────────────────────────────────
```

```
. xtunitroot ips  LogCPS

Im-Pesaran-Shin unit-root test for LogCPS
─────────────────────────────────────────────

Ho: All panels contain unit roots          Number of panels  =       5
Ha: Some panels are stationary             Number of periods =      48

AR parameter: Panel-specific               Asymptotics: T,N -> Infinity
Panel means:  Included                                       sequentially
Time trend:   Not included

ADF regressions: No lags included
───────────────────────────────────────────────────────────────────────

                                            Fixed-N exact critical values
                    Statistic    p-value       1%      5%      10%
───────────────────────────────────────────────────────────────────────
 t-bar               -2.4615                 -2.420  -2.150  -2.020
 t-tilde-bar         -2.2932
 Z-t-tilde-bar       -2.2669      0.0117
───────────────────────────────────────────────────────────────────────



. xtunitroot ips   LogED

Im-Pesaran-Shin unit-root test for LogED
─────────────────────────────────────────────

Ho: All panels contain unit roots          Number of panels  =       5
Ha: Some panels are stationary             Number of periods =      48

AR parameter: Panel-specific               Asymptotics: T,N -> Infinity
Panel means:  Included                                       sequentially
Time trend:   Not included

ADF regressions: No lags included
───────────────────────────────────────────────────────────────────────

                                            Fixed-N exact critical values
                    Statistic    p-value       1%      5%      10%
───────────────────────────────────────────────────────────────────────
 t-bar               -1.9666                 -2.420  -2.150  -2.020
 t-tilde-bar         -1.8683
 Z-t-tilde-bar       -1.0908      0.1377
───────────────────────────────────────────────────────────────────────
```

61

```
. xtunitroot ips  LogREER

Im-Pesaran-Shin unit-root test for LogREER
─────────────────────────────────────────────

Ho: All panels contain unit roots        Number of panels  =       5
Ha: Some panels are stationary            Number of periods =      48

AR parameter: Panel-specific              Asymptotics: T,N -> Infinity
Panel means:  Included                                      sequentially
Time trend:   Not included

ADF regressions: No lags included
─────────────────────────────────────────────────────────────────────
                                             Fixed-N exact critical values
                   Statistic    p-value       1%      5%      10%
─────────────────────────────────────────────────────────────────────
 t-bar              -2.1019                  -2.420  -2.150  -2.020
 t-tilde-bar        -1.9715
 Z-t-tilde-bar      -1.3765      0.0843
─────────────────────────────────────────────────────────────────────
```

```
. xtunitroot ips  LogTOT

Im-Pesaran-Shin unit-root test for LogTOT
──────────────────────────────────────────────

Ho: All panels contain unit roots        Number of panels      =       5
Ha: Some panels are stationary            Avg. number of periods =  36.20

AR parameter: Panel-specific              Asymptotics: T,N -> Infinity
Panel means:  Included                                      sequentially
Time trend:   Not included

ADF regressions: No lags included
─────────────────────────────────────────────────────────────────────
                                             Fixed-N exact critical values
                   Statistic    p-value       1%      5%      10%
─────────────────────────────────────────────────────────────────────
 t-bar              -1.6162                       (Not available)
 t-tilde-bar        -1.5738
 Z-t-tilde-bar      -0.3370      0.3681
─────────────────────────────────────────────────────────────────────
```

Pedroni Cointegration

```
xtset country time

xtpedroni Logcab Logcps Loged Logfb Logreer Logtot, nopdols

xtpedroni cab cps ed fb  reer tot, full notest

Pedroni's cointegration tests:

No. of Panel units: 5         Regressors: 5

No. of obs.: 240              Avg obs. per unit: 48

Data has been time-demeaned.


        ---------------------------------------

          Test Stats. |     Panel      Group

        ----------------+----------------------

                    v |     .7353          .

                  rho |    -3.641       -2.991

                    t |    -5.514       -5.658

                  adf |     -2.41       -2.752

        ---------------------------------------

All test statistics are distributed N(0,1), under a null of no
cointegration, and diverge to negative infinity (save for panel v).
```

Pooled Mean Group

```
-----------------------------------------------
                      PMG)            (Mg)
                   D.LogCAB        D.LogCAB
-----------------------------------------------
ECT
LogFB               0.2050**         1.3460
                    (2.24)          (1.71)

LogCPS             -0.8288***       -2.8336**
                   (-4.32)          (-2.80)

LogED               0.2000***       -1.2987
                    (3.60)          (-0.19)

LogREER            -0.6967**         0.9333
                   (-2.38)          (0.97)

LogTOT             -0.4376*          2.0505
                   (-2.88)          (1.27)
-----------------------------------------------
SR
ECT                -0.5613***       -0.754***
                   (-3.53)          (-7.69)

D.LogFB             0.0925**        -0.0389
                    (2.95)          (-0.12)

D.LogCPS           -0.4513          -1.257*
                   (-1.37)          (-2.11)

D.LogED            -0.6199          -0.567
                   (-1.64)          (-1.52)

D.LogREER          -0.3885          -1.990
                   (-1.73)          (-0.97)

D.LogTOT            0.1574          -0.575
                    (0.46)          (-1.04)

_cons               9.5935***       -0.00556
                    (3.64)          (-0.00)
-----------------------------------------------
N                   172             172
-----------------------------------------------
t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001
```

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Appendix VII: Abstract of Published Paper

A Pooled Mean Group Analysis on the Determinants of Current Account Balance in the East Africa Community

Kevin Wanjala[1], Aquilars Mutuku Kalio[2], Symon Kiprop[3]

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Abstract: *Since 2010 the current account balance of the East Africa Community Countries has been deteriorating. The countries namely, Kenya, Uganda, Tanzania, Burundi, and Rwanda have maintained current account deficits that are above five percent of their GDP. This pattern raises doubts about the sustainability of these deficiencies and the resulting debts amassed to fund them. If not addressed the deficits may erode the bloc's competitiveness in addition to hampering the fiscal development of the member nations. It is against this backdrop therefore that this study sought to examine the determinants of Current Account Balance for the 5 East Africa Community countries. It sought to analyze the long-term and short-term impacts of the select macroeconomic variables in regards to the current account balance by utilizing the Panel ARDL approach. The study period spanned from 1970-2017 based on data availability and the period being ample to measure both the long- and short-run results. I'm, Pesaran and Shin (IPS) test for Stationarity and Pedroni test for Cointegration were applied to the data, after which dynamic panel data regression techniques i.e. the Pooled Mean Group was applied as suggested by the Hausman specification test. The study established that external debt positively affects the current account balance in the EAC, credit to the private sector which was used as a proxy to financial liberalization negatively affects the current account balance both in the short-run and the long-run. The fiscal balance was established to give a positive effect on the current account balance both in the short- and long-run. The actual effective exchange rate negatively affects the current account balance both in the short- and in the long-run. Finally, Terms of Trade negatively impacts on the current account balance in the long run.*

Keywords: Current Account Balance, ARDL, Pooled Mean Group, East African Community

1. Introduction

Regardless of the comparatively extensive hypothetical and experiential literature, there exists no consent on the determinants of current account balance particularly among the nations that have come together to form regional integration such as the EAC community. Therefore, the performance, character, and determinants of the current account balance is still an experimental issue in various regions. To evaluate the determinants of the current account balance for the region, it's imperative, therefore, to make use of some models of current account balance determination.

Traditionally, economists have relied on elasticity, monetary and absorption methodologies as they try to establish evidence for the determinants of the current account balance. These approaches have been widely used with the notion that the chief component of the current account balance is trade balance, namely, the value of imports and exports of commodities and services. Consequently, much emphasis has been placed regarding the movement of real exchange rate and Gross Domestic product by relating them with the substitution and income effects in consumer demand theory. From a theoretical standpoint however, the shortcoming of this approach is that it is based on the assumption that the changes in exchange rate is not a critical factor in trade balance, and that the effect in the growth of income as a result of exogenous increase in demand is the same as that caused by the expansion of supply. This assumption poses an empirical challenge as it may become harder isolating stable association among current account balance, exchange rate, and changes when it comes to income.

Faced with problems that emanate from the weaknesses of elasticity and monetary approaches, economists led by Sachs (1981), Buiter (1981) and Obstfeld and Rogoff (1995) developed an alternative approach that concentrates on an economy's saving-investment nexus. The assertion was that the current account balance reflects the aggregate net savings within the financial system. The proponents of this proposition postulated that net savings draw attention to the factors that directly influence it. Specifically, they assert that the real interest rate, as well as the variations in the current and future, are likely to have a significant effect on the saving behavior of households and investment decisions of firms.

Other variables that are likely to have significance as determinants of the current account balance is fiscal policy such as corporate and personal income taxes. The current account balance and the fiscal policy relate vividly using this approach as opposed to the traditional approaches. The justification for this is that the net saving can be loosely interpreted as the fiscal surplus plus the private savings minus private investment.

1.1 Trends for East Africa Community's Current Account Balance

East Africa community countries just like other developing countries are among the countries worst affected by the current account deficit. These countries are characterized by economies formed on the basis of markets, with various infrastructure projects that are owned by the state, laissez-faire kind of external systems of trade and their present accounts have continuously witnessed constant discrepancies. These countries gained independence around the same time