THE DETERMINANTS OF BALANCE OF PAYMENTS PERFORMANCE IN KENYA
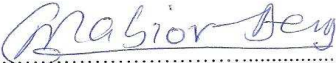
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X51/80172/2012

Research Project Submitted in Partial Fulfilment of the Requirements for the Award of the Degree of Master of Arts in Economic Policy Management of the University of Nairobi, Kenya

OCTOBER 2014

DECLARATION

This research paper is my original work and to the best of my knowledge has never been presented for the award of a degree in any other university.

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APPROVAL

This Research Paper has been submitted for examination with our approval as University supervisors.

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DEDICATION

I dedicate this work to all my relatives.

ABSTRACT

This study assessed the determinants of balance of payment performance in Kenya using time-series data for period the1975 – 2012. The study adopted unrestricted VAR model which had lag four as the maximum lag to estimate the relationship between balance of payments in Kenya and previous balances in balance of payments account, money supply, exchange rate, real interest rate, terms of trade, openness of economy, gross capital formation and political instability .

The VAR model showed that all variables and their lags were highly significant in determining the balance of payment in Kenya. The study found a positive relationship between current balance of payment and previous balance of payment at first, second, and third lag, differenced money supply at fourth lag, differenced exchange rate, terms of trade at second lag, differenced openness of economy at third and fourth lags, real interest rate at second and fourth lags and gross capital formation at fourth lag.

 On the other hand, negative relationship was found between current balance of payments and previous balance of payment at fourth lag, a differenced money supply at first, second and third lags, terms of trade at first and third lags, differenced openness of economy at first and second lags, real interest rate at first and third lags, gross capital formation at first, second and third lags and all lags of political instability.

 The study recommended that the Government of Kenya, Central Bank of Kenya, all financial institutions and other stakeholders whose activities influence money supply, terms of trade, openness of economy, real interest rate, gross capital formation, and political instability ought to apply relevant policy measures for better management of Kenya's balance of payment.

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ADF-	Augmented Dickey Fuller
BOP-	Balance of Payment
BOT-	Balance of Trade
CBK-	Central Bank of Kenya
EPC-	Economic Promotion Council
FDI-	Foreign Direct Investment
GDP-	Growth Domestic product
IMF –	International Monetary Fund
KENGEN-	Kenya Electricity Generating Company
KNBS-	Kenya National Bureau of Statistics
KPA-	Kenya Ports Authority
KPLC-	Kenya Pipe Line Corporation
KR-	Kenya Railway
MPC-	Monetary Policy Committee
NFA-	Net Fixed Assets
NSE-	Nairobi Stock Exchange
OLS-	Ordinary Least Square
OMO-	Open Market Operation
SAPs-	Structural Adjustment Programs
WB-	World Bank

CHAPTER ONE

INTRODUCTION

1.1 Background Statement

From the time of independence the economy of Kenya has been facing problems of uncertainty and economic instability. The government of Kenya has been concerned with fundamental policies pertaining to trade, capital flows, inflation management, exchange rate system, economic growth, creation of employment opportunities and commercial policies geared towards ensuring that Kenya becomes economically a viable state. Kenya like any other country is prepared to achieve both domestic full employment with price stability (Internal balance) and equilibrium in the balance of payment (External balance). Both monetary and fiscal policies are the main instruments applied by the government to accomplish its target of economic stability in Kenya.

The concept of balance of payment was discussed in 1960s and 1970s by Mundell (1961), Fleming (1962) and Johnson (1972). It was an improvement on the Keynesian model of income determination in an open economy. Balance of payments account is composed of four main elements namely; current account balances, capital and financial account balances, balancing items (Errors and Omissions) and reserves balances.

Current account balances are further subdivided into trade balances, income balances and transfers balances. Trade balances record the value of exports and imports of both goods and services. Examples of goods are final consumer goods, raw materials and intermediate capital goods while services include transportation, construction

services, communication services banking, insurance, tourism, travel services, financial services, computer and information services, royalties and license fees, personal, cultural and recreational services, government services and expenses on education.

Income balances are comprised of items such as compensation of employees, interest, rent, profits, dividends and royalties received from foreign countries and paid out to foreign countries. Items that make up transfers account balances are gifts, grants and reparation receipts and payments to foreign countries. Transfers can be government transfers or private transfers. Government transfers are normally given either for economic, political or humanitarian reasons (H.G. Mannur, 2012). On the other hand, private transfers are remitted or received from foreign countries on person –to- person basis.

Capital and financial account balances are composed of capital transfers, net Foreign Direct Investment (FDI), portfolio investment and net loans. Capital transfers are provided either in cash or in kind. It is in cash when money is given without compensation relating to a fixed assets and in kind when ownership of fixed assets is transferred or through debt forgiveness. FDI has three components namely equity capital, reinvestment earnings and intra-company loans. FDI by home country citizens and firms in foreign countries is considered as debit item while the direct investment by foreigners in home country is treated as credit item.

The flow of capital is influenced by differences in profit rate between the home country and the rest of the world. Portfolio investments are done either in domestic or foreign securities, stocks, bonds and shares. The net flows of portfolio investments depend on differences in interest rates, dividends or the rate of return on capital between home country's financial assets and those of foreign nations. Loans given by home country are treated as debit items and loans received by home country are treated as credit items. A loan into the country has a favourable effect on the balance of payment but both lending to foreigners and repatriation of profits by foreigners to their home countries have unfavourable effect.

Capital inflows shift the external balance to the right thereby enhancing consumption that leads to appreciation of real exchange rates. Foreign capital inflow has benefits such as increasing the host country's capital accumulation and production capacity, introducing new technology, knowledge, improvement of country's balance of payment and creation of employment opportunities, new business avenues and ultimately economic development.

Outflows of long term capital through direct investment can lead to balance of payment problems to the investing country. This was evidenced in 1960s when United States was faced with persistent deficit (Sodersten and Reed, 1994). Through direct investments and actions related to control of exports and imports by multinationals, balance of payment is affected. The influence from multinationals may be in the form of sharp increase in capital flows which the host country will be unable to control. Multinationals can even make government policies not functional in case they refuse to adhere to directives given by government authorities.

The balancing items component of balance of payment refers to Errors and Omissions which capture all international transactions that might have not been recorded. Items included in Errors and Omissions account are assumed to have resulted from statistical and recording errors, smuggling, illegal and secret capital movements and imperfect estimation procedures. These items in unrecorded transactions account represent a difference in the sum of recorded credit and debit transactions in current account balance and capital and financial account balances.

1.2 Kenya's Balance of Payments

In Kenya, current account balance has been deteriorating thereby reflecting a deficit especially after the oil shock of 1973. This deterioration of current account balance is as a result of faster growth in the merchandise import bill relative to merchandise exports, slow economic growth and continuing rise in inflation. Deterioration in terms of trade contributes to excess of import bills over export earnings. However, in the last decade, Kenya's current account balance improved in the year 2002, 2003 and 2009. The balance in 2003 was in surplus resulting from increased tourism earnings and grants inflows from abroad. Kenya frequently registers surpluses in its trade in services and deficits in trade in goods. Kenya has remained a net importer of food and net exporter of agricultural raw material since independence (Osoro, 2013). This has resulted to an export –import gap which is worsened by inelasticity of demand for Kenya's primary products in foreign markets. There is high consumption for foreign goods compared to locally produced and processed goods.

In order to minimize effect of deficit, policy makers in Kenya advice adoption of policies that stabilize domestic prices, improve economic management and discourage unnecessary imports while encouraging exports through taxes and policy measures that would improve the general competitiveness of the economy in the international market.

Kenya's capital account balance was liberalised in the year 1995. Consequently, capital inflows have increased in the successive years and this explains increasing surpluses in the capital and financial account in Kenya. Other factors causing an increase in capital inflows to Kenya are attractive interest rates regime, commodity price boom and relatively stable exchange rate (Guillermo and Carmen, 1999).

These surpluses in capital and financial account are used to finance the deficit in the current account. The balance in capital and financial account declined in 2003, and 2008. The decline in capital inflows was attributed to fear of outcome of both general elections in 2002 and 2007.The overall balance of payment in Kenya has usually been in surplus except in 2008 and 2011 when it was in deficit. The deficit in 2008 was attributed to decrease in inflows of foreign direct investment and short term capital inflows. Deficit in year 2011 was explained by rising import bills especially as a result of rise in oil prices in the global market.

According to World Bank (2012) Kenya's economy is considered to be more vulnerable to both internal and external shocks like oil price, export price fluctuations, poor harvest and domestic instability. In order to reduce a large and widening current account deficit, the government resorts to use of International Monetary Fund (IMF)

credits to support the balance of payment and reduction in international foreign reserves. Borrowing from IMF was also found harmful as it resulted to an increase in external debt and cost of servicing the debt.

Figure 1.1: Trends in Kenya's Current Account Balance (CAB) and Capital& Financial Account Balances (CFAB) as percentage (%) of GDP for the period 1990- 2012
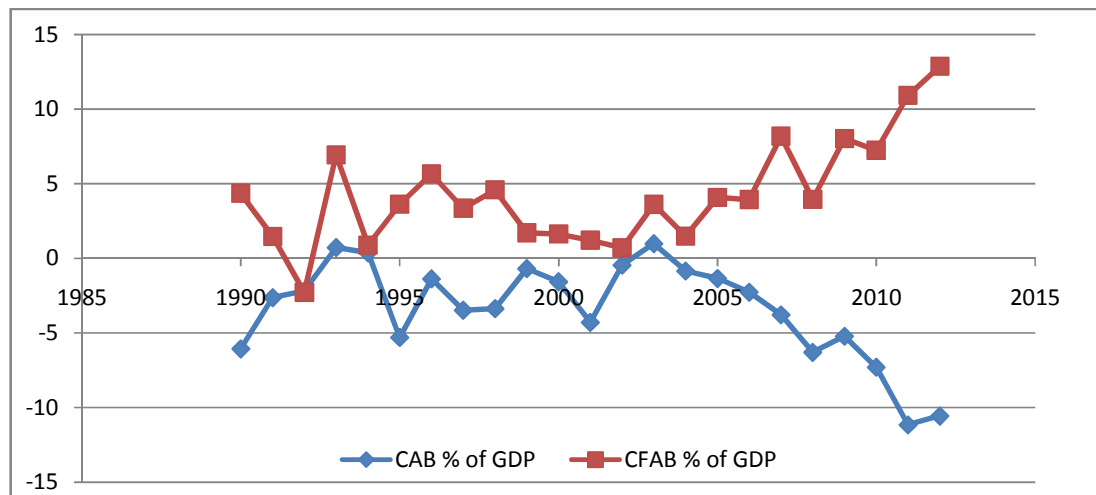
Source: Republic of Kenya (various issues)

In most years current account balances had deficit with either small improvement or deterioration. The current account witnessed an improvement in 1990-1993, 1996, 1999, 2001-2003, 2009 and 2012. In most years this improvement was not sustainable accept in the year 1990-1993 and 2001- 2003. Current account balances deteriorated continuously from 2003- 2008. Balances in capital and financial accounts were also inconsistent with improvement in 1993, 1995-1996, 1998, 2003, 2005, 2007, 2009 and 2011-2012. Capital and financial account balances persistently deteriorated between 1990- 1992 and 1998-2002.

1.3 Indicators of Balance of Payment Performance in Kenya

Balance of Payment performance is influenced by a number of factors. Among these indicators are trade balances, terms of trade, competiveness, domestic money supply, exchange rate, fiscal deficit, economic growth rate, domestic capital formation, inflation rate, net foreign direct investment, capital market, remittances and loans. Some of the indicators of balance of payment are discussed here below;

a) **Exports**

The volume of exports in Kenya has relatively been following an increasing trend over time but has been less than imports across respective years under study. There was growth in volume of exports in the first decade after independence which slackened in 1970s. The main reasons were unfavourable price fluctuations in international markets and high domestic competition from imports. In order to enhance productivity of the export sector in Kenya, strategies which include lowering of tariffs, liberalization of exchange rate, exports subsidies, duty exemption, import licensing, import quotas and bans have continuously been developed to achieve the required objectives.

Export Promotion council (EPC) is tasked with identifying market opportunities and formulation of appropriate strategies which the business community can exploit for its benefit. These opportunities are market research and investigations, trade fairs and exhibitions, buyer- seller meetings, trade missions and marketing Kenya as a preferred destination for trade, tourism and investment. All these contribute to the improvement of internal and external trade policy environment.

b) Imports

The volume of imports has constantly grown at faster rates compared to exports in each year since 1980s. The huge volume of imports results to deficit in the balance of payment. In order to enhance adjustment in a country faced with deficits, quotas are imposed on imports and subsidies are given to local producers to encourage exportation, imposing restrictions and taxes on capital outflows and reduction in amount of foreign aids. Moreover import substitution strategy has been adopted since 1970s.

c) Inflation Rates

One of the main goals of Central bank of Kenya is to achieve and maintain stable prices (low inflation) at the target of 5%. This target has never been achieved over the past years. In the Republic of Kenya, inflation has been fluctuating with the highest value of 46.0% experienced in 1993 and the lowest attained was 1.6% in 1995. The main policies used to move inflation to its intended level are interest rates and reserve money (Gichuki et al, 2012).

d) Foreign Exchange Rates

Immediately Kenya achieved her independence, it adopted fixed exchange rate regime at Kenya shillings 7.1 to the US dollar which lasted till 1975. The regime was subsequently shifted to crawling peg system between 1975 and 1982 that was later changed in 1990 to an official dual exchange rate system which again changed to a floating exchange rate system (Ndung'u, 1999). Kenyan Shillings has been weakening against US Dollars over time for the entire period under study. This weakening of the Kenya shillings is considered to have sometimes resulted from debt crisis in Euro zone, pressure from Kenya's BOP problems, higher importation costs and post elections violence due to political instability.

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Despite frequent depreciation, the Kenya Shilling strengthened against the US Dollar during some years under study. This appreciation is attributed to tight monetary policy adopted by monetary policy committee (MPC) at the Central Bank of Kenya, disbursement from IMF through enhanced Credit facility programme, liberation of cross border financial flows, remittance from abroad and higher foreign exchange from exports and tourism sector. It is worth noting that deviation of actual real exchange rate from equilibrium rates (misalignment) may have adverse effects on allocation of resources in an economy (Oduor and Khainga, 2010). Over-depreciations lead to domestic inflationary pressures that increase debt payment obligation of indebted countries. On the other hand, over-appreciation causes reduction in export volumes and restricts domestic production.

e) Real GDP Growth Rates

Growth in real GDP in Kenya has never been consistent. Before and after the time of independence till 1990, there were two years of negative growth in real GDP which occurred in 1961 and 1970 at the rate of -7.8 and -4.7 respectively. The other years after 1980 were characterised by positive growth in real GDP but which varied from year to year.

f) Net Foreign Direct Investment (FDI)

FDI has benefits that include inflows of foreign exchange, new technologies, local employment, managerial skills, tax revenues and stimulation of additional domestic investment through backward and forward linkages in manufacturing and extractive industries.

There has been gradual slowdown in FDI in Kenya (World Bank 2013). This low level of FDI is attributed to poor infrastructure in energy and roads, politically driven economic policies, rampant corruption, government malfeasance and substandard public services, high costs associated with crime and insecurity, low labour productivity and hostile and excessive regulatory environment. These factors contributed to higher investment costs. Besides incurring higher costs, more time and resources are wasted by investors. The final effects on investors are low returns on investments that translate to generation of low profit if any. However, in order to encourage FDI in Kenya, the government has embarked on building roads and supporting the energy sector. In many countries, financial incentives like tax allowances and grants in forms of aid are employed to attract FDI.

g) Capital Markets and Portfolio Investment

Investment in both stocks and bonds is taking root in Kenya. Foreign investors and domestic investors are attracted to invest at Nairobi Stock Exchange and the bonds market because of higher returns (Mwega, 2010). Examples of domestic bond investments include Kenya Electricity Generating Company (KenGen) infrastructure bond (2009), Safaricom's five year bond (2009) and Government's 12 year Ksh 18.5 billion bond to finance energy, road, water and sewerage in Kenya (2009).

The Nairobi Stock Exchange (NSE) was however affected by the global financial crisis which caused foreign investors to retreat to their homes so as to buy safer investment bonds. In order to restore trust and confidence, the government opted to adopt a tax free interest as well as reducing with-holding tax charge on interest income earned from long term bonds from 15% to 10%. Moreover, it instructed stock brokers and investment banks to publish their half and full year financial results.

h) Remittances and Net Loans

Kenyans abroad remit money to their relatives back at home. These remittances are intended for different uses such as family upkeeps, school fees, medical expenses and investments in Kenya. Remittances to Kenya in the last years were US $ 642 million, US $ 891 and US $ 1.2 billion in the year 2010, 2011 and 2012 respectively. According to World Bank (2013) the main sources of remittances to Kenya are North America (48%), Europe (28%) and rest of the world (24%). Aid is either in form of grants or loans from both bilateral and multilateral sources. Kenya receives loans mainly from the World Bank Group, China and European Union (Mwega, 2010). These help in settling current account balance deficits.

1.4 Balance of Payment Policies Adopted in Kenya Over the Years

a) Import Substitution Policies (1960-80's)

This was adopted immediately after independence. The main framework was the Sessional paper No. 10 of 1965 that was focused on trade development and protection of domestic market to help develop industries. The main objectives of the policy were rapid growth of trade, easing balance of payment pressure, increasing domestic control of economy and generation of employment. This strategy was responsible a growth of trade and development of trade over the first decade after independence.

b) Trade Liberalization: Structural Adjustment Programmes (SAPs)

These were introduced in early 1980s to address the structural rigidities, price instability and macro-economic imbalances that had led to poor delivery of services by the public sector. Their main goal was to create a more competitive environment in Kenya to facilitate increased use of local resources and support outward oriented policies for employment creation and export expansion. Measures taken were

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promotion of non-traditional exports, liberalization of market systems and reforms of international trade regulations.

c) Export Oriented Policies- 1990s

These policies were covered under the Sixth Development Plan (1989-1993) that provided a framework for adoption of export promotion strategy. The aim was to create an enabling environment for growth of exports, improve efficiency, stimulate private investment and increase foreign exchange earnings. The outlined objectives were to be achieved through institutional reforms, reduction and restructuring of tariffs, abolition of export duties, introduction of export retention schemes, improvement of foreign exchange and insurance regulations and establishment of National Export Credit Guarantee Cooperation.

d) Economic, Public Financial Management and Social Service Reforms (1996-1998)

In order to achieve significant reduction in unemployment and poverty Kenya as an economy planned for a target average growth rate of 6% a year for several years. This was to be achieved by adopting decontrol of prices, removal of import licensing, removal of exchange rate controls, reform of the civil service, tight control on budget and tax reforms aimed at reducing tax rates and broadening the tax base, strict dealing with mismanagement and corruption in financial systems, privatization of non-strategic public enterprises and restructuring of key public enterprises such as Kenya Power and lightening Company (KPLC), Kenya Ports Authority (KPA). Kenya Railways (KR) and Kenya Post and Telecommunication Corporation, reduced fiscal deficit and strengthening of current account balance and applying open market operation (OMO) to ensure that money supply expands at rates consistent with growth of economic activities by Central Bank of Kenya. In addition, implementation of

staffing norms for all cadres, improved establishment control, rationalization of selected ministries, pay reforms and enhancing participation of women were also adopted. Finally, designing and funding of Youth Development programme and projects through Youth Self-Help Groups in both rural and urban areas were initiated.

e) Vision 2030 and National Trade Policy (2004-to date).

Vision 2030 is geared towards making Kenya a globally competitive and prosperous nation with high quality of life. Through a National Trade policy, Kenya is expected to grow into a stable economy capable of expanding national and international trade. This is planned to be achieved through; promotion of decent, protected and recognized informal sector, establishment of vibrant business supported by well-established and functioning infrastructure and social amenities, expansion of Kenya exports that can enhance job creation and prosperity for the people of Kenya and lastly transforming Kenya into a regional service hub. The First Medium Term Plan (MTP) of Kenya Vision 2030 targeted a growth rate of 9.7% and 10% in fiscal year 2011 and 2012 respectively. However, the actual growth rates turned out to be 4.4% and 4.6% indicating the targets were largely missed.

f) Political Reforms

These are reforms meant to enable Kenya achieve political and economic stability which will consequently improve the balance of payment. Kenya has experienced numerous social, political and economic changes since independent. Kenya has been built to become a democratic society that respect individual liberties, freedom of speech, association, worship and rule of law. Such reforms include; a change from party state to multiparty state in 1992, promulgation of new constitution in 2010, adoption of devolution governance system in 2013 and making government transparent and more accountable to its citizens.

Although all or some of the above policies and strategies have been applied in Kenya, the economy is still struggling in search of stability and improvement of the balance of payment.

1.5 Statement of the Problem

One of the main focuses of the Kenyan government since independence has been to achieve external balance in its balance of payments a long side other objectives such as sustainable economic growth, improved living standards and internal balance. In order to enhance stable external balance in Kenya, prudent policies that include structural adjustment programmes (SAPs) in fiscal year 1980/1981, import substitution, export promotion, liberalization of capital flows, financial sector policy reforms, international trade regulation reforms, government budget rationalization, parastatal reforms, use of suitable exchange rate regimes, strengthening of political system, civil service reforms and privatization were adopted.

These policies were intended to spur economic activities, gain low inflation rates, create positive real interest rates, achieve stable nominal exchange rates, attain price stability and create an enabling environment for accumulation and efficient utilization of financial resources which finally translate to viable economy with favourable balance of payment.

Despite the implementation of these numerous policies to enhance stability of Kenya's balance of payment, there are still persistent imbalances in the BOP. There have been continuous deficits in current account section of the balance of payment in Kenya thereby making external balance sustainability a major problem. Instability in

balance of payment is a problem because it can lead to a decline in economic growth and higher level of poverty by creating unemployment and unstable macroeconomics environment.

Persistent deficit is a serious problem for it can result into crises like currency crises, external debt crisis, selling of assets and reduction of international reserves. This calls for understanding of the underlying dynamics. This study is aimed at filling this gap by identifying the determinants of this level of performance with a view to suggesting appropriate prescriptions for better management of the balance of payment in Kenya.

1.6 Objectives of the study

The General Objective of the study is to assess how the Balance of Payment has performed over time in Kenya.

The specific objectives are;

a) To identify the factors that affect Balance of Payment performance in Kenya

b) To derive policy solutions that can be used to adjust Balance of Payment in Kenya so as to achieve the desired goals and objectives.

1.7 Significance of the Study

A study of determinants on balance of payment performance in Kenya is crucial to policy makers, planners, investors and the public. Factors that influence balance of payment performance will be identified and analysed to examine their effects on Kenya's balance of payment. Findings on the study may be used to mitigate adverse effects pertaining to balance of payment problems. Based on findings, informed

policies can be designed in order to enhance improvement and stability in Kenya's external balance.

The study intends to investigate determinants that have previously not been studied in Kenya and therefore it will make constructive addition to the available literature and data on balance of payment in Kenya. This research is one of the few researches done on factors that influence balance of payment in developing countries. Consequently, it can be used as a basis to carry out further researches that are of value in developing countries.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Literature

In order to analyse Kenya's Balance of Payment Position, it is crucial that we review theories that explain concept of Balance of Payment. There are three approaches explaining the balance of payment. These are;

2.1.1 Elasticity Approach to Balance of Payment

This is a theory that is associated with Robinson (1937). It provides an analysis of how devaluation of exchange rate and price level affect the Balance of Trade depending on the elasticity of supply and demand for foreign exchange and foreign goods. Prices are assumed to be flexible and thus it is the movement of prices that determine the current account balance. Exchange rate is the most important price that is considered in this approach. This is because exchange rate is closely linked to trade balance. The theory analyses markets of exports and imports and concludes that it is the difference between exports and imports that gives rise to a balance of payment surplus or deficit. Elasticity approach ignores income and assumes that capital movements are excluded (fixed exogenously).

The theory applies devaluation for it to work. Devaluation of domestic currency increases the prices of imports in the economy making imports to be very expensive thus discouraging imports. Elasticity approach encourages exports and current account deficit is corrected to surplus. This theory leads to J. Curve effect which refers to the pattern of Balance of trade (BOT) following devaluation (see Figure 2.1). The approach also applies the Mershall-Lerner condition which states that the sum of

price elasticity of demand for imports and exports must be more than one (1) in absolute terms for devaluation of domestic currency to improve the balance of payments.

The depreciation of currency is not effective because;

1) It takes a long time to affect trade

2) Decline in currency value will initially worsen the deficit before improvement.

Figure 2.1: The J-Curve
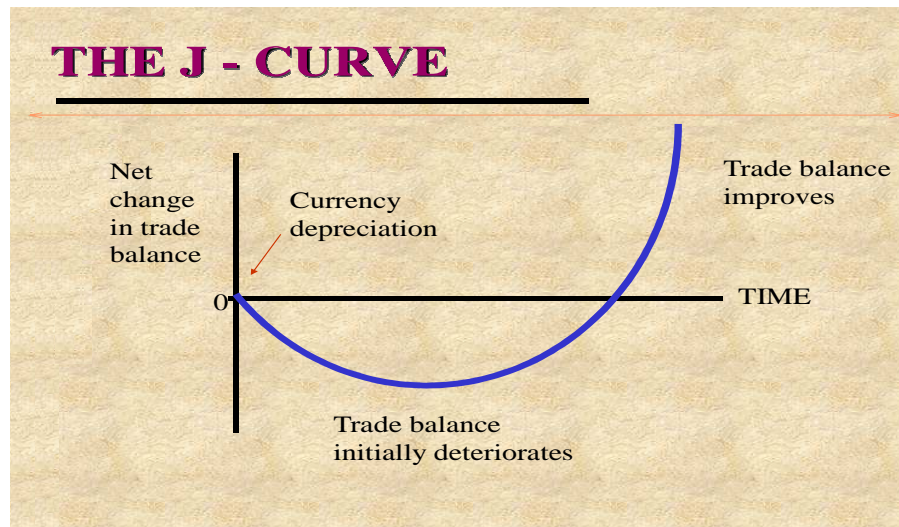
2.1.2 Absorption Approach to Balance of Payment

This is a Theory by Alexander (1952) that analyzes trade balance as difference between aggregate domestic income and aggregate domestic expenditure (absorption). The theory emphasizes how domestic spending on domestic goods changes relative to domestic output. The theory focuses on current account balance and balance of trade which is viewed as the difference between what the economy produces and what it takes for domestic use.

The absorption approach is based on the national income identity;

$$Y = C + I + G + X - M \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where; Y = National income.

C = private consumption of goods and services purchased at home and abroad.

G = Government expenditure.

I = Total investment by firms and government.

X = Exports of goods and services.

M = Imports of goods and services.

Then C + I + G are combined into a single term, A, which represents domestic absorption (Total domestic expenditure).

$$A = C + I + G \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2).$$

Then

$$Y = A + X - M \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3).$$

By stating that national income equals absorption the trade balance,

$$X - M = Y - A \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4).$$

From equation 4), it can be seen that trade balance is equal to the difference between domestic income and total absorption. Equation (4) is the fundamental equation of the absorption approach. It can be concluded that; if the total absorption (expenditure) exceeds income (production), then the imports will exceed exports and thus a deficit in the balance of payment and if income exceeds absorption, the balance of payment will be in surplus.

2.1.3 Monetary Approach to Balance of Payments (MABOP)

This study adopts the monetary approach to balance of payment (MABOP) framework which was discussed by Hume and Alexander (1952), Mundell (1968) and Johnson (1975). The theory assumes that balance of payment is essentially a monetary phenomenon which must be analyzed in terms of adjustment of money stocks. Any excess demand or supply of money is exactly reflected in the movements in balance of payment. An excess demand for money (ceteris paribus) causes absorption to be less than income and thus produces a balance of payment surplus. The country here absorbs less than it produces and thus sells out the rest to the foreign countries as exports.

In case of excess supply of money, absorption is greater than income thereby producing a balance of payment deficit. The country here receives from foreign countries more than it supplies them. The money supply identity, money demand identity and equilibrium are therefore expressed as follows;

$$M^s = (R + D)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.. (5)$$

$$M^d = F(Y, P, I)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..\, (6)$$

$$M^s = M^d\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.. (7)$$

Where,

M^s = Money Supply

R = International reserve

D = Domestic credit

M^d = Money demand

Y = Level of real domestic income

I = Interest rate

P = Price level.

From equations 5, 6 and 7 above, we can get changes in reserves as shown below;

$R = M^s - D$ …………………………………........ (8)

Since $M^d = M^s$ in equation (7), then equation (6) is transformed as follow

$R = F(Y, P, I) - D$…………………………….......(9)

Taking percentage changes in both sides of equation (9), we get

$\Delta R = \Delta[Y, P, I] - \Delta D$…………………………….....(10)

Therefore, Equation (10) is the reserve flow equation which concludes that;

    a) Changes in reserves are result of divergence between the growth of money demand and growth of domestic credit.

    b) With stable money demand, an increase in domestic credit will cause a decrease in international reserves.

The coefficient of ΔD shows the extent to which changes in domestic credit are offset by changes in international reserves.

2.2 Empirical Literature

Some studies have been done regarding the factors that affect balance of payments performance in other countries. In Kenya most studies focused on determinants of current account balance and other studies only looked into factors which influence elements of capital and financial account. There are very few studies conducted on balance of payments in Kenya as a whole. According to studies carried out both in Kenya and other countries some factors influencing balance of payments include terms of trade, country's economic growth, exchange rates, net foreign direct investment, domestic inflation, fiscal balance, interest rate, trade liberalization, money supply, openness of an economy and political stability.

Akpansung (2013) in Nigeria undertook a review of empirical literature on the balance of payment as a monetary phenomenon. He found that balance of payment is monetary a phenomenon. The study showed a causal relationship between domestic credit and balance of payment. In addition, it showed that growth in income and prices were associated with balance of payment surpluses and that growth in domestic credit generally led to a balance of payment deficits and reserve outflows.

According to Selma and Kastrati (2013), FDI has benefits on the balance of payment in both developing and developed nations. These benefits include technology spill over, human capital formation support and improvement of enterprise development. Apart from host country benefiting from inflows of capital, FDI can be substitute for imports of goods and services which lead to improvement of BOP through the current account.

Osoro (2013) while investigating determinants of balance of payments in Kenya found that the level of trade balance, foreign direct investment and exchange rates were the main determinants of Balance of payment in Kenya. His study found that balance of payment in Kenya is both a monetary and real phenomenon.

In Namibia, Eita (2012) conducted a study on the balance of payment through cointegrated vector autoregression method with variables being fiscal balance, GDP and interest rate. These variables were found to be the main determinants of balance of payment in Namibia. An increase in GDP and interest rate was found to cause an improvement in the Balance of payments, while GDP policy is used to increase export

so as to improve current account, interest rate policy was used to ensure favourable capital account.

Guglielmo and Mudida (2012) found that in Kenya there is a well-defined co - integrating relationship linking the balance of payments to the real exchange rate and relative income. Thus moderate depreciation of Kenya Shillings may have a stabilizing influence on the balance of payment through the current account without the need for high interest rates.

Oladipupo and Onotaniyahuro (2011) did a research on impact of exchange rate on balance of payment in Nigeria and found that the exchange rate had a significant impact on the balance of payments' position. This shows that depreciation leads to improved balance of payment if fiscal discipline is imposed. Moreover, they found improper allocation and misuse of domestic credit, fiscal indiscipline and lack of appropriate expenditure control policies as being some of the causes of persistent balance of payment deficit in Nigeria. Inadequacy of foreign currency was found to lead to balance of payment problem and therefore there was need to manage foreign currency resources properly so as to reduce adverse effects that may result from fluctuation of foreign currency in a nation.

In Pakistan, Ali (2011) carried out a study on balance of payment as a monetary phenomenon using econometric evidence with variables such as excess money supply, net foreign assets, exchange rate, inflation and interest rate. It was evidenced that there existed a strong relationship among net foreign asset, exchange rate, inflation and the balance of payment. In addition, the study confirmed a strong

negative relationship among money supply, domestic credit and balance of payment. Interest rate was found to have insignificant relationship with balance of payment. The monetary approach was found to play partial role in the Pakistan's Balance of Payment.

Arfan (2008) studied the relationship between political stability and balance of payment and found that stable political regime with visionary leadership leads the nation to higher levels of favourable balance of payment. He found that pure theoretical macroeconomic policies cannot make macroeconomic stability unless the country is maintaining political stability. It was found that surplus of trade balance, foreign direct investment and higher international reserve mostly depends on its long term political stability under one party political system. He further suggested that political stability and economic freedom help in achieving international financial stability.

Parikh (2004) after researching on the relationship between trade liberalization, growth and balance of payment in developing countries revealed that trade liberalization can lead to faster import growth than export growth and hence unsustainable balance of payment position in developing countries. It was concluded that trade liberalization could constrain growth through the adverse impact on the balance of payments. He associated the increase of current account deficits of African Economies during the period of 1980-1999 to Trade liberalization in most African countries.

In Nigeria, Onyemauma and Odii (2003) studied how to improve balance of payment through Agriculture. They found that interest rates, exchange rate and nation's foreign

reserve have direct relationship with balance of payment equilibrium. Hence , the effect found was that as interest rate increases, the balance of payment increase, as the foreign reserve increases, there tends to be a favourable balance and the more Naira it takes to buy a unit of foreign currency, the higher the balance of payment. Other factors like imports and exports were found to be inversely related to balance of payment.

Buscaglia (2003) studied sterilization of capital inflows and the balance of payment crises in emerging market economies. The empirical findings showed that external factors are highly relevant to the determination of the timing and the magnitude of the capital flows to developing countries. The result suggested that an attempt to sterilize the capital inflows which follow from reduction in the international interest rate sets the economy in a path leading to balance of payment crises associated with sudden reversals of the flows.

In Zimbabwe, Dhliwayo (1996) carried out an econometric research on the balance of payments as a monetary phenomenon for the period 1980 to 1991 using reserves, real income, price level, interest rates and domestic credit. He concluded that money played a significant role in determining the balance of payments. He established a strong negative relationship and link between domestic credit and the flow of international reserves. It was thereby emphasised that balance of payment disequilibrium can be corrected through appropriate financial programming and monetary targeting.

In Nigeria, Tijani (2010) examined empirical analysis of balance of payment adjustment mechanisms of monetary channel for the period 1970-2010. The results

indicated that a positive relationship between domestic credit, exchange rate, balance of trade and balance of payment. Moreover, negative relationship was found between inflation rate, gross domestic product and the balance of payment. It was concluded that monetary measures partially influenced the balance of payment and government should therefore apply expenditure reducing monetary policies to promote favourable balance of trade which stabilizes balance of payment.

2.3 Overview of Literature

Based on studies done in Kenya regarding balance of payment, little is known about factors that could be influencing Kenya external balance due to insufficiency of the literature. The findings on literature such as Gugliemo and Mudida (2012) and Osoro (2013) indicated that some factors that positively influence balance of payment in Kenya include exchange rate, foreign direct investment, economic growth, relative income and trade balance.

On the other hand, money supply and dependency ratio were the main factors found to be negatively influencing Kenya's Balance of Payment. Having considered that, we realize that these studies failed to recognize and emphasize the significant effects of political instability, openness to economy, terms of trade and real interest rate on balance of payments in Kenya.

Gugliemo and Mudida(2012) and Osoro (2013) used a few variables in their studies despite applying the techniques of fractional integration and cointegration methods by the former and dynamic VAR model by the . Adoption of few variables may lead to

errors of omission and model misspecification. In our study we used more variables to forecast balance of payment situation in Kenya.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents theoretical framework, the model used and the estimation procedure adopted, definition and measurement of the variables, pre- estimation tests and data sources.

3.2 Theoretical Framework

This study adopted the monetary approach to balance of payment (MABOP) framework because it captures most of the variables that were used in this study. The monetary approach to balance of payment (MABOP) framework states that balance of payment is essentially a monetary phenomenon which must be analyzed in terms of adjustment of money stocks.

Based on MABOP, Money Supply is expressed as, $M^s = D + R$ and Money demand is expressed as, $M^d = F(Y, P, I)$. Equilibrium is expressed as, $M^s = M^d$ and thus,

$D + R = F(Y, P, I)$.

Changes in money supply through domestic credit and reserves are reflected in balance of payment (BOP) in that;

When there is excess money supply, domestic credit is increased and reserves are reduced. This consequently leads to depletion in BOP.

On the other hand, when there is a decreased in money supply, domestic credit is reduced and reserves are increased. Consequently, BOP is improved.

It can be concluded that a change in reserves is equal to a change in balance of payments with a relationship expressed as;

$\Delta R = BOP$... (11)

By substituting money demand in Money supply equation we get,

BOP= R = F(Y, P, I) – D.. (12)

By taking changes on both sides, we get;

ΔR = BOP =Δ[Y, P, I] – ΔD.. (13)

3.3 Model Specification

The model established the relationship between Kenya's balance of payments and selected fundamental variables assumed to determine it. In order to test the relationship, the study used a standard model of the monetary approach to balance of payment (ΔR = BOP) to explore the balance of payments performance in Kenya and its determinants. Factors identified to have an influence on balance of payment such as money supply, exchange rate, real interest rate, terms of trade, openness of the economy; gross capital formation and political instability were regressed on the he yearly basic balances of balance of payments in Kenya. Given the data used and the dynamism of the analysis, we employed Vector Autoregressive (VAR) method because it tackles the multi-equation simultaneous model (Thomas, 1987). This methodology generalizes the univariate autoregressive (AR) model as suggested by Stock and Watson (2001). The Autoregressive model is expressed as;

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \cdots + \cdots \beta_m Y_{t-m} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots (14)$$

Where; Y_t = is a vector of endogenous variables time, β_0 is the kx1 vector of constant terms, $\beta_{1,}\beta_{2,}\beta_{3\dots}\beta_m$ are k x k matrices of coefficients, ε_t is vector of serially uncorrelated of zero mean and a vector of covariance matrix.

By adopting VAR model, we explored each variable based on its own lags and lags of all the other variables utilized by the model. The VAR model to be used in this study has been adopted from related studies (Eita, 2012; Osoro, 2013).

The relationship between BOP and its determinants in equation (13) is further extended by adding more variables and can now be expressed as;

$$\text{BOP}_t = \beta_0 + \beta_1 BOP_{t-1} + \beta_2 MS_t + \beta_3 ToT_t + \beta_4 OE_t + \beta_5 EXR_t + \beta_6 RIR_t +$$

$$\beta_7 GCF_t + \beta_8 POL_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (15)$$

Where;

BOP = Balance of payments

BOP_{t-1}=One period lag of Balance of payments

MS = Money Supply

ToT= Terms of Trade

OE= Openness of the economy

RIR= Real interest rate

EXR = Real Exchange Rate

GCF = Gross capital formation

POL=Political Instability

ε_t = Error term

β_0 is the mean value of the VAR equation

$\beta_1 - \beta_7$Represent the parameters to be estimated.

3.4 Estimation Technique and Procedure

The parameters have been estimated using the Vector Autoregressive (VAR) model which allows time series aspects to be modelled simultaneously. The VAR model has therefore been used to explore the relationship between the independent variables and the Balance of Payment in Kenya using time series data for the period 1975-2012 with the aid of Stata version 12.1software.

We have carried out cointegration test using Johansen test of cointegration to ensure that there was not only a stable but also long-term relationship between balance of payments and independent variables in the model.

3.5 Definition of Variables

Money Supply: This refers to the entire stock of currency and other liquid instruments in an economy at a given time. It can be in cash, coins and balances held in checking and saving accounts. An increase in money supply lowers interest rates and this in turn generates more investment and increases money in the hands of citizens, thereby stimulating spending. When the level of income increases due to a rise in money supply, the interest rate is reduced while the level of imports is increased. Consequently, the BOP is worsened. On the other hand, a fall in money supply increases interest rates and investment is reduced and thus a fall in spending by the citizens of an economy. Money supply determines level of prices and inflation in the long run in a country.

Exchange Rate: This is the price of a nation's currency in terms of another currency. This price is determined by demand and supply of foreign exchange in an economy. Demand for foreign exchange is derived from our demand for foreign goods and services of imports plus capital exports. Supply for foreign exchange available to a country is made up of the foreign money earned by exporting various goods and services, receiving unilateral transfer payments from abroad and short term capital imports or inflows. Exchange rate is used as the measure of competitiveness. There is usually equilibrium exchange rate that prevails under existing demand and supply conditions of foreign exchange rate. Other factors which affect exchange rate include

inflation rate, interest rates, speculation, government debt and position of balance of payment. From economic theory, a fall (depreciation) of an exchange rate will improve BOP position since net export is increased.

Openness of the Economy: This indicates the liberalization of the economy. It is calculated as the ratio of summation of imports and exports to GDP. If openness of the economy favours imports, then BOP will be made worse off. However, if it favours exports, then BoP will be better off.

Terms of Trade: This is the value of country's export relative to its imports multiplied by hundred. Terms of trade can either be favourable or declining. It is favourable when prices of exports rise relative to prices of imports and declining when export prices fall relative to import prices.

Real Interest Rate: This is interest rate adjusted inflation in order to reflect the real cost of funds to the borrower and the real yield to the lender. Real Interest Rate = Nominal Interest Rate - Inflation (Expected or Actual). The real interest rate depends on the level of inflation, risk and demand for the fund to be borrowed or invested. Thus higher levels of inflation lead to low real interest rate and vice versa. Moreover, higher demand for capital/credit raises real interest rate while a rise in the supply of capital/credit reduces real interest rate. In addition, real interest rate is also determined by the level of risk such that higher level of risk leads to higher real interest rate and low risk level requires low level of real interest rates.

Gross Capital Formation: This refers to outlays or additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements, plant, machinery, equipment purchases and the construction of roads, railways, schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales.

Political Instability: This refers to the situations under which the country is in a political or political related crisis. It involves actions that intend or actually contribute to the disruption of peace in the country and consequently slows down economic activities. For example, the eruption of violence related to elections or attack by insurgents. The relationship between the dependent and the explanatory variables is postulated to have the following signs;

Table 3.1: Postulated Signs of the Coefficients of Explanatory Variables.

Dependent variable	Explanatory Variables	Expected Sign
Balance of payment	Money Supply	-
	Exchange Rate	+
	Openness of the Economy	- or +
	Terms of Trade	- or +
	Interest Rate	+
	Gross Capital Formation	+
	Political Instability	-

3.6 Pre-estimation Tests

3.6.1 Stationarity Test

We conducted a stationarity test to establish the presence of a unit root using Augmented Dickey-Fuller (ADF) tests. The test was done to help avoid the problem of spurious and inconsistent regression results.

3.6.2 Cointegration Test

Cointegration prior to the VAR analysis was conducted in order to determine whether the variables exhibited long-run or short run relationship. We used Johansen test to detect presence of cointegration.

3.6.3 Normality Test

Normality of the data used was tested using Jarque Bera and established that all variables were not normally distributed since the p-value obtained was 0.00460 and thus less than 0.05 significantly. In this test, a null hypothesis was rejected.

3.6.4 Multicollinearity

This is common in time series data which occurs when two independent variables are linearly related. Its presence leads to inflation of the variance of parameter estimates hence provision of incorrect magnitude of the estimate of the coefficients and signs. This may further lead to incorrect conclusions. The study did not find a problem of multicollinearity between variables of interest in the model.

3.6.6 Autocorrelation

Autocorrelation refers to a situation where the error term is correlated to the preceding error term. Its presence does not affect the un-biasedness of the estimates but leads to poor conclusions due to wrong hypothesis testing. The study conducted Breusch Godfrey LM test and confirmed that there was autocorrelation.

3.7 Data Sources

The data for study has been collected from Kenya Economic Surveys, Central Bank of Kenya (CBK) Reports, Kenya statistical abstracts and World Bank (WB) and International Monetary Fund (IMF) publications data. The data used is a secondary annual time series data covering 38 years from 1975-2012

CHAPTER FOUR

ESTIMATION RESULTS

4.1 Introduction

This chapter presents the study findings based on investigation of the determinants of balance of payments in Kenya for the period 1975 to 2012. It provides descriptive statistics and comprehensively gives econometric results which are later used in the next chapter for recommendations.

4.2 Descriptive Statistics

We considered average, standard deviation and the range in illustrating the characteristics of the study variables which include balance of payments, exchange rates, Terms of trade, real interest rates, openness of the economy, gross capital formation and political instability. The Balance of payments has an average mean of Ksh12536.46 million with the range of between a deficit of Ksh 33,162 and surplus of Ksh 123,119 million respectively varying at Ksh 28,741.18 million.

Table 4.1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
Bop	38	11175	26955.78	-33162	123119	2.165173	8.408163
Bm	38	35.6194	6.489106	26.68185	51.1612	0.5624225	2.632662
Ex	38	44.18607	29.77421	7.343193	88.81077	-0.2635859	1.415944
Ope	38	0.6023782	0.0744377	0.4770277	0.7361452	0.1914279	1.965668
TT	38	86.75895	14.31255	50	114.02	0.4191629	2.586013
RIR	38	6.782787	6.951532	-7.490084	21.09633	0.3261707	2.385029
GCF	38	20.1235	3.419795	15.00382	29.78929	0.2424681	2.056511
Pol	38	0.2894737	0.4596059	0	1	1.202082	2.445

Source: Author's computation.

Where Bop is the Balance of payment, Bm is the broad money, Ex is the exchange rates, Ope is the openness of the economy, TT is the terms of trade, RIR is the real interest rates, and GCF is capital formation and Pol is the political instability. Table 1 illustrates that all the variables are skewed positively except exchange rate and the Kurtosis is not more than five except for balance of payments at a significance level of 0.05.

4. 3 Patterns of the Determinants of the Balance of Payments in Kenya.

Figure 4.1: Overall Balance of Payments
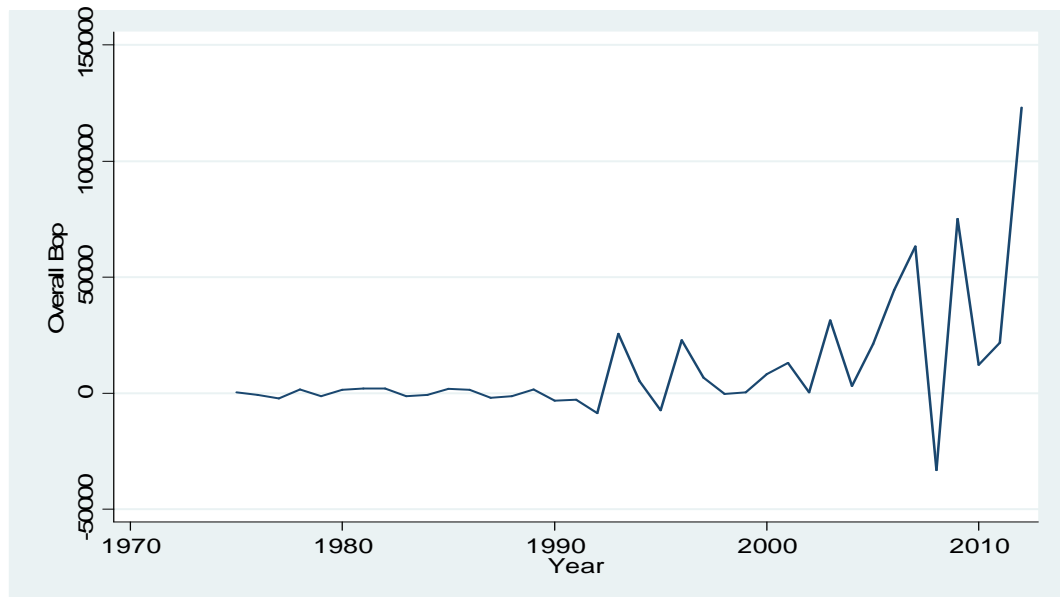
Source: Author computation

We found out that Balance of payments initially was constant from the year 1975-1991 from which it started deviating with huge sharp fluctuations which hit the highest point in 2012. The huge deficit around 2008-2009 may be attributed to economic global crisis and post election violence in 2007.

Figure 4.2: Broad Money Supply
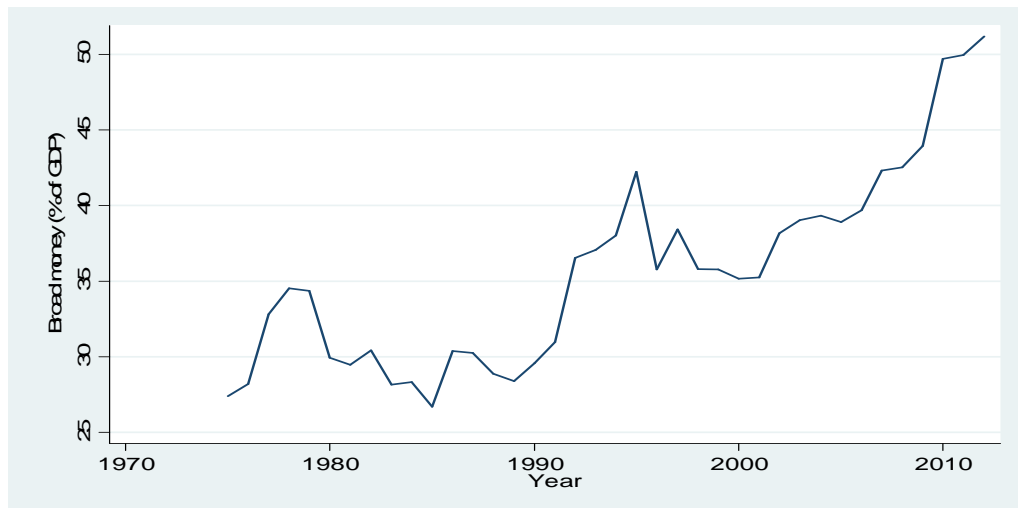
Source: Author's computation

Money supply in Kenya experienced an increasing trend with dynamic fluctuations although in consistent as shown by Figure 4.2. There was fluctuation in money supply between 1978 and 1987. This was attribution fluctuation in economic activities and instable leadership in the country. There was a steady increase in money supply as from 1987 to 1995 which was followed by fluctuating patterns between 1996 and 2001. From the year 2002 to 2012 money supply has been increasing but with slight fluctuations. The increase is due to expansion in economic activities in the economy.

Figure 4.3: Official Exchange Rates
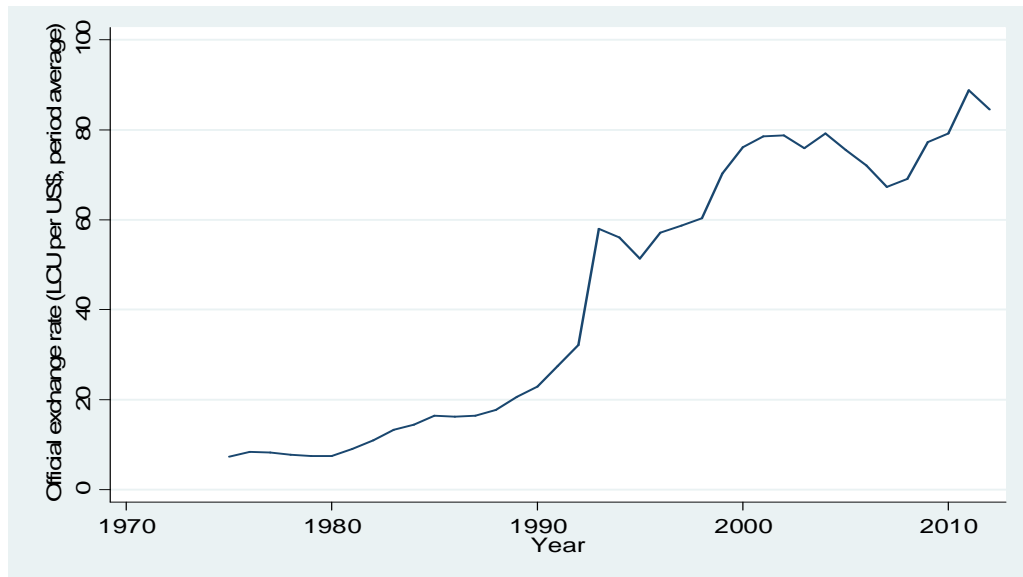
Source: Author's computation.

Figure 4.3 shows trends of exchange rates in Kenya which depreciate at an increasing rate to the year 1996. The Kenya shillings appreciated in 1997 because of linearization and good policies by leadership after 2002 election.   During other periods under the study Kenya shillings greatly depreciated. This condition trend may be attributed to decline in foreign exchange earnings and 2008/2009 global financial crisis.

Figure 4.4: Openness of the Economy
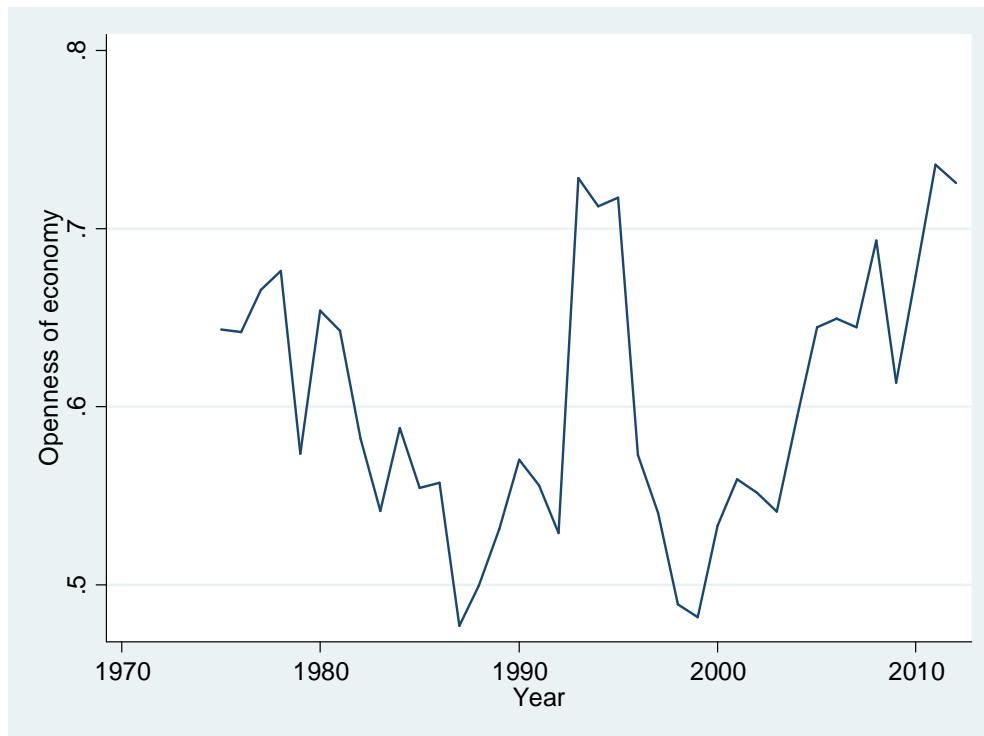
Source: Author's computation

Openness of economy was obtained as a ratio of the summation of the exports and imports to real Gross Domestic Product. This variable has "W" pattern from 1975 which is a balanced fluctuation as can be observed From Figure 4.4.There was a sharp fluctuation in openness of economy in Kenya 1975 and 1986. After experiencing the lowest openness of economy in 1987, Kenya improved its trade with other economies the years after until 1993 when it dropped again. The decline in openness to economy continued until 1998. It kept on increasing thereafter although it was still fluctuating. Increase in openness of economy at various periods may be attributed to an increase of either exports or imports or both. It may also be due decrease in GDP level.

Figure 4.5: Terms of Trade
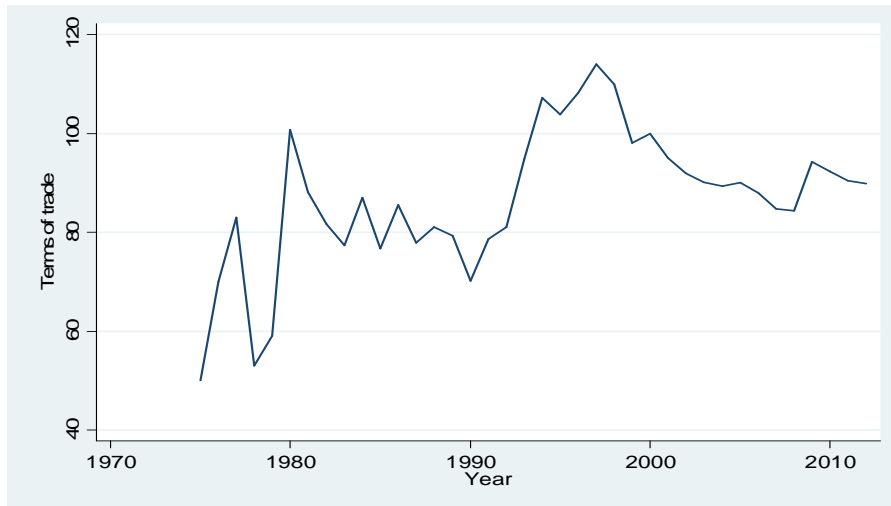
Source: Author's computation

Terms of trade is reflected as a potential determinant of balance of payment from the literature and we found that it is the only variable among the study variables which exhibited a downward bowed pattern which implied that it had a bidirectional variation. It depicted "M" pattern. The prices of exports were relatively fair in 1977, 1980 and 1994. The period between 1981 and 1989 witnessed small variation in terms of trade in Kenya. Terms of trade declined adversely in 1978 and 1990. The period after 1994 had persistent decline in terms of trade. This resulted due fluctuation of export prices and consistent increase in oil prices.

Figure 4.6: Real Interest Rate
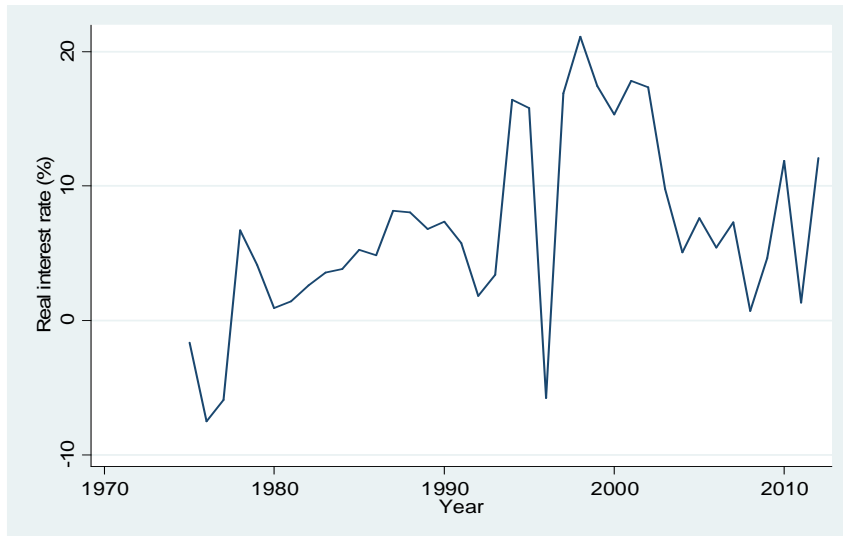
Source: Author's computation

In study, we further investigated the pattern of real interest rate. From figure 6 above, we found that in year 1978, 1994 and 1997 real interest rates increases. However, real interest rate dropped drastically in 1980, 1992, 1996, 2008 and 2011 compared to other study periods. The declines in interest rates are attributed to political crisis, post election violence, liberalization of capital and global economic crisis.

Figure 4.7: Gross Capital Formation
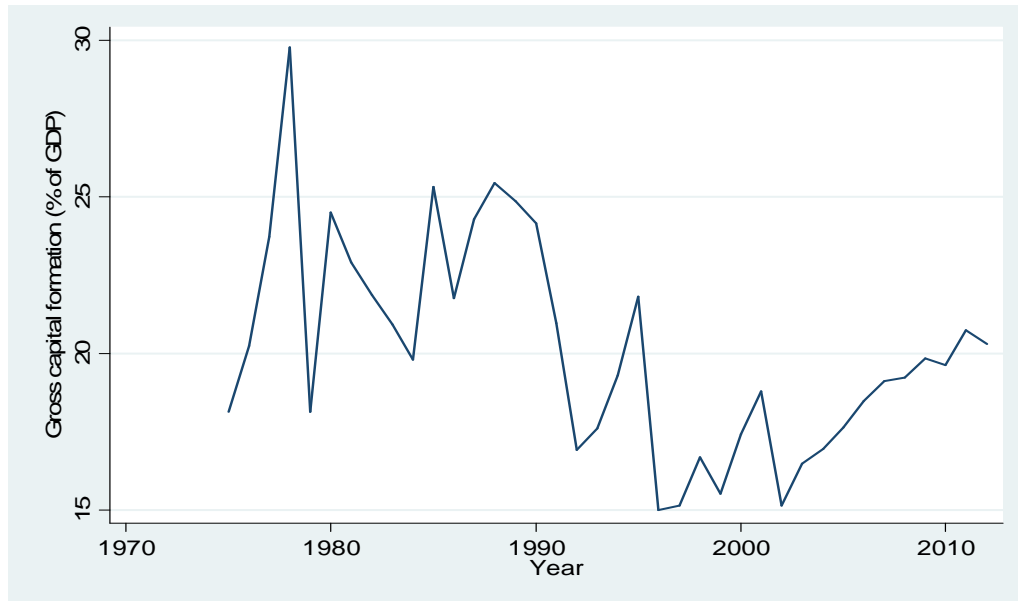
Source: Author's computation

Finally, Gross capital formation was illustrated shows fluctuations. It was at highest level in 1978 but sharply declined 1979 because of changes in leadership which disrupted general production in the country. There were also decrease in capital formation in 1984, 1992, 1999 and 2002. Gross Capital formation reduction in the outlined years is attributed to low confidence in political leadership, changes of regimes and insecurity in the country.

4.4 Diagnostic Tests

4.4.1 Correlation Matrix (Spearman's Rank correlation Matrix)

We used spearman's rank correlation matrix. We considered those variables with coefficients below |0.6|. We assessed the existing relationship between balance of payments and independent variables and amongst independent variables. From Table

2, we found that balance of payments was positively related to all other variables but negatively related to gross capital formation and political instability. Broad money was negatively related to gross capital formation and positively related to all other variables. Exchange rate was also positively related to all other variables except gross capital formation which was also negatively related to terms of trade, real interest rates and political instability. However, terms of trade was negatively related to political instability. We further investigated the significance of the relationship established below where we found out that the relationships between BoP and Bm, Ex, TT; Bm and Ex, Ope, TT; GCF and Pol; Ex and RIR, TT and GCF; Ope and RIR; and lastly TT and RIR, GCF were significant. It is important to note that the study did not find a problem of multicollinearity between variables of interest in the model.

Table 4. 2: Correlation Matrix

Variables	Bop	Bm	Ex	Ope	TT	RIR	GCF	Pol
Bop	1.0000							
Bm	0.4800	1.0000						
	0.0023							
Ex	0.5417	0.8026	1.0000					
	0.0004	**0.0000**						
Ope	0.2813	0.4198	0.0712	1.0000				
	0.0871	**0.0087**	**0.6708**					
TT	0.4450	0.5479	0.5709	0.0909	1.0000			
	0.0051	**0.0004**	**0.0002**	**0.5872**				
RIR	0.1618	0.3023	0.5063	-0.3382	0.4258	1.0000		
	0.3317	**0.0651**	**0.0012**	**0.0378**	**0.0077**			
GCF	-0.2839	-0.4557	-0.5137	0.1631	-0.4993	-0.2242	1.0000	
	0.0840	**0.0040**	**0.0010**	**0.3277**	**0.0014**	**0.1760**		
Pol	-0.0344	0.3731	0.1244	0.0397	-0.0238	0.1773	-0.2249	1.0000
	0.8376	**0.0211**	**0.4570**	**0.8130**	**0.8872**	**0.2870**	**0.1746**	

Source: Authors computation

4.4.2 Autocorrelation Test

Since autocorrelation is associated with biasness of the estimates which can lead to spurious regression, we conducted Breusch Godfrey LM test, and confirmed that the p value of 0.4065 was indeed greater than the significant level of 0.05 and thus there was autocorrelation.

Table 4.3: Breusch Godfrey Langrage Multiplier Test for Autocorrelation

Breusch-Godfrey LM Test for Autocorrelation			
lags(p)	chi2	df	Prob> chi2
1	0.689	1	0.4065

H_0: No serial correlation

4.4.3 Normality Test

The study conducted normality test to determine whether variables used in the model were normally distributed through their residuals.

The hypothesis tested was;

H_0: Residuals are normally distributed

Ha: Residuals are not normally distributed

We used Jargue Bera test for normality and established that all variables were not normally distributed since the p-value of 0.00460 is less 0.05 significantly. However on individual basis, Bop, DEx, TT, RIR and GCF were normally distributed whereas DBm, Dope and Pol were not normally distributed.

Table 4.4: Jargue Bera Test

Equation	Chi2	Df	Prob> Chi2
Bop	0.748	2	0.68799
DBm	7.948	2	0.01880
DEx	2.973	2	0.22622
Dope	13.384	2	0.00124
TT	1.100	2	0.57706
RIR	0.690	2	0.70815
GCF	0.272	2	0.87289
Pol	7.421	2	0.02446
ALL	**34.535**	**16**	**0.00460**

Source: Author's computation

4.4.4 Testing for Non Stationarity

We carried out a non stationarity test to avoid estimates changing along the period of study. We tested non stationarity in all variables as indicated by table 4.5 to avoid spurious estimates. We found that money supply, exchange rates and openness of the economy were non-stationary and thus we differenced them to period one and thus reduced or eliminated the likely bias. The study used the Augmented Dickey Fuller (ADF) test for stationarity.

The hypothesis tested was;

H_0: The variable is Non-stationary H_a: The variable is Stationarity

Table 4.5: Testing for Stationarity

Variables	Test Statistic	Critical value at 5%	P-value at lags (0)
Bop	-4.359	-2.966	0.0004
Bm	-0.210	-2.966	0.9374*
Ex	-0.395	-2.966	0.9109*
Ope	-2.311	-2.966	0.1686*
TT	-3.493	-2.966	0.0082
RIR	-3.673	-2.966	0.0045
GCF	-3.275	-2.966	0.0160
Pol	-5.727	-2.966	0.0000
DBm	-6.653	-2.969	0.0000
DEx	-5.469	-2.969	0.0000
Dope	-6.623	-2.969	0.0000

*These variables are non - stationary.
Source: Author's computation.

The transformed model is:

$$Bop =$$

$$\beta_0 + \beta_1 Bop_{t-m} + \beta_2 DBm_{t-m} + \beta_3 DEx_{t-m} + \beta_4 DOpe_{t-m} + \beta_5 TT_{t-m} +$$

$$\beta_6 RIR_{t-m} + \beta_7 GCF_{t-m} + \beta_8 Pol_{t-m} + \varepsilon_{t-m} \text{...(16)}$$

Where Bop is the balance of payment, DBm is the first difference of the money supply, DEx is the first difference of the exchange rate, DOpe is the first difference of the openness of the economy, TT is the terms of trade, RIR is the real interest rate, GCF is the gross capital formation and Pol is the political instability, ε is the error term and β is the coefficients to be estimated whereas β_0 is the constant. All of these variables are lagged m times in the model.

4.4.5 Cointegration Test

Persistent non stationarity of data series may lead to spurious relationship. To avoid this problem, cointegration test was conducted to establish whether the variables exhibited long-run or short run relationship. We used Johansen test for cointegration as indicated in the table 4.6 whereby we established that our variables were not cointegrated.

The hypotheses tested were;

H_0: There is no cointegration H_a: There is cointegration

The trace and max statistic were lower at 88.7035 and 33.8134 respectively, compared to the 5% critical value of 94.15 implying that we failed to reject the null hypothesis. There was no long run relationship between balance of payment and its determinants.

Table 4.6: Johansen Test for Cointegration

Sample 1978-2012						
Max rank	Parms	LL	Eigen values	Trace statics	Max statistic	Critical values %
0	72	-841.25276	.	**145.3873**	85.0673	**156.00**
1	87	-798.71912	0.90120	118.3201	48.6166	124.24
2	100	-774.41081	0.75069	88.7035	33.8134	94.15
3	111	-757-5041	0.61943	54.8901	26.1653	68.52
4	120	-744.42143	0.52649	28.7248	13.4718	47.21
5	127	-737.68552	0.31949	15.2529	10.8739	29.68
6	132	-732.24589	0.26705	4.3791	3.2655	15.41
7	135	-730.61585	0.08908	1.1136	1.1136	3.76
8	136	-730.05905	0.0332	-	-	-
H_0 = No cointegration (Max rank zero)						

Since variables were not cointegrated, we could not run vector error correction model but we run unrestricted vector autoregressive model (VAR). Our trace and max statistics told the same thing. Note that trace statistic of maximum rank zero represents the null hypothesis of no cointegration whereby it is expected to be less

than the critical value at 5% significance level of which it is not as per our study findings. We further determined the short run causality since our findings indicated no presence of long run association.

4.4.6 Short run Granger Causality Test

From the Johansen test for cointegration, we established that our variables exhibited the short run association. Therefore, we conducted Engel Granger test to investigate whether in the short run balance of payments is significantly caused by the respective variables. We revealed from the Table 4.7 that all variables were highly significant in granger causing balance of payments in the short run. Further we found that when all of these factors were combined, they were all significant in causing balance of payments.

Table 4.7: Engel Granger Test

Equation	Excluded	chi2	Df	Prob> chi2
Bop	Independent Variables			
Bop	DBm	5.4e+26	4	0.000
Bop	DEx	4.8e+26	4	0.000
Bop	Dope	3.8e+26	4	0.000
Bop	TT	3.5e+26	2	0.000
Bop	RIR	6.4e+26	3	0.000
Bop	GCF	6.5e+26	4	0.000
Bop	Pol	4.7e+26	4	0.000
Bop	**All**	9.5e+26	13	0.000

Source: Author's computation.

4.5 Lag Determination for VAR Model

Having considered all the requirements needed to determine the right model to employ; we determined the number of lags which we used to estimate our model. We had five information criteria for lag selection that is Likelihood Ratio (LR), Final

Prediction Error (FPE), Akaike Information criteria (AIC), Hannan and Quinn information criterion (HQIC) and Swartz Bayesian information criteria (SBIC). In determining the criteria, we considered the lowest value which made our model better.

Table 4.8: Selection Order Criteria for Balance of Payments

```
 Sample:  1980 - 2012                         Number of obs      =        33
```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-826.683				1.3e+12	50.5869	50.7089	50.9497
1	-742.865	167.64	64	0.000	4.3e+11	49.3858	50.4844	52.6509
2	-666.799	152.13	64	0.000	4.5e+11	48.6545	50.7296	54.8219
3	-491.345	350.91	64	0.000	9.0e+09*	41.8997	44.9514	50.9694
4	7630.07	16243*	64	0.000	.	-446.428*	-442.4*	-434.456*

```
 Endogenous:  Bop DBm DEx DOpe TT RIR GCF Pol
   Exogenous:  _cons
```

Source: Author's Computations

From Table 4.8, we identified lag four as the best number of lags needed in estimating the VAR model since most of the information criteria described earlier actually supported it. Therefore, the model which is estimated in section 4.6 was interpreted the same way ordinary least squares (OLS) is done.

4.6 Vector Autoregressive Model Estimation

This study was concerned with identifying the determinants of balance of payments in Kenya. We identified and estimated the effect of money supply, exchange rates, openness of the economy, terms of trade, gross capital formation, terms of trade and political instability on balance of payments in Kenya. We employed unrestricted VAR model after conducting the pre- estimation tests for non stationarity and non cointegration which are important before estimation to avoid spurious results and

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model misspecification. The VAR model showed that all variables and their lags based on selection criteria were highly significant. Therefore we found that Bop, DBm, DEx, DOpe, TT, RIR, GCF and Pol with their lags significantly affected balance of payment in Kenya. The model is given below and the interpretations are done as shown below;

BoP

$= 3379392 + 1.42LBop + 6.9L2Bop + 5.71L3Bop - 1.21L4Bop$

$- 27301.75LDBm - 57904.69L2DBm - 8041.43L3DBm + 10268.57L4DBm$

$+ 23373.88LDEx + 27201.44L2DEx\ 5985.48L3DEx + 1092.63L4DEx$

$- 10624.82LTT + 993.51L2TT - 10276.32L3TT - 6769.2L4TT$

$- 1920347LDOpe - 2466025L2DOpe + 281805.1L3DOpe + 175866.2L4DOpe$

$- 6980.3LRIR + 22135.91L2RIR - 11655.92L3RIR + 10438.3L4RIR$

$- 21374.16LGCF - 16816.43L2GCF + 4449.8L3GCF - 25204.71L4GCF$

$- 233924.3LPol - 89016.87L2Pol - 83432.83L3Pol$

$- 75125.55L4Pol \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. (17)$

Where Bop is the balance of payment, DBm is the first difference of the broad money supply, DEx is the first difference of the exchange rate, DOpe is the first difference of the openness of the economy, TT is the terms of trade, RIR is the real interest rate, GCF is the gross capital formation and Pol is the political instability. All of these variables were lagged to four time periods.

The VAR model (see Equation 16) shows that if all factors are held constant, balance of payment will be KSh 3,379,392 million. A unit change in the first, second and third lags of balance of payments led to an increase in current balance of payment whereas the fourth lag led to a decline in the current balance of payment. The first difference

of the money supply, through its first, second and third lags respectively led to a decrease in the current balance of payment while the fourth lag increased the current balance of payments in Kenya. Similarly, the first, third and fourth lags of Terms of trade reduced current balance of payment in Kenya while the second lag increases the current Kenyan balance of payment. Both first and second lags of the first difference of openness of the economy, led to a decrease in the Kenya balance of payment contrary to the third and fourth lags of the same which increased the current balance of payments.

Interest rates as projected in the literature was revealed to reduce the country's current balance of payment through the first and third lags while second and fourth lags increased balance of payment in Kenya. In addition, it was revealed that the first, second and fourth lags of the gross capital formation resulted to reduction in balance of payment in Kenya while the third lags of gross capital formation led to an increase in balance of payments in Kenya. Finally, we found that all lags of political instability in Kenya led to a reduction in balance of payments.

Table 4.9: Regression Results for the Vector Autoregressive Model

Sample: 1980 – 2012		No. Of	Obs	=	33	
Log likelihood = 7630.07			AIC	=	-446.4285	
FPE = .			HQIC	=	-442.4002	
Det(Sigma_ml) = 2.0e-211			SBIC	=	-434.4564	
Variables	**Coefficients**	**Std. Err.**	**zP>z**	**95%**	**Confidence Interval**	
Bop						
Bop						
L1.	1.420974	1.05e-13	1.4e+13	0.000	1.420974	1.420974
L2.	6.904614	3.78e-13	1.8e+13	0.000	6.904614	6.904614
L3.	5.709515	3.77e-13	1.5e+13	0.000	5.709515	5.709515
L4.	-1.214467	2.14e-13	-5.7e+12	0.000	-1.214467	-1.214467
DBm						

L1.	-27301.75	2.59e-09	-1.1e+13	0.000	-27301.75	-27301.75
L2.	-57904.69	2.70e-09	-2.1e+13	0.000	-57904.69	-57904.69
L3.	-8041.426	1.87e-09	-4.3e+12	0.000	-8041.426	-8041.426
L4.	10268.57	8.16e-10	1.3e+13	0.000	10268.57	10268.57
DEx						
L1.	23373.88	1.13e-09	2.1e+13	0.000	23373.88	23373.88
L2.	27201.44	1.78e-09	1.5e+13	0.000	27201.44	27201.44
L3.	5985.484	1.38e-09	4.3e+12	0.000	5985.484	5985.484
L4.	1092.632	4.66e-10	2.3e+12	0.000	1092.632	1092.632
Dope						
L1.	-1920347	1.05e-07	-1.8e+13	0.000	-1920347	-1920347
L2.	-2466025	1.64e-07	-1.5e+13	0.000	-2466025	-2466025
L3.	281805.1	6.16e-08	4.6e+12	0.000	281805.1	281805.1
L4.	175866.2	5.82e-08	3.0e+12	0.000	175866.2	175866.2
TT						
L1.	-10624.82	5.69e-10	-1.9e+13	0.000	-10624.82	-10624.82
L2.	993.5569	3.00e-10	3.3e+12	0.000	993.5569	993.5569
L3.	-10276.32	5.54e-10	-1.9e+13	0.000	-10276.32	-10276.32
L4.	-6769.196	5.85e-10	-1.2e+13	0.000	-6769.196	-6769.196
RIR						
L1.	-6980.303	4.03e-10	-1.7e+13	0.000	-6980.303	-6980.303
L2.	22135.91	1.07e-09	2.1e+13	0.000	22135.91	22135.91
L3.	-11655.92	1.44e-09	-8.1e+12	0.000	-11655.92	-11655.92
L4.	10438.3	6.70e-10	1.6e+13	0.000	10438.3	10438.3
GCF						
L1.	-21374.16	2.14e-09	-1.0e+13	0.000	-21374.16	-21374.16
L2.	-16816.43	1.06e-09	-1.6e+13	0.000	-16816.43	-16816.43
L3.	4449.597	1.21e-09	3.7e+12	0.000	4449.597	4449.597
L4.	-25204.71	1.13e-09	-2.2e+13	0.000	-25204.71	-25204.71
Pol						
L1.	-233924.3	1.15e-08	-2.0e+13	0.000	-233924.3	-233924.3
L2.	-89016.87	6.94e-09	-1.3e+13	0.000	-89016.87	-89016.87
L3.	-83432.83	8.05e-09	-1.0e+13	0.000	-83432.83	-83432.83
L4.	-75123.55	7.80e-09	-9.6e+12	0.000	-75123.55	-75123.55
_cons	3379392	2.15e-07	1.6e+13	0.000	3379392	3379392

Equation	Parms	RMSE	R-sq	chi2	P>chi2	
Bop	33	0	1.000	9.50e+26	0.0000	

Source: Author's Computations

From Table 4.9, it was further revealed that all variables with their respective lags were highly significant in determining the balance of payment in Kenya since the p values of 0.000 was less than the significance level of 5%. Also, we found that all variations from the (R-squared) results explained the balance of payments.

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the study objectives, methodology and concludes with findings of the research. In addition, it offer s policy recommendations and suggests areas that need further research.

5.2 Summary and Conclusion

The specific objective of the study was to identify the factors that affect the balance of payment performance in Kenya. In order to achieve this objective, the study adopted unrestricted VAR model to relate Kenya balance payments to selected determinants such as money supply, terms of trade, openness of the economy, real interest rate, exchange rate, gross capital formation and political Instability.

In determining maximum lag for the VAR model, lag four was found as the best number of lags needed in estimating the VAR model. Based on the regression results for the Vector autoregression model, it was revealed that all variables with their respective lags were highly significant in determining the balance of payment in Kenya since the p values of 0.000 was less than the significance level of 5%.

The results showed that first, second and third lags of balance of payment increased current balance of payment while the fourth lag reduced it. In addition, all lags except 4th lag of a differenced money supply led to a decrease in balance of payment in Kenya. This supports a study by Ali (2011) which concluded that money supply had a negative relationship with balance of payments. The results for relationship between

terms of trade and balance of payment showed mixed results in that first, third and fourth lags revealed a negative relationship with only the second lag giving a positive relationship. This conforms to expected sign which postulated that relationship could either be positive or negative.

It was further found that all the lags of a differenced exchange rate had positive relationship with balance of payment in Kenya. It therefore shows the same results as Tijani (2010), Oladipupo and Onotaniyahuro (2011), Osoro (2012), Guglielmo and Mudida (2012). Moreover, it was found that first and second lags of a differenced openness to economy lead to a decrease in current balance of payment in Kenya while third and fourth lags led to an increase in Kenya. According to a Parkh (2004), trade liberalization can led to unsustainable balance of payment in developing countries.

The results further revealed that first, second and third lags of gross capital formation resulted in a decrease in balance of payment in Kenya. It was also found that while the first and third lags resulted in deterioration in current balance of payment in Kenya second and fourth lags improved it.

Finally, all lags of political instability translated to unfavourable situation in the current balance of payment in Kenya. This is in line with a study conducted by Arfan (2008) whose result confirmed that stable political regimes with visionary leadership led a nation to higher level of favourable balance of payments.

5.3 Policy Recommendations

It should be noted that balance of payments performance plays a very critical role in an economy. For this reason, factors that influence Kenya's balance of payment need

to be closely studied and evaluated. According to the results obtained in this study, current balance of payment is negatively influenced by money supply, gross capital formation and political instability. In order to resolve their negative effects, policies that enhance improvement in balance of payment should be encouraged and consistently implemented. The government of Kenya, Central bank of Kenya, all financial institutions and other stakeholders whose activities influence money supply, gross capital formation and political instability ought to take a lead in addressing adverse effects found in Kenya's balance of payment.

In addition, openness of Kenyan economy, terms of trade and interest rate can either have positive or negative impact on balance of payment. In pursuit of a stable balance of payments through these variables, desirable policy measures that may be applied include strengthening export sector in Kenya, promoting local production of importable goods, exchange rate stabilization and encouraging competitive real interest rates that attract investors to invest in financial sectors. Above all, good policies and political stability are paramount in enhancing equilibrium in Kenya's balance of payment.

5.4 Areas for Further Research

The study has concentrated on effect of few determinants of Kenya's balance of payments. There are so many other factors that could be directly or indirectly affecting balance of payments which are not investigated. It is therefore recommended that effects of factors such as domestic credit, Gross domestic products, reserves, economic growth rates, Inflation rates and fiscal balance on balance of payments be done in future.

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APPENDIX: DATA

Year	Bop	Bm	Ex	Ope	TT	RIR	GCF	Pol
1975	338	27.39467	7.343193	0.643353	50	-1.64091	18.13989	0
1976	-712	28.18176	8.367145	0.642061	70	-7.49008	20.24422	0
1977	-2254	32.79569	8.276561	0.66552	83	-5.90234	23.72332	0
1978	1552	34.52913	7.729383	0.676235	53	6.712202	29.78929	1
1979	-1400	34.3548	7.475309	0.573642	59	4.128561	18.13278	1
1980	1444	29.9314	7.420188	0.654168	100.72	0.942589	24.50714	0
1981	1982	29.4702	9.047498	0.642802	88.11	1.410506	22.91344	0
1982	2096	30.42047	10.92233	0.582157	81.62	2.605412	21.86022	1
1983	-1364	28.17589	13.31152	0.541627	77.37	3.572394	20.92507	0
1984	-781	28.34209	14.41388	0.588039	87.02	3.83512	19.81103	0
1985	1725	26.68185	16.43212	0.554454	76.69	5.257538	25.32482	0
1986	1460	30.38808	16.22574	0.557414	85.5	4.864495	21.76804	0
1987	-2087	30.24395	16.45449	0.477028	77.86	8.15739	24.28943	0
1988	-1354	28.90107	17.7471	0.49975	81.06	8.026232	25.44904	0
1989	1610	28.39891	20.57247	0.531564	79.37	6.815212	24.86208	0
1990	-3379	29.57702	22.91477	0.570209	70.15	7.332797	24.16409	0
1991	-2866	30.98193	27.50787	0.555977	78.69	5.745513	20.97052	0
1992	-8660	36.5178	32.21683	0.529309	81.03	1.825329	16.92084	1
1993	25682	37.06523	58.00133	0.728585	94.87	3.413472	17.61044	0
1994	5297	38.01601	56.05058	0.712661	107.23	16.42811	19.29324	0
1995	-7378	42.23227	51.42983	0.717457	103.88	15.80165	21.81976	0
1996	22798	35.79169	57.11487	0.573121	108.25	-5.77659	15.00382	0
1997	6725	38.42265	58.73184	0.540571	114.02	16.87957	15.14099	1
1998	-291	35.80718	60.3667	0.488972	109.91	21.09633	16.69272	1
1999	411	35.7708	70.32622	0.481923	98.08	17.45405	15.52142	0
2000	8243	35.16473	76.17554	0.53309	100	15.32743	17.41409	0
2001	13071	35.24074	78.5632	0.559468	95.07	17.8125	18.79034	0
2002	257	38.15891	78.74914	0.551727	91.88	17.35814	15.13822	1
2003	31339	39.02316	75.93557	0.541323	90.16	9.770511	16.48215	0
2004	3075	39.32703	79.17388	0.59477	89.32	5.045258	16.9625	0
2005	21163	38.90672	75.55411	0.644789	90.05	7.609988	17.64969	0
2006	44446	39.7084	72.10084	0.649442	88	5.426264	18.48836	0
2007	63250	42.31659	67.31764	0.644777	84.74	7.314818	19.1192	1
2008	-33162	42.54033	69.17532	0.693549	84.31	0.710642	19.24008	1
2009	75182	43.94261	77.35201	0.613553	94.25	4.61571	19.84351	0
2010	12226	49.70303	79.23315	0.673485	92.32	11.85799	19.62737	1
2011	21847	49.95117	88.81077	0.736145	90.42	1.326266	20.75608	0
2012	123119	51.1612	84.5296	0.725652	89.89	12.07582	20.30396	1