DETERMINANTS OF BALANCE OF PAYMENTS AMONG COUNTRIES IN EASTERN AFRICA

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A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND GRADUATE TRAINING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER OF ARTS IN ECONOMICS OF KYAMBOGO UNIVERSITY

MAY, 2024

DECLARATION

I, Mutale Robert, hereby declare that this dissertation titled ‘‘Determinants of Balance of Payments among countries in Eastern Africa’’ is entirely original and has never been submitted to any university purpose of obtaining of a degree.

SIGNATURE……..DATE……..

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APPROVAL

This dissertation titled ‘’Determinants of Balance of Payments among countries in Eastern Africa’’ has been endorsed by us as academic supervisors.

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DEDICATION

I dedicate this dissertation to my grandfather the Late Hamis Kasake, my mother the Late Sarah Nakalyango Naalongo and father Mr. Joseph Musisi.

ACKNOWLEDGEMENT

I want to convey my appreciation to my supervisors Dr. Victoria Kakoooza and Dr. John Sseruyange who guided me when I was conducting this research project.

I wish to convey my sincere appreciation to my lecturers who have imparted their knowledge, expertise, and passion for the subject in me. Their dedication to teaching and commitment to providing a high-quality education have been instrumental in shaping my understanding of economics.

In addition, my thanks go to Dr. Dickson Turyareeba, Rev. Tibihika Amon, Mr. and Mrs. Sserunjoji Fred, Mr. Kimuli Fred, Mr. Kayongo Uthman, Ms. Nabbossa Norah, Ms. Nasaazi Florence and Ms. Nansubuga Molly for the moral support they gave me when I was studying.

I also thank my father Mr. Musisi Joseph for all his financial and moral support. And finally, I am grateful to the Divine for the blessings He has poured onto me.

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LIST OF ACRONYMS

AfDB	African Development Bank
ARDL	Autoregressive Distributed Lag
BOP	Balance Of Payments
DOCR	Domestic credit to private sector
EXRATE	Official exchange rate
FDIs	Foreign direct investments
FEM	Fixed Effects Model
GCF	Gross Capital Formation
GDP	Gross Domestic Product
INFL	Inflation
IMF	International Monetary Fund
LLC	Levin, Lin and Chu
MONE	Money supply
OLS	Ordinary Least Squares
REM	Random Effects Model
TRADE	Trade openness
VIF	Variance Inflation Factor
WDIs	World Development Indicators

ABSTRACT

Balance of Payments plays a crucial role as an economic indicator, giving valuable perspectives on economic exchanges of a nation on the global stage. Despite its significance, numerous African nations consistently grapple with deficits in their BOP, lacking clear explanations for such shortfalls. This dissertation employs fixed effects and random effects estimations to investigate the determinants of BOP, focusing specifically on Eastern African countries. Drawing upon data from World Bank development indicators spanning from 1991 to 2021, the study utilizes various econometric techniques to discern underlying trends. Key findings reveal that foreign direct investments exert a positive influence on BOP, while money supply, gross domestic product and trade openness exhibit negative impacts. Specifically, foreign direct investments emerge as statistically significant drivers, suggesting the need for policies that encourage and facilitate their inflow. In light of these results, fostering an environment conducive to foreign direct investment through incentives, infrastructure investment, and the establishment of favorable legal frameworks are recommended. Additionally, certain variables were found to have negligible impact on BOP, underscoring the importance of focusing efforts on factors proven to be statistically significant.

CHAPTER ONE: INTRODUCTION

1.1Back ground of the study

BOP refers to a complete overview of economic dealings occurring between residents of a specific country and individuals from other countries within a defined period of time (IMF, 2009). It gives a thorough account of how a nation interacts economically with the entire world. According to Mwangi (2014) BOP consists of three main elements, namely; the current account that keeps track of all business dealings, income flows and unilateral transfers involving the exchange of products and services. It consists of financial transfers like foreign aid and remittances as well as imports and exports of products (visible commerce), imports and export of services (invisible trade) and income from investments overseas. The capital account monitors the movement of capital transfers as well as the purchase or sale of non-financial assets. It entails actions like the acquisition or disposal of fixed assets, the change in ownership of natural resources and the cancellation of debt. And the financial account that comprises of assets and obligations, including portfolio investments, direct investments and other investments (such loans and banking deposits). It shows changes in who owns financial assets residents and non-residents between them.

Each transaction is noted as a credit or debit item in a double-entry accounting system. Since every transaction has an equal and opposite entry, the current account, financial account, capital account, should potentially total up to zero (Krugman&Obstfeld, 1998). The surplus or deficit in BOP shows whether the country is a net borrower or lender in its economic transactions with the entire world. A surplus show that the economy is bringing in more foreign aid than it is expelling, at the same time as a deficit says that the reverse is true. BOP is a vital instrument for assessing a nation's economic ties to other countries, its level of competition and its capacity to meet its external debts.

Kenya, Tanzania, Rwanda, Burundi, Ethiopia, Sudan, Uganda, South Sudan and other nations make up the region of Eastern Africa(United Nations, 2013). These nations' and other developing countries' BOP positions are determined by the variety of factors (Kariuki,2009). Policymakers, economists, and academics in abide to establish efficient policies and strategies so as to improve economic performance and advance sustainable development, it is crucial for them to comprehend the variables that impact BOP in the region so as to gain meaningful insight into the phenomenon (Abille et al., 2022).

In this study, the important determinants that are to be examined include foreign direct investments, money supply and gross domestic product. By examining these determinants and their impact on BOP in Eastern Africa, this study strives to make a meaningful contribution to a better understanding of the economic dynamics in the region and provide insights for policymakers to formulate effective strategies to aid the achieving of favorable BOP.

According to Aidi et al. (2018), it is a desire of policy makers is to see that economies attain favorable and stable BOP. Therefore, over years most countries in the region have had unfavorable BOP and this is due to a number of crucial factors some of which this study attempts to explore. It is known that factors that adversely affect international trade simultaneously affect BOP (Abille et al., 2022). Such factors include; foreign direct investments, money supply, official exchange rate, GDP, real interest rate, trade openness and many others.

Countries in the region started gaining independence in the late 1950's and early 1960's , there was a lot of hope that the economic leaders would use the chance to create domestic policies that would help the region realize economic balance not only at domestic but also at international levels (Mabior, 2014).The hope resulted from the zeal with which these nations sought their independence. However, only modest progress has been made towards obtaining the internal balance of economies, nearly seven decades after colonial-era and much less the external economic balance.

Though they have not significantly advanced the economies of their nations towards full employment, it is evident that the economic directors in the region are fixated on the conventional monetary and fiscal policies (Bynoe, 1994). The main reason behind is caused by the design of the economies, which are highly affected by external factors, and the pitiful lack of independence exhibited by the institutions in charge of carrying out these policies.

For many years, most countries in the region and Africa at large have consistently experienced. BOP deficits of countries in the region are averaging 4.7% of GDP (World Bank, 2023).Economies not only struggle with maintaining stable internal economic conditions but also encounter imbalances in their external economic relationship. The countries in the region heavily rely on one another, as indicated by the substantial portions of their products that are both exported and imported.

Even though the majority of countries in the Eastern Africa and Africa at large have consented to at least one or more economic groupings so as to stimulate trade among members, these nations still lose out on trade liberalization policies without any significant advancement in the living standards of their populations (Abille et al., 2022). In fact, it is uncertain whether Eastern Africa nations have greatly benefited from the open economy system's advantages, particularly through the commerce channel and the doubt is worsen by the unfavorable BOP as shown in the graph below.

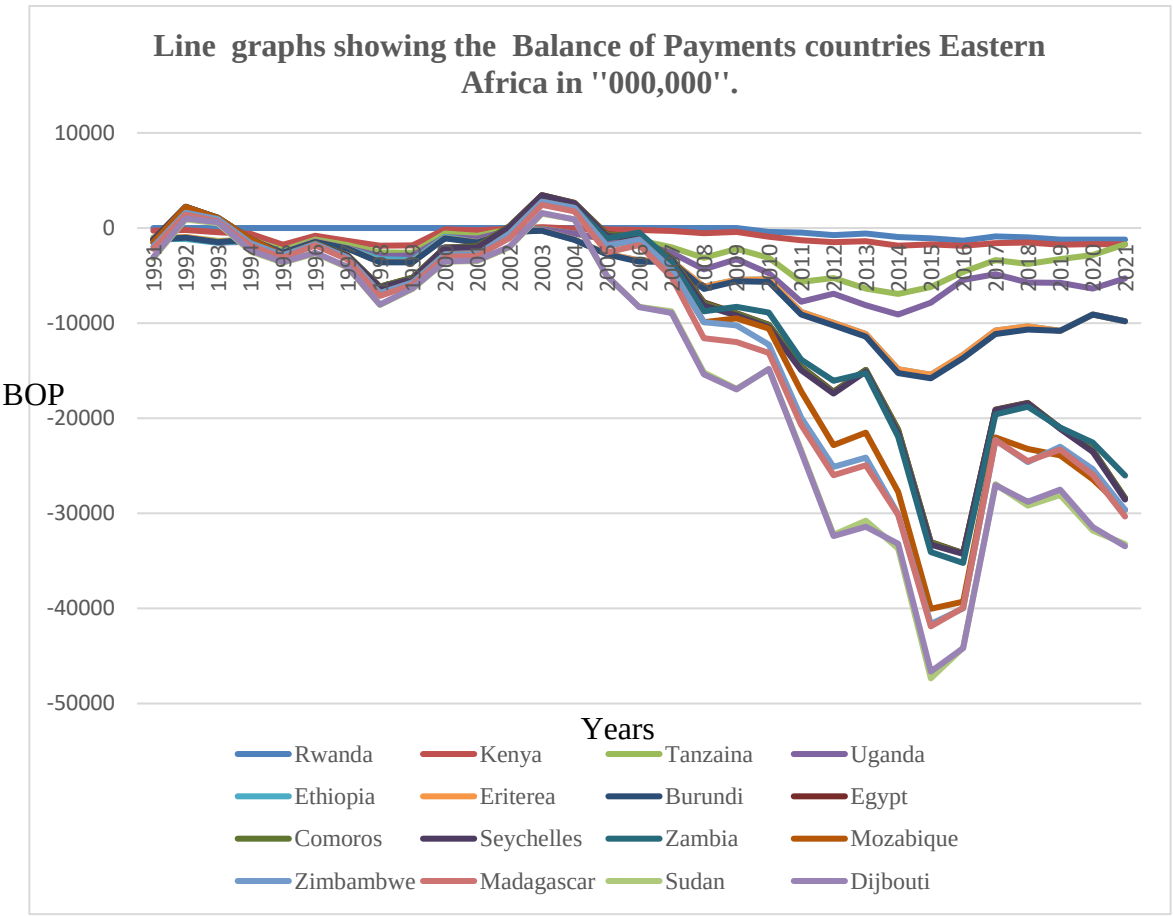

Figure1. 1: Line graphs showing BOP Positions of countries in Eastern Africa.

Source: Author's illustration based on World Bank data spanning from 1991 to 2021.

The majority of proponents of trade liberalization stress that trade generates income and that there is a high likelihood that the nation will gain greatly from the benefits of trade that could significantly raise the living standards of its citizen.

However, in these countries, this seems to be unachievable for the reason that the majority of the region’s advanced western trade partners occasionally use the region as a depository for

the majority of their goods (Abille et al., 2022). In fact, the region has been considered as the raw material source to feed companies in the more developed countries, in addition to being taken as center where substandard goods are discarded. As a result, Eastern African countries continue to a struggle with a range of issues, including persistent and long-term BOP deficits in addition to long-term fiscal deficits and rising public debt, Eita and Macbior (2014)are two studies that showed this clearly.

1.2 Statement of the problem.

BOP serves as an extensive indicator of economic engagements of a country with the global community, playing a pivotal role in indicating its external economic ties. Within the sphere of Eastern Africa, grasping the factors influencing the BOP becomes crucial for nurturing economic stability, fostering sustainable development, and bolstering regional integration. Despite the escalating significance of Eastern Africa in the global economic landscape, there exists a notable scarcity of thorough investigations into the factors steering its BOP dynamics.

Recent data underscores the urgency of such inquiries. As per the "Africa's Pulse" report by the World Bank (2023), Eastern Africa observed a widening current account deficit, averaging 4.7% of GDP in 2022—an evident surge from prior years. Additionally, insights from the African Development Bank (AfDB) reveal fluctuating BOP positions among Eastern African nations, with certain countries persistently grappling with deficits while others sporadically achieve surpluses (AfD Bank, 2022).

These findings raise pivotal inquiries regarding the fundamental determinants fueling these trends. Addressing these queries is paramount for policymakers, economists and stakeholders to craft efficacious strategies aimed at fostering sustainable economic expansion, fortifying financial resilience and nurturing deeper economic collaboration within the region.

Consequently, this research endeavors to bridge this void by conducting an exhaustive examination of the determinants influencing the BOP in Eastern Africa. Through the application of rigorous empirical methodologies, theoretical frameworks, and statistical analyses, this study aims to furnish valuable insights capable of guiding policy formulation, informing investment decisions and enriching the ongoing dialogue on economic advancement and integration in Eastern Africa.

1.3 Objectives of the study

This research examines the determinants of BOP among countries located in Eastern Africa.

1.3.1 Specific objectives

i. To investigate the influence of FDIs on BOP in Eastern African countries.
ii. To investigate the effect of money supply on BOP in Eastern African countries.
iii. To investigate the impact of GDP on BOP in Eastern African countries.

1.4 Hypotheses of the study

H_{o1}: FDIs have no significant impact on BOP in Eastern Africa.

H_{a1}: FDIs have a significant impact on BOP in Eastern Africa.

H_{o2}: Money supply does not have a significant impact on BOP in Eastern Africa.

H_{a2}: Money supply has a significant impact on BOP in Eastern Africa.

H_{o3}: GDP has no significant impact on BOP in Eastern Africa.

H_{a3}: GDP has a significant impact on BOP in Eastern Africa

1.5 Significance of the study

Theoretical and empirical literature exists that explains the factors that influence BOP, but such literature provides a mixture of conclusions. Studies by Imoisi et al. (2013), Proso et al. (2016) and many others show that it is a monetary phenomenon, whereas Kennedy (2013), Edward (2022), Boateng et al. (2013) and many others show that it is not fully a monetary phenomenon. Such a mixture of conclusions drives this study. So, this study fills that gap through examining the impact of FDIs, money supply and gross domestic product on BOP.

This study is advantageous to Eastern African governments as it aids them in comprehending the influence of these factors on the BOP. As a result, these factors must be considered crucial when formulating both national and international policies. The study expands the knowledge about BOP so as to enable both private and public sectors to comprehend the impact of economic growth and money supply on the economy and particularly on BOP. In

essence, the study's significance lies in its comprehensive approach, offering valuable insights into foreign direct investments, money supply and gross domestic product on how they impact on BOP. Consequently, it has the potential to support evidence-based decision-making, leading to sustainable economic growth and progress in the Eastern African region.

1.6 Scope of the study

This study investigates the BOP among countries in the Eastern African region. The study excludes Somalia because its data is not fully available. It covers a period of 30 years using data of World Bank WDIs spanning from 1991 up to 2021 because data for other years is not fully available. The independent variables the study uses are; FDIs, money supply, GDP, domestic credit to private sector, GCF, official exchange rate, inflation and trade openness. The study uses panel regressions in order to illustrate the connection between each independent with the dependent variable.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter introduces the theoretical framework on the BOP, empirical literature and research gap that is filled with this study**.**

2.1 Examination of theoretical literature

This section provides a review of various theories regarding the BOP. Specifically, it examines the elasticity, absorption and monetary approaches.

2.1.1 The Elasticity Approach

Alfred Marshall and Abba Lerner created this strategy in 1923 and 1944 respectively. The method shows how alterations in currency value or the rate of exchange impact the economy's BOP. It is presumptive that if BOP is at symmetry depreciation can strengthen the position of BOP. Devaluation should, however, take into account the Marshall-Lerner ideal scenario for BOP to improve. This implies that the overall price elasticity for domestic and international demand for imports and exports must be above 1 for devaluation to enhance the devaluing country's BOP. Devaluation will therefore result in an increase in BOP surplus. On the other hand, if the total elasticities are less than 1, devaluation will result in a BOP deficit.

In its basic essence, the elasticity approach centers around the current account and seeks to comprehend the circumstances in which fluctuations in exchange rates can correct price disparities in global trade. These imbalances are considered a primary rationale for imports being valued more than exports. The examination employs the Marshallian partial equilibrium theory to investigate the market dynamics of imports and exports.

When considering capital movements, price level domestically differs from the global price level. Devaluation may not only result in an enhancement in BOP, it would boost BOP if the elasticity conditions were true (and assuming a stable foreign exchange market).

The phenomenon referred to as the Marshall-Lerner condition tackles this concept. It asserts that when the combined elasticities of imports and exports add up to one, any alteration in the EXRATE will have no impact on the trade balance .When the sum is below one, devaluation of the currency will worsen the BOP, whereas an appreciation will improve it (Haberler, 1949).

2.1.2 Income-absorption approach

The impact of changes in exchange rates on BOP is solely dependent on the import responsiveness of both domestic and foreign goods, as indicated by the elasticity approach to analyzing devaluation. This implies that the effects of devaluation will be reflected in the relative price changes that occur. This analysis assumes that income remains constant, disregarding the impact of devaluation on income multipliers. Alexander (1952) disapproves the elasticity approach, considering it a partial equilibrium analysis and suggests an option strategy called the absorption strategy (Keynesian approach). The absorption strategy is based on Keynesian principles of national income relationships and takes a general equilibrium perspective in contrast to the elasticity method, which emphasizes price consequences; the absorption approach scrutinizes the impacts on income. The balance of trade of the economy will improve only if the yield of goods and services surpasses the country's absorption (domestic spending on goods and services). If a nation has a BOP shortfall, it means that its consumption exceeds production, indicating that domestic spending on consumption and investment surpass the nation's income

If there is an excess in BOP, it signifies that national revenue exceeds domestic consumption. According to this definition, BOP illustrates the variance between national income and domestic expenditure. In simpler terms, the current account balance indicates the space between domestic absorption and national income. Therefore, increasing national revenue or reducing domestic consumption can both contribute to enhancing BOP. This situation arises when total absorption (expenditure) surpasses income (production), leading to imports exceeding exports and creating a BOP shortfall."

The primary rationale behind the absorption strategy is that if devaluation does not successfully decrease domestic absorption, elasticities of price alone might not be adequate to achieve a positive impact on the BOP. The national income identity forms the initial foundation for the absorption approach.

2.1.3 The Monetary Approach to BOP determination

BOP monetary approach emerged during the Nineteen-sixties as part of a resurgence of monetarist and anti-Keynesian ideas. Elements of this approach can be marked back to Alexander's exposition of the absorption approach in 1952. While the understanding of the connection between the domestic and foreign sectors of an economy via the monetary sector is attributed to Hume's mechanism of price specie flow in 1752. The hypothetical exploration of the monetary approach gained power with the research of (Mundell, 1971) and (Mussa, 1974).

Concerning the variances in money supply and demand, the monetary perspective examines imbalances in BOP. Within the framework of a general equilibrium strategy, this approach focuses on studying the monetary account of the BOP. Consequently, the BOP is considered a monetary phenomenon in small open economies like those of Eastern Africa, which can be corrected through monetary adjustments. According to Johnson (1975) these imbalances are considered "stock" imbalances rather than flow imbalances.

The monetary perspective on BOP explains the way disparities in the money market can affect the by and large BOP, as calculated by international reserves. When there is an excess of money in circulation, local consumers tend to increase their spending on foreign goods and services, especially in a fixed exchange rate system. As a consequence, BOP deteriorates because these purchases need to be rewarded for by depleting reserves. The reduction in foreign exchange reserves leads to a money supply cut until it reaches equilibrium with the required amount of money.

Central banks have the ability to address excessive money supply and restore monetary balance by selling foreign exchange reserves and purchasing domestic currency, particularly in a fixed exchange rate system. This approach aims to minimize the depletion of international currency holdings and bring balance in the BOP. As individuals need to generate domestic currency through the export of goods and securities to foreign market, when there is an excessive demand for money, it triggers an opposite adjustment that leads to an increase in the surplus of the BOP.

To realize balance, central banks will acquire surplus foreign currency and domestic securities, which in turn encourage the inflow of foreign exchange reserves. It is important to note that without appropriate constraints on domestic credit, any efforts to enhance the BOP will likely fail. Therefore, factors such as long-term full employment of the economy, domestic credit control under a fixed or pegged exchange rate, the absence of monetary authority sterilization, and consistent demand for money functions all fulfill a function in resolving imbalances in BOP.

2.2 Empirical literature review

The empirical studies indicate diverse studies on BOP in different countries by various scholars.

2.2.1 FDIs and BOP

Many studies demonstrate the impact of foreign direct investments on the BOP. For instance, Kennedy (2013) looked at the long-term factors that affect Kenya's BOP. The study shows that FDIs and exchange rate as the key determinants for BOP. To more specific, FDIs and exchange rate bare a positive impact on the BOP.

Edward (2022) using the ARDL when analyzing the determinants of the BOP of Nigeria on data obtained from the annual statistics from 1981 to 2019. Results show an inverse and significant effect of exchange rate on BOP. However, this effect is only in the long term but, in the short-run, exchange rates cause a positive impact on Nigeria’s BOP statement. Moreover, the coefficients for FDI, GDP expansion, interest rates, and the price of crude oil are positive and significant.

Similar to the above, Kovacevic (2017) , using nine South East European nations, including Bulgaria, Romania, Croatia, Serbia, Moldavia, Bosnia and Herzegovina, Albania and Montenegro from 2000 to 2015. He uses the panel data approach and results show that net foreign direct investments inflows bare a positive impact on the BOP whereas real effective exchange rate bare a negative significant impact on the BOP.

Besides the above, Nwanosike et al.(2017) in their attempt to analyze the impact of currency depreciation on BOP of Nigeria examined from Marshall Lerner perspective. Foreign direct investment inflows, trade openness and exchange rates are used in the study, 2.28138 percent

is realized as the average BOP decline of the country after currency devaluation. Results show negative relationship between BOP and the three variables.

2.2.2 Money supply and BOP

Numerous studies present the impact of money supply on the BOP. For instance, Imoughele& Ismaila (2015) investigated the impact of monetary policy on the BOP in Nigeria. Time-series data spanning from 1986 to 2013 underwent analysis. Specifically, they identified that the exchange rate, broad money supply, and credit to the private sector as the primary monetary factors. To be more specific, results show a positive significant impact of money supply on BOP.

Similarly, Imoisi et al. (2013) conducted a study to examine the effectiveness of monetary policy in achieving BOP stability in Nigeria. The estimated findings indicate a positive connection between BOP and the monetary factors, including Money Supply, Exchange Rate, and Interest Rate.

Additionally, Danmola& Olateju (2013) examined the effects of monetary policy on the various components of the current account in Nigeria from 1970 to 2010. The research findings indicate that money supply and other variables have a positive influence on BOP, except exchange rate which showed a negative influence.

Nevertheless, Ajayi (2014) investigated the factors influencing BOP in Nigeria from 1970 to 2010. The research utilized the co-integration method; the findings reveal a significant negative relationship between monetary policy instruments which are monetary policy rate and money supply on BOP.

However, Proso et al. (2016) investigated the influence of monetary policy, specifically money supply, interest rate and exchange rate on the BOP in Nigeria from 1980 to 2015. It was observed that money supply and interest rate have a significant positive relationship with BOP.

Furthermore, Osisanwo et al. (2019) using the bound testing approach as analyzing Nigeria's BOP from 1980 to 2015. Results portray a negative connection between GDP and the BOP. Also results show that money supply has a long run impact on the BOP adjustments.

2.2.3 Gross Domestic Product and BOP

A variety of studies present the impact of GDP on the BOP and some include; Efanga et al.(2020) who used the ARDL Model to analyze Nigeria's economic growth. Results show that GDP and BOP have a positive relationship whereas imports are negatively related to BOP.

Similarly, Mwangi (2014) revealed that the impact of GDP growth rate, budget deficit, and official exchange rate on the BOP is positive. In contrast, inflation exerts a negative impact on BOP. Nevertheless, the impact of Gross Capital Formation (GCF) as a proxy for investment and savings on the BOP remains unclear.

Additionally, Batool et al. (2022) who used the data set from 1972 -2013 to scrutinize Pakistan's BOP determinants. They used the ARDL; the study presents a short and long run positive association between BOP and GDP growth.

On the flip side, Nwani (2004) indicated that terms of trade and GDP demonstrate a favorable association with the BOP. In contrast, the exchange rate, inflation, and trade openness reveal an adverse connection with the BOP. On the other hand,Chinn & Prasad (2003) found out the trade openness is negatively related with BOP.

Never the less, Mohammed et al. (2017) used the Vector Error Correction Model approach to scrutinize the determinants of Sudan's BOP from 1980 to 2016. The findings of their study reported a significant negative impact of inflation, foreign debt, GDP and exchange rate on the BOP.

In a study by Boateng et al. (2013) the BOP of Ghana was examined using a monetary approach and econometric models on data spanning from 1980 to 2010 were used. Specifically, interest rate, GDP growth and domestic credit rate are identified as significant factors. The study reveals a negative impact of interest rate, domestic credit and foreign assets on the BOP. GDP growth also shows a positive connection with the BOP.

In conclusion, Eita used co integrated vector auto regression techniques to investigate the macroeconomic factors that affected Namibia's BOP from 1999 to 2009. The results of his study show that the primary factors that impact on Namibia's BOP are the GDP, fiscal

balance, and interest rate, with an enhancement in the BOP resulting from rising GDP and interest rates.

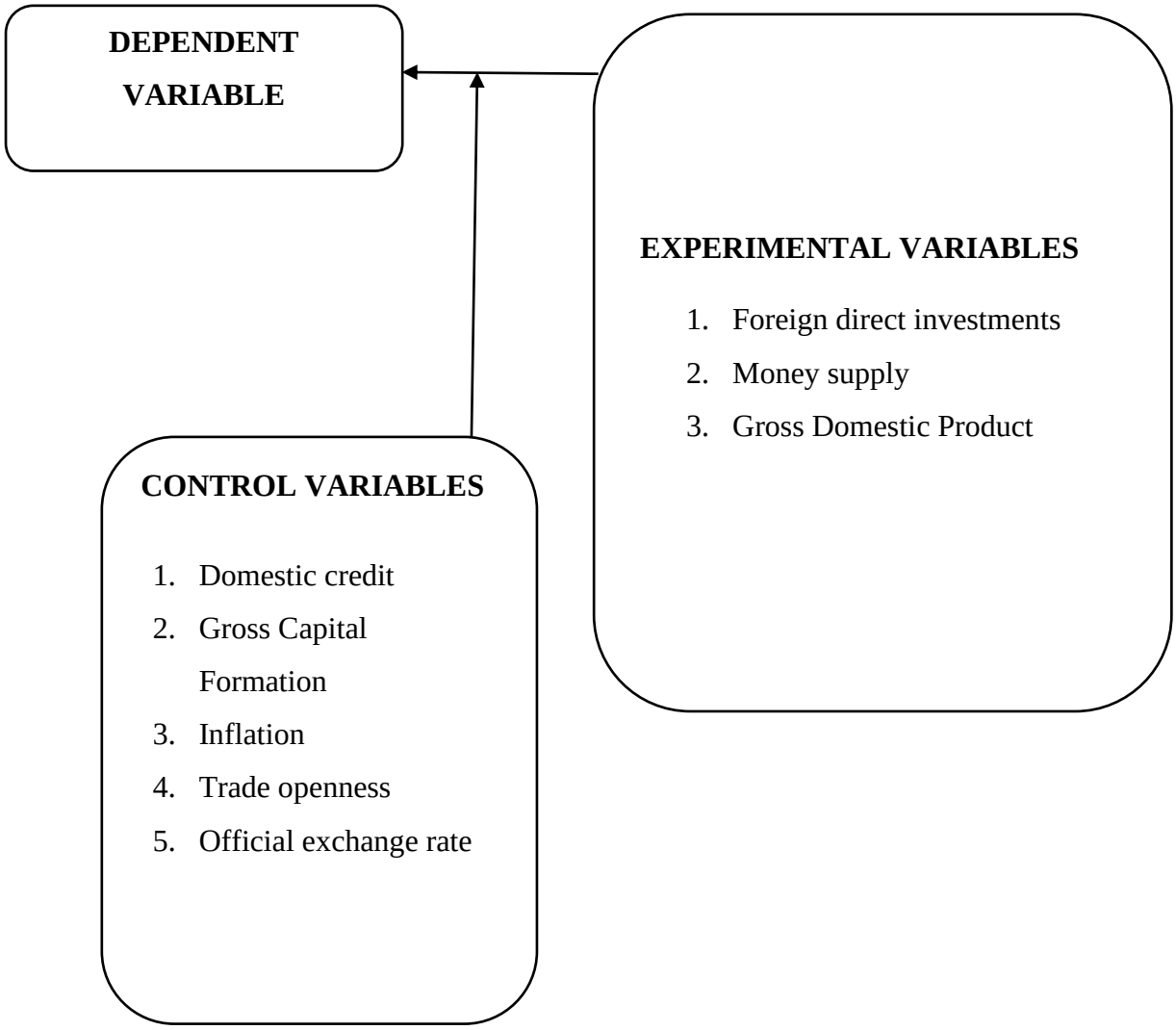

Figure2. 1: Conceptual frame work

Source: Author's compilation.

According to the above reviewed literature, **experimental** variables are on the right-hand side of the dependent variable and these include**;** foreign direct investment, money supply and GDP, commonly impact on the BOP in various countries. However, to a smaller, extent variables below the dependent variable such as domestic credit, gross capital formation, inflation, trade openness and official exchange rate rarely impact on BOP.

2.3. Summary of Literature and Research Gap

Multiple research studies have examined the factors influencing BOP in different countries. However, these empirical studies present conflicting viewpoints regarding the variables that impact on BOP. Some studies show a direct whereas others an indirect relationship of the same variable with BOP as shown above.

Unfortunately, there is a lack of comprehensive and clear literature on the factors driving the BOP specifically in Eastern African countries. Therefore, further research is needed to understand the unique dynamics of FDIs, monetary supply, and GDP impacts on BOP in Eastern African countries.

CHAPTER THREE: METHODOLOGY

3.0. Introduction

The chapter comprises of key elements of the methodology to applied beginning with analysis plan, model specification, variable definition and diagnostic tests.

3.1 Analysis plan

To examine the factors influencing BOP among Eastern African countries, panel models are utilized to estimate the data obtained from the WDIs of the World Bank spanning from 1991 up to 2021. Panel models are favored in this analysis due to their ability to improve efficiency, control for unobserved variations, and address issues of endogeneity and omitted variable bias. The utilization of panel data offers several advantages as it allows for examining both within-country and between-country effects, resulting in more reliable estimates and better control over unobservable differences and variables that are not observed (Cortes,2016).The anticipated estimation procedure involves examining multicollinearity through the pair wise correlation test and unit root test to test for stationary of variables. REM and FEM are performed subsequently; the Hausman test is conducted to decide the most suitable model. The normality test, serial correlation test, heteroscedasticity test, cross sectional dependence test, and functional form misspecification test are performed to ensure that the chosen panel data model is appropriate.

3.2 Model specification

The generalized model in matrix form is specified as:

$$Y = XB + U \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where:

Y - is the BOP vector.

X-is the matrix of all independent variables.

B- is the vector of coefficients.

U-is the error term vector.

More specifically, equation (1) is presented as follows:

$$logBOP_{it} = \beta_0 + \beta_1 logFDI_{it} + \beta_2 logMONE_{it} + \beta_3 logGDP_{it} + \beta_4 logGCF_{it} + \beta_5 logDOCR_{it} + \beta_6 INFL_{it} + \beta_7 TRADE_{it} + \beta_8 logEXTRATE_{it} + U_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

FDI represent foreign direct investments, GDP represents the gross domestic product and GCF represents gross capital formation which provides a broader measure of investment. DOCR represents domestic credit to the private sector, MONE represents the money supply, INFL represents the inflation rate, TRADE represents the degree of openness to trade and EXTRATE represents the official exchange rate.

3.3 Variable definition, along with anticipated direction of effect and the sources of data

The study uses data spanning from 1991 up to 2021, from WDIs by World Bank to examine the determinants of BOP among countries in Eastern Africa. Foreign direct investments, GDP, money supply, GDP, and domestic credit to the private sector, gross capital formation as a proxy for investment, inflation, official exchange rate and trade openness are variables that the study uses

Table 3. 1: Variable definitions, including anticipated signs and data sources.

Variables	Description	Source	Expected sign
BOP	Due to the fact that data about other Balance of Payment's accounts is scarce and the available one is unreliable, BOP which is the dependent variable is represented by the current account balance. The current account of BOP represents the combined value of net exports of goods and services, net primary income, and net secondary income(IMF, 2009). The data is presented in terms of current U.S. dollars	World Bank WDIs (2022)	
FDIs	Foreign direct investments (FDIs) represents the aggregate of direct investment equity flows within an economy, encompassing reinvestment of earnings, equity capital, and other types of capital (Carkovic& Levine, 2005) The data is reported in current U.S. dollars.	World Bank WDIs (2022)	+
GDP	Gross domestic product (GDP) at purchaser's prices is derived by aggregating the gross value added products by domestic producers, (Anyanwu &Yameogo, 2015)The data is reported in terms of current U.S. dollars.	World Bank WDIs (2022)	+
GCF	Gross capital formation (GCF), previously referred to as gross domestic investment, encompasses expenditures aimed at increasing the economy's fixed assets and changes in inventory levels (Lucky & Uzah, 2016). The data is presented in terms of current U.S. dollars.	World BankWDIs (2022)	+
DOCR	Domestic credit (DOCR) to the private sector refers to the allocation of financial resources from financial institutions to non-governmental entities, encompassing loans, non-equity securities purchases, trade credits, and other types of receivables. These transactions create a repayment obligation (Bonga & Nyoni, 2017). The data is presented in terms of current U.S. dollars.	World Bank WDIs (2022)	-
MONE	Money supply (MONE) is the total amount of currency held outside of banks, demand deposits (excluding those of the central government), time deposits, savings deposits, foreign currency deposits held by resident sectors other than the central government, bank and traveler's checks, and other securities(Adediyan, 2020). The data is presented in terms of current U.S. dollars.	World Bank WDIs (2022)	+
INFL	Inflation (INFL) refers to the yearly expansion rate of the prices (Kilindo, 2017). GDP implicit deflator serves as an indicator of inflation, representing the rate at which prices change in the overall economy wide of World Bank Percentage (%).	World Bank WDIs (2022)	-
TRADE	Trade openness (TRADE) refers to the summation of goods and service exports and imports expressed as a percentage of gross domestic products (Mbogela, 2019).	World Bank WDIs (2022)	+
EXRATE	Official exchange rate (EXRATE) pertains to the exchange rate established by the government or recognized exchange market (Teklay, 2017). It is computed in average form over the course of a year, using monthly averages as the basis. (Local currency units relative to the U.S. dollar).	World BankWDIs (2022)	-

3.4 Model diagnostic tests and estimation techniques

The study carries out the normality test to find out whether residual terms follow a normal distribution. The study uses Shapiro & Wilk (1965) that have been found to be more suitable than Jarque-Bera. The null hypothesis posits that the error term follows a normal distribution. The analysis employs the scaled LM test proposed by Pesaran (2004) to test presence of serial correlation having null of no serial correlation absence , the CD test also introduced by Pesaran (2004) to test cross sectional dependence with a null of absence of cross sectional dependence, Breusch and Pagan (1980) LM test to test presence of heteroscedasticity with a null of no heteroscedasticity and the bias-corrected scaled LM test by Baltagi et al. (2012) to test for functional form misspecification with a null of no for functional form misspecification.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

This chapter presents empirical findings composed of descriptive statistics, diagnostic tests and regression results.

4.1. Descriptive Statistics

Below is the table providing descriptive overview of the data, presenting observations for 16 countries in Eastern Africa over a 30-year period from 1991 to 2021.The table displays the summary statistics for the study variables. These statistics offer a comprehensive overview of the essential characteristics of the variables under examination. Descriptive statistics presents variables scaled in billion Current US dollars. The table generally shows measures such as minimum values, maximum values mean and standard deviation,

Table 4. 1: Descriptive Statistics

Variable	Mean	St. Dev.	Min	Max	Observations
BOP					
Overall	-0.991	2.246	-21.494	3.833	N=496
Between		1.226	-3.604	0.158	n=16
With in		1.936	-18.780	6.536	T=31
FDI					
Overall	0.017	1.578	-11.513	7.897	N=496
Between		1.223	-4.672	2.310	n=16
With in		1.021	-8.341	6.144	T=31
GDP					
Overall		0.327	0.001	4.460	N=496
Between	3.996	0.048	3.938	4.051	n=16
With in		0.325	0.058	4.518	T=31
GCF					
Overall		0.441	1.023	3.766	N= 496
Between	2.894	0.360	2.333	3.321	n=16
With in		0.230	1.584	3.504	T=31
DOCR					
Overall		0.581	1.079	3.601	N=496
Between	2.540	0.481	2.075	3.250	n= 16
With in		0.389	1.457	3.314	T=31
MONE					
Overall		0.657	2.414	5.170	N=496
Between	3.867	0.195	3.678	4.155	n=16
With in		0.633	2.603	5.023	T=31
INFL					
Overall		0.304	4.212	5.413	N= 496
Between	4.693	0.093	4.599	4.828	n=16
With in		0.291	4.077	5.337	T=31
TRADE					
Overall		11.201	1.474	84.812	N=496
Between	17.860	8.352	6.500	36.898	n=16
With in		7.245	1.738	81.312	T=31
EXRATE					
Overall		1.276	3.131	8.223	N=496
Between	6.290	1.245	4.258	7.506	n=16
With in		0.615	4.637	7.189	T=31

Source: Author's analysis using Stata.

The panel data exhibits a commendable balance, with an equitable distribution of observations across entities. Through the above summary statistics, the study gains insight into the intricate relationships among variables, spanning across overall, between, and within perspectives. Notably, the standard deviations indicate ample variability within the variables, rendering them well-suited for regression analysis. Furthermore, the mean values surpass the standard deviation values across all variables, indicative of a dataset devoid of outliers, obviating the need for outlier treatment. These statistics not only elucidate key aspects of the data, including its temporal span, observation count and balance but also affirm the suitability of the variables for regression modeling.

4.2 Variables Correlation Matrix.

Table 4. 2: Variables Correlation Matrix.

Variables	logFDI	logEXRATE	logBOP	logGDP	TRADE	INFL	logMONE	logDOCR	logGCF
logFDI	1								
logEXRATE	0.031	1							
	(0.742)								
logBOP	0.447	0.040***	1						
	(0.423)	(0.000)							
logGDP	-0.385***	-0.040	-0.625*	1					
	(0.000)	(0.598)	(0.084)						
TRADE	0.073*	0.029*	0.039***	-0.224	1				
	(0.063)	(0.098)	(0.000)	(0.473)					
INFL	0.024***	-0.020***	0.032	-0.040***	0.318	1			
	(0.000)	(0.000)	(0.682)	(0.000)	(0.763)				
logMONE	-0.035***	-0.008***	-0.273***	0.322*	-0.123*	-0.071***	1		
	(0.000)	(0.000)	(0.000)	(0.092)	(0.064)	(0.000)			
logDOCR	-0.338*	0.008	-0.002*	0.226	0.224***	0.138*	-0.038**	1	
	(0.053)	(0.469)	(0.084)	(0.674)	(0.000)	(0.061)	(0.025)		
logGCF	0.223	-0.014*	-0.040	0.013	-0.229	-0.029**	0.336*	-0.092*	1
	(0.543)	(0.073)	(0.553)	(0.456)	(0.567)	(0.034)	(0.076)	(0.065)	

P-values are in brackets. ***p< 0.01 ***p<0.05 and *p < 0.1

Source: Author's Computation

Drawing from the correlation matrix displayed in the above table, various associations with BOP can be observed. Notably, positive correlations are evident between BOP and variables including; foreign direct investments, trade openness, inflation and exchange rate. Conversely, negative correlations are observed between BOP and gross domestic product, money supply, credit to private sector and gross capital formation. According to Studenmund (2001), if none of the correlation coefficients exceed 0.8, it indicates absence of worrying multicollinearity concerns among the independent variables. Consequently, it can be inferred that the interrelationships among these variables are not excessively strong, signifying the absence of a significant multicollinearity issue.

4.3 Panel Unit Root Test

The analysis employs the Levin, Lin, and Chu (LLC) test to conduct panel unit root tests: the null hypothesis for the Levin, Lin, and Chu (LLC) test panel unit root test is that the panel data series have a unit root, indicating they are non-stationary.

Table 4.3: Panel unit root test summary.

	LLC		
Variables	**Coefficient**	**P-Value**	**Conclusion**
BOP	-0.373*	0.055	*1(0)*
FDI	5.391***	0.000	*1(0)*
MONE	-7.484**	0.025	*1(0)*
GDP	-1.577**	0.043	*1(0)*
GCF	0.347 ***	0.000	*1(0)*
DOCR	-9.150***	0.000	*1(0)*
INFL	-0.675**	0.045	*1(0)*
TRADE	-0.547***	0.000	*1(0)*
EXRATE	-5.344***	0.000	*1(0)*

Source: Author's Computations

Basing on the above results, BOP has a p-value of 0.055 which is less 0.1 indicating strong evidence for stationarity. FDI has a p-value of 0.000 which is less than 0.01 hence showing that FDI is stationary. MONE has got a p-value of 0.025 which is less than 0.05 so that study rejects the null suggesting that MONE is stationary. GDP has a p-value of 0.043 which is less than 0.05 indicating moderate evidence against non-stationarity. Therefore, the study rejects the null hypothesis of having a unit root, suggesting that GDP is stationary. According to the unit root test results above, the coefficient for GCF is significantly high, and the p-value (0.000) is very low, less than 0.01 indicating strong evidence against non-stationarity. Therefore, the study rejects the null hypothesis of having a unit root, suggesting that GCF is stationary.

The coefficient for DOCR is significantly high, and the p-value is 0.000 which is very low indicating strong evidence against non-stationarity. Therefore, the study rejects the null hypothesis of having a unit root, suggesting that DOCR is stationary. INFL has a coefficient of -0.675 with a p-value of 0.045 which is less than 0.05.Therefore; the study rejects the null hypothesis of having a unit root, suggesting that INFL is stationary. TRADE has a coefficient of -0.547 with a p-value of 0.000 which is less than 0.01.Therefore; the study rejects the null hypothesis of having a unit root, suggesting that TRADE is stationary. And lastly, the p-value associated with the coefficient for EXRATE is 0.000 which is very low, indicating strong evidence against non-stationarity. Therefore, the study rejects the null hypothesis of having a unit root, suggesting stationarity of EXRATE. In conclusion, all variables are stationary therefore there is no need to perform panel data co-integration tests in this study as the data already demonstrate stationarity.

4.4 Regression results.

FEM and REM were performed and below are the results.

Table 4.4: Showing **FEM and REM estimations.**

Dependent variable: Logarithm of BOP

Variable	FEM		REM	
Variables	Coef.	Std. Err	Coef.	Std. Err
Logarithm of FDI	0.157***	0.067	0.458***	0.053
Logarithm of Money Supply	-0.186**	0.091	-0.193	0.104
Logarithm of GDP	-0.196***	0.062	-0.258**	0.035
Logarithm of Gross Capital formation	0.176	0.445	0.676*	0.585
Logarithm of Domestic credit to private sector	1.956	0.892	1.757	0.948
Inflation	-0.164	0.087	-0.205**.	0.183
Trade openness	0.186*	0.091	0.386	0.395
Logarithm Exchange rate	0.459	0.452	0.550	0.684
Constant	2.584***	0.491	2.970***	0.753
Observations	496		496	
R-sq: within	0.635		0.648	
R-sq: between	0.612		0.450	
R-sq: overall	0.534		0.670	

*** p<.01, ** p<.05, * p<.1

Source: Author's analysis using Stata.

4.5 Hausman test.

The Hausman test is conducted on equation (2) for fixed effects and random effects frameworks, aiming to select the optimal model.

$H_{0:}$ proposes that the REM is the preferred option.

$H_{a:}$ suggests that the model is a FEM.

Table 4.5: Showing Hausman test results

Items	Value
Chi-square (2)	86.50
Prob>Chi-square	0.000

Source: Result from the analysis.

The Hausman test results, as presented in the table above, provide important insights into the choice between fixed effects and random effects models in our analysis. Since Prob> Chi-square is lower than the 5% significance level, it indicates that the FEM is better.

4.6 Discussion and interpretation of results

Fixed effects model results were consistent according to the Hausman Test results. It also controls for unobserved individual-specific characteristics. This helps to eliminate the bias that could arise from unobserved factors affecting both the explained variable and the independent variables (Wooldridge, 2010).

The coefficient of foreign direct investments is 0.157 and is statistically significant at 1% implying that a one percent increase in foreign direct improves BOP by 15.7%. This positive outcome is attributed to the fact that foreign direct investments lead to a substantial inflow of capital into the region. A robust inflow of FDIs increases foreign investors have trust in the economic prospects and policies. This positive perception has attracted further investment trust resulting in sustained economic growth thus leading to positive effects on the BOP. These findings align with the research conducted by Edward (2022) and Kovacevic (2017) who also observed a positive effect of foreign direct investments on the BOP.

The coefficient of money supply is -0.186 and it is statistically significant at 5%. This implies that a one percent increase in money supply worsens BOP by 18.6%. This negative relationship is due to high import dependence where an increase in money supply in the region leads to increase in domestic demand which is not met by domestic production. This negative relationship aligns with the research conducted by Ajayi (2014) but contradicts with findings of other scholars such as Proso et al. (2016), Imoisi et al. (2013), and Osisanwo et al.(2019) who found out a positive association between money supply and BOP.

The coefficient of GDP is -0.196 and is statistically significant at 1%. This implies that a one percent increase in GDP worsens BOP by 19.6%.Despite the growth in GDP; countries in the region are experiencing trade deficits, meaning that their imports exceed their exports. This trade deficit is primarily caused by the importation of expensive inputs for domestic industries' production resulting into a negative connection between GDP and the BOP. Significant capital outflows also contribute to this negative relationship as well. These capital outflows involve the repatriation of profits and dividends where the income generated from the increased GDP is transferred to other countries not in the region. This finding aligns with the research piloted by Osisanwo et al. (2019) and Mohammed et al. (2017) that also discovered an inverse relationship between GDP and BOP.

The coefficient of trade openness is -0.186 and is statistically significant at 10%. This implies that a one percent increase in trade openness worsens BOP by 18.6%. Trade openness is likely to increase imports thus having a negative impact on the current account of BOP, increases capital outflows and deters economic growth and stability. This aligns with findings of Chinn and Prasad (2003) and among others who found out a negative relationship between trade openness and BOP.

4.7 Post-estimation diagnostic checks.

Post-estimation diagnostic checks are also done by the study to assess the validity and robustness of results. These include the normality test, Breusch-Pagan LM, Bias-corrected scaled LM, Pesaran CD and Pesaran scaled LM test

4.7.1 Normality test

The study performs a normality test to ascertain whether the residual terms are normally distributed. The null hypothesis posits that the error terms follow a normal distribution.

Table 4. 6: Table showing results for the normality test

Test	Statistic	Prob
Shapiro-Wilk	0.722	0.769
Shapiro-Francia	0.651	0.724

Source: Result from the analysis.

The null hypothesis for the Shapiro-Wilk test is that the error terms normally distributed. In this case, with a p-value of 0.769, which is greater than the typical significance level of 0.05, the study therefore fails to reject the null hypothesis.

Similarly, for the Shapiro-Francia test, the null hypothesis is that the error terms are normally distributed. With a p-value of 0.724, which is also greater than 0.05, we fail to reject the null hypothesis. Therefore, there isn't enough evidence to suggest that the error terms significantly deviate from a normal distribution according to the Shapiro-Francia test.

4.7.2 Breusch-Pagan LM, Bias-corrected scaled LM, Pesaran CD and Pesaran scaled LM test

The analysis employs the scaled LM test to test presence of serial correlation with a null of no serial correlation, the CD Pesaran test to test cross sectional dependence with a null of no cross sectional dependence, Breusch and Pagan (1980) LM test to test presence of heteroscedasticity with a null of no heteroscedasticity and the bias-corrected scaled LM test to test for functional form misspecification with a null of no for functional form misspecification .

Table 4. 7: Table showing results for Breusch-Pagan LM, Bias-corrected scaled LM, Pesaran CD and Pesaran scaled LM test

Test	Statistic	Prob
Breusch-Pagan LM	97.624	0.433
Bias-corrected scaled LM	0.736	0.488
Pesaran CD	6.243	0.273
Pesaran scaled LM	0.440	0.588

Source: Author's Computation

The Breusch-Pagan LM test utilized to assess whether there is heteroscedasticity in the regression model. The p-value associated with the test statistic is 0.433 and it's greater than the conventional significance level of 0.05, the study fails to reject the null hypothesis. Therefore, based on this test, there is insufficient evidence to suggest the presence of heteroscedasticity.

The Bias-corrected scaled LM test is another method used by the study to assess potential issues in the regression model, such as functional form misspecification. With a p-value of 0.488, which is greater than 0.05, the study fails to reject the null hypothesis. This implies that there is no significant evidence to indicate functional form misspecification.

To test for cross-sectional dependence, the study uses Pesaran CD test. In this instance, the p-value of 0.273 exceeds the 0.05 threshold. The study fails to reject the null hypothesis, indicating that there is no significant evidence of cross-sectional dependence.

For serial correlation testing, the Pesaran scaled LM test was used with a p-value of 0.588. This exceeds the significance level of 0.05, leading to a failure to reject the null hypothesis. Therefore, there is no significant evidence of serial correlation based on this test.

CHAPTERFIVE

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.0 Introduction.

This chapter shows the summary and conclusion of the study are presented along with policy recommendations derived from the study's findings. Furthermore, the limitations of the study are discussed as well as potential avenues for future studies.

5.1. Summary and conclusions.

Investigating the determinants of BOP among Eastern African countries was the primary objective of this study and data got from World Bank WDIs spanning from 1991 up to 2021 was used. The study focused on examining the impact of FDIs, money supply, GDP and other factors on how they impact on the BOP.

Therefore, FDIs, money supply, GDP, gross capital formation as a proxy for investment, official exchange rate, trade openness, domestic credit to private sector and inflation were variables used for the study.

The research reveals a notable and meaningful 1% positive significance between FDIs and BOP supporting the first alternative hypothesis. Additionally, when fixed effect estimations were made, it was observed that money supply, gross domestic product and trade openness have a 5%, 1% and 10 % respectively significant negative influence on the BOP thus aligning with the last two alternative hypotheses.

5.2. Policy Recommendations

For Eastern African countries to progress efforts towards to achieving favorable BOP should be geared so several policy alternatives should be adopted which include the following:

Foreign direct investments exhibited a positive association with the BOP. Therefore, FDIs should be encouraged and facilitated through provision of incentives, investment in infrastructure and installing a favorable corrupt free legal framework so as to ensure their effective materialization.

Money supply exhibited a negative relationship with the BOP. Therefore, monetary policy management should be strengthened so as to avoid excessive issuing of money. Domestic production should also be supported by the governments so as to match with domestic demand that increases with increase in money supply.

GDP exhibited a negative relation with the BOP. This is due to importation of inputs used in production. Therefore, technological advancement should be facilitated through research and development so as to create capacity to locally produce the expensive inputs. Also, the political and economic environment should be made favorable so as to boast foreign investors' confidence so as to reduce profit repatriation and capital flight.

Trade openness exhibited a negative relationship with BOP. This is attributed to the high volume of imports compared to exports. Therefore, import substitution strategy should be strengthened through provision of incentives for production and enact trade policies that prioritize local industries so as to reduce the volume of imports.

5.3. Limitations of the Study and Potential avenues for future research

The objective of the research was to investigate the factors influencing BOP in Eastern Africa, utilizing panel data from 1991 to 2021. While the study intended to cover a wider time period, it was not possible because data for previous years in many of the countries was not available.

The study examined the determinants of BOP among Eastern African countries with an exception of Somalia because of data availability. The study used foreign direct investments, money supply and gross domestic product as the key variables; therefore, another researcher can carry out the same study to find out whether the region's BOP is a monetary phenomenon.

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