

**THE EFFECT OF FOREIGN DIRECT INVESTMENT AND THE BALANCE OF
PAYMENT ON THE FOREIGN EXCHANGE RATE IN KENYA**

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DECLARATION

I declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for academic award.

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This project has been submitted for examination with my approval as the University supervisor.

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Dr. Kennedy Okiro.

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DEDICATION

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ABBREVIATIONS

BOT	-	Balance of Trade
BOP	-	Balance of Payment
CAB	-	Current Account Balance
FDI	-	Foreign Direct Investment
GDP	-	Gross Domestic Product
IMF	-	International Monetary Fund
KBS	-	Kenya Bureau Statistics
MNF	-	Multinational Firms
OECD	-	Organization for Economic Co-operation and Development
REH	-	Ricardian equivalence hypothesis

ABSTRACT

The study sought to understand the effects of foreign direct investments and the current account on the foreign exchange rate in Kenya. Many factors affect the foreign exchange rate in Kenya and elsewhere globally but this study was keenly interested in understanding the relationship between foreign direct investment and the current account on the foreign exchange in Kenya. The development of literature was guided by several theories and models; Elasticity approach to balance of payment, the balance of payments theory, Mundel-flaming model and the Balance of payment constraint model. The descriptive research design was used in this study. Data was sourced from Kenya Bureau of Statistics (KBS) and the Central Bank of Kenya and the World Bank database. The study used annual averages of foreign direct investment net inflows (% of GDP), annual averages on foreign exchange rates (LCU per USD) and annual current annual averages (% of GDP) from 1980-2014. The data was analyzed using descriptive analysis to model the relationship between two explanatory variables and a response variable by fitting a linear equation to estimate the relationships between the study variables as well as OLS regression analysis after testing for non-stationarity of data using Breusch-Pagan test. The findings established that the co-efficient of multiple determinations R-square value was 0.214; this implies that the chosen variables specifically foreign direct investment and the current account in Kenya during years 1980-2014 affect the foreign exchange rate by 21.4% and therefore 78.6% effects of the foreign exchange rate was associated with other unexplained factors. The regression results also indicate that the model used was significant at 5% level of significance with an F-statistic of 0.0023. The study recommends that the government should consider undertaking rigorous reforms towards improving the inflow of foreign direct investment. It was further recommended that Kenya being a developing nation key sector like infrastructure should be the center of focus and more funds should be channeled to this subsector so as to boost government consumption through establishing a debt fund as well as relaxing external commercial borrowing.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The exchange rate is a key element that best describe the state of an economy. The main influential factors over the exchange rate are: the current account of the balance of payments, the relationship between the supply and demand of the currency, foreign direct investment, the interest rates, the purchasing power parity, the country's tax policy, and the central bank intervention on the currency market. Empirical analysis by (Keneddy, 2013) provides support for the unit root alternative hypothesis affirming that these variables are non-stationary, and indeed, are of random walk. Given the non-stationarity of these series and the co-integration equation estimated, the results confirm that balance of payment co-integrates with exchange rates, balance of trade, and foreign direct investment. As a result, his study concurs with recent studies such as (Lehman, 2002) and (Brada and Tomsik, 2003) who show that foreign direct investment (FDI) contributes positively to the balance of payments and that the contribution can be very large.

Economic theory states that between the exchange rate and the balance of payments there is a one-to-one relationship. An increase (depreciation) in the exchange rate stimulates an increase of exports, diminishes the imports and determines a tendency to stabilize the balance of payments. Decrease (an appreciation) in the exchange rate discourages exports, stimulates an increase in imports and generates instability in the balance of payments. Foreign direct investments have an impact over the evolution of the exchange rate: the more the currency of a state is stable, the higher the foreign investments flow is (Iavorschi, 2014). In the Keynesian absorption theory, a rise in the budget deficit is seen as raising imports by means of an increase in domestic

absorption. Naturally, the rise in imports will culminate in current account deterioration. In the Feldstein chain model on the other hand, more emphasis is laid on the linkages between short-run capital movements, the exchange rate and interest. This approach has it that if a floating exchange rate regime is firmly in place and capital movements are unrestricted, then a fiscal shock that culminates in a budget deficit will cause national savings to fall. In order to redress this situation and recoup national savings, the interest rate will be raised thus attracting capital from abroad. Given the inwards flow of foreign capital, the value of domestic assets will rise causing the country's exports to decline. Put differently, budget deficits would trigger an upward movement in the domestic interest rate, thus causing substantial inwards capital movements. Naturally, an appreciation in the national currency would follow raising in turn the current account deficit of the country (Feldstein, 1992).

The situation of the current account of the balance of payments and the foreign direct investments flow are relevant elements that influence the dynamics of the economic competitiveness of a state. The stability of the balance of payments depends on the value of imports and exports, on the degree of efficiency and product competitiveness, on the price level, international services and the international markets position. Deficit and surplus of the balance of payment create a series of transformations in the structure of national economy with influence in the monetary behavior of the economic agents. In case a state is hit with a deficit in the balance of payments, the national economy is incapable of providing exports corresponding to the amount of national currency existing abroad. Currency holders abroad would sell the amounts in the currency market, and where the currency supply exceeds the demand then the currency depreciates. Alternatively, when the state achieves a surplus of the balance of payments, the

foreign currencies can be used to buy goods and services from abroad therefore the currency demand is higher than the supply and thus appreciates (Iavorschi, 2014).

1.1.1 Current Account of Balance of Payment

The Current account balance (CAB) is a key component of the balance of payment (BOP) and of vital importance in macroeconomic analysis of an open economy. Current account balance measures current payments (cash outflows) and current receipts (cash inflows) between residents of a country and the rest of the world. (Kariuki, 2009) explains that current account balance comprises of factor income, balance of transactions of goods and services and current transfers. Current account balance is an important economic measure of how well an economy fairs in international economic transaction and a key indicator of the level of national savings, spending behavior and investment (Wanjau, 2014). Economic theory contends that whether current account balance disequilibrium (precisely current account deficit) is beneficial or detrimental to the economy depends on factors that gave rise to it. For instance, the currency crisis in Mexico and Thailand in the 1990s' was linked to abrupt withdrawal of foreign financing amid a financial crisis. Large and persistent current account balances, reversal of foreign financing and an unsustainable import bill and inadequate export revenue highly disrupted private consumption, government expenditure and investment in the aforementioned economies (Kariuki, 2009; Ghosh and Ramakrishnan, 2006).

Current account covers all transactions that involve real sources (goods, services, income) and current transfers. The Current Account records exports and imports of goods and services, income receivable and payable abroad as well as current transfers. Current Account transactions

are recorded on a transactions gross basis. All credit transactions (i.e. receipts from abroad) and debit transactions (i.e. payments to abroad) are recorded. As per Todaro and Smith, (2003), current account balance is the difference between a country's total exports and imports of goods and services, plus net investment income, debt service payments, remittances and transfers. Current account balance is said to be in deficit when there is negative balance and surplus when the balance is positive.

The balance of payment identity states that the net balance on the current account should exactly mirror the net balance on the capital and financial account (International Monetary Fund, 2009). The identity claims that the net provision of real resources by an economy to the rest of the world matches a change in the country's net financial claims on the rest of the world. Kandil (2009) observed that the accounting relationship in the balance of payments indicates that a deficit in the current account may be associated with an increase either in the financial balance or a reduction in foreign reserves.

1.1.2 Foreign direct investment

Foreign Direct Investment (FDI) is considered to be an important source to build up physical capital, create employment opportunities, develop productive capacity, and enhance skills of local labour and managers through transfer of technology, and integration with rest of the world. It has been argued to play a key role in accelerating growth in developing countries. Foreign direct investment (FDI) is defined as investment in foreign assets, such as foreign currency, benefits or property, credits, rights, undertaken by a foreign national for the purposes of production of goods and services which are to be sold either domestically or exported overseas.

Foreign direct investment generally refers to an investment made to acquire a lasting management interest (normally 10% of voting stock) in a business enterprise in a country other than that of the investor defined according to residency (World Bank, 1996). Ownership of less than 10% is regarded as portfolio investment (Abala, 2014).

Foreign direct investment (FDI) inflow is accounted as credit entry in the financial account of balance of payment (BOP) thus having direct positive impact on BOP. However, increasing volume of FDI also increases the size of imports and profit repatriation. There is a large body of empirical literature showing positive effects of FDI on receiving country's economy including transfer of technology, employment creation, growth enhancement and tax collection. However, relatively less focused area is related to problems resulting due to FDI inflows in small open economies like Kenya. FDI inflows in developing countries may cause exchange rate appreciation, trade and income account balance worsening thus having serious implications for overall balance of payments and foreign exchange reserves (Sarno and Taylor, 1999).

A Foreign direct investment, (Kidwell et al, 2008), can also be defined as an investment in a business by an investor from another country for which the foreign investor has control over the company purchased.

1.1.3 Exchange rate

The exchange rate is the price of a unit of foreign currency in terms of the domestic currency (Cavallo, 2004). Exchange rate serves as the basic link between the local and the overseas market for various goods, services and financial assets. Using the exchange rate, one is able to

compare prices of goods, services, and assets quoted in different currencies (Barasa, 2013). In order for currencies to trade in a common market, one currency must be expressed in terms of the other. An exchange rate is the price of one currency in terms of another (Mishkin and Eakins, 2009). They can either be direct or indirect whereby a direct quotation refers to how much of the home currency is required to buy a unit of the foreign currency while an indirect quotation refers to how much a unit of the foreign currency can be obtained for a unit of the home currency (Howells and Bain, 2007).

Exchange rates can also be spot or forward whereby a spot transaction is a two day exchange of bank deposits while a forward exchange rate is an exchange at some future specified date (Mishkin and Eakins, 2009). Exchange rates can further be classified according to government control. (Madura and Fox, 2011) classified exchange rates as either fixed whereby the exchange rates are held constant or only allowed to fluctuate within very narrow boundaries or managed which is the exchange rate system that is in use today whereby exchange rates are allowed to fluctuate on a daily basis without any official boundaries. An exchange rate system may also be pegged to a foreign currency or a basket of foreign currencies and lastly a freely floating exchange rate system which is determined by the market forces without any intervention by the government. In Kenya, Obondi, (2013) in her study of the relationship between foreign exchange rates and the central bank rate determined that a central bank sells foreign reserves when the exchange rate is going up thereby dampening its rise and buys when it is going down in order to reduce the variability of the exchange rate.

According to Mishkin, (2008), the exchange rate of the currency in which a portfolio holds the bulk of its investments determines that portfolio's real return. A declining exchange rate obviously decreases the purchasing power of income and capital gains derived from any returns. Moreover, the exchange rate influences other income factors such as interest rates, inflation and even capital gains from domestic securities. Whereas there is no general theory of exchange rate determination, Eiteman et al (2001) divide the potential exchange rate determinants into five areas: parity conditions, infrastructure, speculation, cross-border foreign direct investment and portfolio investment, and political risks. For investors, exchange rates are determined by numerous complex factors that often leave even the most experienced economists baffled, investors however should still have some understanding of how currency values and that exchange rates plays an important role in the rate of return on their investments. Exchange rates are prices that are determined by supply and demand. For some countries the exchange rate is the single most important price in the economy because it determines the international balance of payments. (Levich, 2001)

1.1.4 Exchange rate and foreign direct investment

Economic literature defines the exchange rate as the price at which a national currency is traded for another currency (Krueger, 1996). The exchange ratio between currencies has a synthetic characteristic for it allows a comparative analysis of the gross domestic product, of prices, salaries, work productivity and other indicators from the two countries whose currencies are being compared. An important factor which influences the exchange rate is the foreign direct investments. Studies have shown that countries with strong national currencies attract huge flows of Foreign Direct Investment (Froot and Stein, 1991); Klein and Rosengren, 1994).

Exchange rate movements have a predefined implication on FDI. Depreciation or the decline in the relative value of a domestic currency relative to another foreign currency will have an advantage of lowering labor and production cost in the destination market thereby creating a locational advantage for foreign investors (Vernon, 2006). This attracts investors to take the advantage of relatively cheap and minimal production cost leading to an increase in the return to foreign investors. However this assertion is based on the assumption that this exchange rate depreciation is not anticipated beforehand. If the exchange rate movement is anticipated a priori, it may diminish the importance of the relative wage advantage as the anticipated exchange rate depreciation may be reflected in the higher investment financing cost due to the equalization of risk adjusted expected rate of return across countries as per the interest parity condition. On the other hand, this exchange rate movement should also not be coupled with a change in relative production cost for a depreciation of a domestic currency to have the stipulated effect (Ruiz, 2005).

Looking at the connection between exchange rate volatility and investments, (Cushman, 1985; 1988 and Goldberg and Kolstad, 1995) argues that there is a positive relationship between the foreign direct investments in the USA and the exchange rate volatility. The evolution of the FDI is determined mainly by the competitiveness of costs in the host country which is also influenced by the evolution of the exchange rate. When a national currency depreciates it has two potential implications for the FDI. In the first place, the depreciation of the national currency contributes to the decrease of salaries and production costs compared to the ones abroad. Moreover, the state that is confronted with national currency depreciation has a competitive advantage through the cheapening of the labour force. Through this relative channel of salary cost, the exchange rate

depreciation attracts foreign investors; unlike the reverse situation when there is a currency appreciation that drives away foreign investors (Goldberg, 1997). Foreign investors who choose to place FDI on emergent markets are vulnerable to the evolution of the exchange rate: devaluation attracts foreign direct investments by lowering prices, although it was expected for it to postpone the FDI flow because volatile exchange rates can only be correlated with economic and political uncertainty, which was actually meant to discourage foreign direct investments.

1.1.5 The relationship between exchange rate and current account

Studies have been carried out to explain the effects and the relationships between the Current account and other macroeconomic variables that include interest rates, inflation and exchange rate. Studies have found that the adjustment of the current account is associated with a slowdown in economic growth and a real depreciation of the exchange rate. Indeed, (Freund, 2005) using a dataset including 25 adjustment episodes from 1980 to 1997, shows that there is a threshold level of current-account deficit that is consistent with its sustainability: current-account reversals typically start when the current account deficit reaches 5% of Gross Domestic Product (GDP), leading to a significant decline in output growth and a real depreciation of the currency around 10% to 20%. Examining episodes of current-account adjustment in developed countries, (Debelle and Galati, 2005) also finds that current-account reversals are associated with a notable slowdown in domestic growth and large exchange rate depreciation.

Some studies pay particular attention to the speed of the adjustment process of the current account towards equilibrium. (Freund and Warnock, 2007) show that large deficits take more time to adjust than small ones, and are associated with a significant slowdown in GDP growth

with a greater impact in countries where exchange-rate movements are limited. Besides, they find that deficits resulting from investment growth are less painful in terms of exchange-rate adjustment than deficits driven by consumption. Relying on threshold autoregressive models for the G7 countries, Clarida et al. (2007) highlight that the adjustments speed of the current account is slow especially when some threshold levels of deficit are reached. They also underline that exchange rates tend to depreciate in phases of current-account deficits, and appreciate during current-account surplus episodes.

Focusing on Eurozone countries, Arghyrou and Chortareas, (2008) rely on logistic smooth threshold error correction specifications and show that the relationship between real exchange rates and current accounts is substantial in size and subject to important nonlinear effects. De Haan et al. (2008), using a probit specification to model the probability of reversals versus non-reversals, show that a deeper current-account deficit, absence of spare capacity in the economy, and a beginning real depreciation significantly increases the predictive power of an upcoming reversal of the current account. In addition, the exchange-rate regime matters since the reversal of a large current-account deficit is less probable under a peg or moving band regime than under crawling peg. They also find that current-account adjustments lead to recessions and severe currency devaluations in half of the reversal cases. Using a similar approach, Pancaro, (2013) highlights as well the importance of the exchange-rate regime on the current-account adjustment.

1.1.6 The Effect of Current Account and Foreign Direct Investment on Foreign Exchange Rate

The current account balance of the host country can be viewed as an indicator of the strength of its currency. A deteriorating current account balance is likely to lead to a depreciation of the host country's currency. It is possible that potential multinational investors view current account deficits negatively because such deficits may lead to inflation and exchange rate variations. If this is the case, then an increase in the current account deficit may lead to a reduction in foreign direct investment inflows. In contrast, if multinational companies take advantage of the current account deficits of the host country by negotiating more favorable operative terms, then the current account deficits may increase foreign direct investment inflows. Foreign investors may gain or lose from a depreciating exchange rate. For instance, a depreciating exchange rate may boost exports hence the current account and provide gains from resource-seeking foreign direct investment. Foreign investors, however, may lose as well because they must incur costs to prevent transaction and translation losses when currencies depreciate. If they believe that depreciation will continue after they enter a country, they may conclude that the costs will be too high to justify their investments. Grosse and Trevino, (1996); Froot and Stein, (1991); Klein and Rosengren, (1994), and Tuman and Emmert, (1999) find mixed investor reactions to exchange rate depreciation.

Leiderman and Thorne, (1996) in their study done in Mexico, report that foreign direct investment into Mexico changed very little after the Mexican currency crisis and devaluation of 1994. Further, in spite of the high value of the U.S. dollar during much of the 1980s, the United States was a net recipient of foreign direct investment. Therefore, the impact of exchange rate

depreciation on foreign direct investment inflows seems to be ambiguous. Exchange rate risk that is created by exchange rate volatility affects current account through export-import variations as well as the flow of foreign direct investment; various studies have pointed to scenarios where the impact may be negative as well as positive.

Iavorschi, (2014), research findings statistically prove that the current account of the balance of payments of Romania and the dynamics of the foreign direct investments affect the evolution of the exchange ratio of the leu currency against the euro currency, in the medium term. The increase of the current account of the balance of payments determines the increase of the exchange rate, and the increase of the foreign direct investment flow also carries along the increase of the rate of exchange. In the case of this research the regression model has been successfully confirmed by validating the economic theory regarding the influential factors of the exchange rate. The volatility of the leu/euro exchange rate can be explained up to a certain point by the influence of the economic indicators, such as, the situation of the current account of the balance of payments and the foreign direct investment dynamics. Beyond the influence of these two indicators, the fact that unexpected leu-euro exchange fluctuations in Romania, in the period analyzed, were in some degree due to the political and fiscal instability, which along with speculative actions have contributed to the national currency depreciation in favour of the single currency.

Kennedy, (2013) findings in his study suggest that as the foreign direct investment flow increases it may motivate the investors to increase the production of domestic substitutes to imports which can improve the trade balance. The trade balance will reduce because FDI would

positively impact on export as more goods and services are produced through import substitution strategy. The results further showed that the Coefficient of budget deficit was positive but insignificant. This is in line with the assumption that increase in the government's budget deficit leads to an increase in the trade deficit as given by Mundell-Fleming model. The equation represents the estimated long-run relationship between trade balance, the real exchange rate, budget deficit and foreign direct investment.

1.2 Problem Statement

Kenya has and continues to experience large and persistent current account balance deficit over the last decades. Evidence shows that imports have not only grown at a faster rate but they are relatively price-inelastic compared to exports (Kariuki, 2009). Theoretical and empirical literature identify real exchange rate management as the main policy instrument that influence trade policies and current account balance (Ozturk and Acaravci, 2009; Ghosh and Ramakrishnan, 2006). However, due to liberalization, Central Bank of Kenya has lost its control of exchange rate as the anchor shifted from nominal exchange rate to inflation targeting (Kariuki, 2009; Mudida *et al*, 2012). Large current account deficit may be beneficial to developing countries if foreign debt complement low capital formation of the internal economy and consequently stimulates economic growth (Kariuki, 2009; Ozturk and Acaravci, 2009).

Like many other developing countries, Kenya runs a large current account balance deficit while experiencing increased foreign direct investment in the recent past. A great part of international macroeconomics literature focuses on issues that arise when the current account balance is in disequilibrium and its implication on foreign trade competitiveness. (Kariuki, 2009; Tsikata,

2013), an empirical study, have focused on determinants of international trade flows with particular emphasis on the relationship between current account balance and key macroeconomic variables. Ambunya (2012) studied the relationship between exchange rate movement and stock market returns volatility at the Nairobi Securities Exchange and concluded that there is a strong relationship between exchange rate movement and stock market returns volatility. Mwanza (2012) reviewed the relationship between monetary policy and the performance of the NSE and established that the monetary policies including exchange rates greatly affected the stock returns at the NSE following the high level of foreign investors and the high fluctuations in the exchange rates.

A study by Mungami (2012) examined the effects of exchange rate liberalization on the balance of payments of a developing country using a case of Kenya. Mungami recommends development of forwards, futures and options markets to enable the companies to certainly forecast the expected exchange rates in the future hence facilitate planning. Sekantsi (2009) used ARCH and GARCH models to examine the effect of real exchange rate volatility on South African exports to the U.S. for the period 1990:1- 2000:4. The findings are that Rand's real exchange rate variability exerts a significant and negative impact of exports both in the long and short-run. Kariuki (2008) studied the determinants of current account balance in Kenya using the inter-temporal approach. Kariuki noted that large and persistent current account deficits constitute a cause for concern, particularly when sustainability issues are raised and thus the economic prospects of a country are put at risk.

From the above discussions, it is evident; that there is no known study that has focused on the effect of foreign direct investment and the current account balance on the foreign exchange in Kenya. This study therefore is aimed at filling this research gap by answering the following question: What is the effect of foreign direct investment and current account on foreign exchange rate in Kenya?

1.3 Research objective

The general objective of the study was to establish the effect of foreign direct investment and the current account on the foreign exchange rate in Kenya. The specific objectives were:

- i. To establish the effect of foreign direct investment on foreign exchange rate in Kenya.
- ii. Policy implications

1.4 Value of the study

The study will be important to various stakeholders, such as; the government, researchers, industry players, policy makers, and economic analysts, among others. The study will contribute to the existing body of knowledge on the relationship between foreign exchange rate, foreign direct investment and current account of balance of payments in Kenya and thus serve as a source of reference for further research.

Also, the study would help government policy makers in understanding the behavior of the exchange rate on FDI, current account and the entire economy for economic development of the country. Through the findings of this study, the policy makers would be able to device what

strategies need to be put in place to ensure stable exchange rates that would positively influence FDI and the current account and consequently the balance of payments.

The study would help foreign investors to hedge foreign exchange risk. Foreign exchange risk arises when an investor holds assets or liabilities in foreign currencies that would have an impact on the earnings and capital due to the fluctuations in the exchange rates. Kenya being a free market economy, it would not be easy to predict what the exchange rate would be in the next period; it can move in either upward or downward direction regardless of what the estimate projections were. This uncertainty in exchange rate poses as a challenge and a threat to the earnings and capital to a foreign investor and also the government in the estimation of the current account balances hence the balance of payment.

The findings of this study will be significant to both academicians and policymakers in that it will add to the knowledge and bridges the knowledge gap of the researchers in this field of study as well as serving as a guide to both policy makers and academicians.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers the literature review on foreign exchange rates and the variables that affect the foreign exchange rate. It encompasses the empirical review on foreign exchange rates and evaluating what other researchers have written on foreign exchange rates and its interrelation with foreign direct investment and the current account of the balance of payment. The chapter also includes theoretical framework on exchange rates and its interrelation while identifying the knowledge gap.

2.2 Theoretical Review.

There are different theories on foreign exchange rate, each identifying own paradigm and concept about the foreign exchange rates. The study is anchored on the exchange rate theories that identify its relationship with foreign direct investment and the current account. Highlighted below are some of such theories which include;

2.2.1 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. The approach also applies the Marshall-Lerner condition which states that the sum of price elasticity of demand for imports and exports must be more than one in absolute terms for devaluation of domestic currency to improve the balance of payments.

2.2.2 The Balance of Payments Theory

The balance of payments theory is the modern and most satisfactory theory of the determination of the exchange rate. It is also called the demand and supply theory of exchange rate. According to this theory, the rate of exchange in the foreign exchange market is determined by the balance of payments in the sense of demand and supply of foreign exchange in the market. Here the term 'balance of payments' is used in the sense of a market balance. If the demand for a country's currency falls at a given rate of exchange, we can speak of a deficit in its balance of payments. Similarly, if the demand for a country's currency rises at a given rate of exchange, we can speak of surplus in its balance of payments. A deficit balance of payments leads to a fall or depreciation in the external value of the country's currency. A surplus balance of payments leads to an increase or appreciation in the external value of the country's currency (Galí, and

Monacelli, 2005). According to the theory, a deficit in the balance of payments leads to fall or depreciation in the rate of exchange, while a surplus in the balance of payments strengthens the foreign exchange reserves, causing an appreciation in the price of home currency in terms of foreign currency. A deficit balance of payments of a country implies that demand for foreign exchange is exceeding its supply.

2.2.3 Mundel-Flaming Model

According to the Mundell–Fleming model, an increase in the budget deficit will exert upward pressure on domestic interest rates, thereby causing capital inflows, and the exchange rate to appreciate, which in turn deteriorates the current account balance. The Keynesian approach, however, argues that a rise in the budget deficit will increase domestic absorption via import expansion, causing a current account deficit. This school of thought holds that the budget deficit has a significant impact on the current account deficit. Studies by Fleming (1962), Mundell (1963), Volcker (1987), Kearney and Monadjemi (1990) and Smyth et al. (1995) argue that large government deficits increase trade deficits via different transmission mechanisms.

Alternatively, the Ricardian equivalence hypothesis (REH) (Barro, 1989) argues that shifts between taxes and budget deficits do not affect the real interest rate, the quantity of investment or the current account balance. They argue that the effect of the present tax cut or increase in government expenditure do not alter the mix of current consumption and investment, because rational agents foresee.

2.2.4 Balance of Payment Constraint Model

The Balance of payment constrained model, otherwise known as Thirlwall Law' has gained a lot of popularity. Balance of payment constrained model formulated in 1979 by Thirlwall adopted a Keynesian view of aggregate demand and output but fundamentally incorporates the neoclassical elasticity approach in its formulation. According to this theory, export is the only component of national output that provides foreign reserves which consequently allows the growth of other demand components in an open economy (Bahmani, Oskooee and Ratha, 2004).

BOP constraint model explains that if an economy's rate of import exceeds the rate of exports then balance of payment deteriorates which in turn impedes economic growth. Balance of payment constraints model holds that faster income relative to export growth may only cause balance of payment disequilibrium because it increases demand for imports relative to export thus worsening the Balance of Payment (BOP) position. BOP constraint model conjectures that BOP equilibrium can only be maintained by export led growth.

According to theory the relationship between export and growth is circular and cumulative to the extent that export led growth increases productivity which further increases competitiveness and revenue growth from exports (Bahmani, Oskooee and Ratha, 2004). Of particular interest to economists and policy makers in developing countries is the impact of changes in exchange rate on current account balance and economic growth. Therefore, two main theories attempt to explain issues and dynamics among exchange rate policies, current account deficit and economic performance (Dornbusch, 1988; Kariuki, 2009; Ozturk and Acaravci, 2009; Mudida *et al*, 2012). First, the Marshal-Lerner condition stipulates that real exchange rate depreciation (or

devaluation) may potentially improve current account balance if and only if price elasticities for demand of imports and for demand of exports exceed unity in absolute terms. Secondly, Thirlwall law categorically argues that the relative magnitude of income elasticities for imports and exports determine growth by imposing a balance of payment constraint on demand.

2.3 Determinants of Foreign Exchange Rates

There are numerous factors that determine the exchange rate between two countries.

2.3.1 Country's Current Account

The current account is the balance of trade between two countries. It reflects all payments and receipts between the two countries for goods, services, interests and dividends. A negative balance of payment or a deficit in the current account shows that the country is importing or spending more on foreign trade than it exporting or earning from abroad. This means that the country requires more foreign currency than it receives from its exports. This excess demand for foreign currency and lowers the country's exchange rate (Taylor, 2001). A good example of this is the deficit balance of payment between US and China. Ideally, due to this increasing deficit in the balance of payment the Dollar should depreciate against the Yuan, however the Chinese government is artificially keeping the exchange rate of Yuan fixed in order to keep its goods cheaper. This kind of fixed exchange rate is called Pegged rate (Svensson, 2000).

A country's current account reflects balance of trade and earnings on foreign investment. It consists of total number of transactions including its exports, imports and debt, among others. A deficit in current account due to spending more of its currency on importing products than it is

earning through exports causing depreciation. Balance of payment thus fluctuate exchange rate of its domestic currency.

2.3.2 Gross Domestic Product

The gross domestic product (GDP) of a country is a measure of all of the finished goods and services that a country generated during a given period. GDP gives best measure of health of country's economy. It is the number calculated by consolidation of total expenses of government, money spent by business, private consumption and exports of the country. Foreign investors get attracted towards the countries with economically strong GDP. It leads to better valuation of the currency of the country because more and more money comes to the country.

2.3.3 Interest Rates

An interest rate is described as the price a borrower pays for the use of money he does not own, and has to return to the lender who receives for deferring his consumption, by lending to the borrower. Interest can also be expressed as a percentage of money taken over the period of one year (Devereux and Yetman, 2002). An interest amount is very well stated as the rate of increase over time of a bank deposit. An Interest, which is charged or paid for the use of money, is often expressed as an annual percentage of the principal. It is calculated by dividing the amount of interest by the amount of principal. Interest rates often change as a result of the inflation and Government policies. A negative real interest rate means that the nominal interest rate is less than the inflation rate (Gagnon, and Ihrig, 2004). Interest rate is the tool used by the central bank of a country to keep a check on any major currency fluctuation. An increase in interest rate is

necessary to stabilize the exchange rate depreciation and to curb the inflationary pressure and thereby helps to avoid many adverse economic consequences.

2.3.4 Unemployment Rate

The unemployment rate is another factor that can influence the exchange rate. A relation that can reveal a connection between the unemployment rate and the exchange rate is given by the number of available workplaces. If the number of available workplaces is consistent, then this represents a signal of the economic growth, thus the companies need to hire more personnel to handle the consumer needs (Shambaugh, 2004)

2.3.5 Inflation Rates

Inflation means a sustained increase in the aggregate or general price level in an economy. Inflation means there is an increase in the cost of living. There is widespread agreement that high and volatile inflation can be damaging both to individual businesses and consumers and also to the economy as a whole.

According to (Mińska-Struzik, 2012) a study done in Poland; Increase in the price level in Poland causes depreciation of the zloty (Polish currency), as the more expensive products are at the domestic market, the more it encourages consumers to import products from abroad, and thus the supply of currency increases.

Generally, the inflation rate is used to measure the price stability in the economy. A low inflation rate scenario will exhibit a rising currency rate, as the purchasing power of the currency will increase as compared to other currencies.

2.4 Empirical Literature Review

This section reviews empirical research relevant to the area of interest to this study. Given the influence of foreign exchange rate on trade, flow of foreign investments and the balance of payment position in developed and developing countries, this study focused on literature in Africa with particular emphasis given to Kenya in an attempt to review literature that was relevant to this study.

Onafowara, (2003) investigated the effect of real exchange rate changes on trade balance in three Asian countries namely Malaysia, Indonesia and Thailand. The study used quarterly data from 1980 to 2001. Using Vector error correction model and impulse response method, the results indicated a positive long run relationship between exchange rate and trade balance in all countries under consideration. Comparatively, the results showed that real exchange rate shocks worsened Thailand and Indonesia's balance of trade with respect to major economies such as Japan and the U.S. In all cases, Co-integration analysis shows that there exists a stable long run relationship among current account balance, real income, real exchange rate, and real foreign direct investment and income.

Ogwuru, (2008) used time series data from 1970 to 2005 to evaluate the impact of current account balance on the domestic interest rate, exchange rate, money supply and foreign capital

flows in Nigeria. Using an error correction model, it was established that depreciation of Naira (Nigerian currency) which allegedly reduces in import demand and increase of Nigeria's export, does not act to improve the Nigeria's current account balance.

Kariuki, (2009) used intertemporal approach to investigate determinants of current account balance in Kenya. Using Annual time series data from 1970 to 2006, the study applied error correction model and Engle-Granger co-integration in an attempt to investigate the short run and long run relationships. It was established that there existed one co-integrating relationship between real exchange rate and economic growth rate, relative prices, degree of openness and level of money supply. The study also found out that current account balance was positively influenced by favorable terms of trade, depreciation in real exchange rate, economic growth and fiscal balance. Shocks such as oil crisis, coffee boom were found to have a significant negative impact on current account balance. This study shows that degree of openness has an important implication on current account balance in the economy.

Britto and McCombie, (2009) examined whether Thirlwall law applies in Brazil but factored in capital inflow into the equation. The study used Autoregressive distributed lag model to estimate import demand function. The study estimated the import demand function and compared the estimated income elasticity from import demand function to the hypothetical income elasticity calculated by dividing average exports over average income as given in Thirlwall's law. The results showed in the short run, Thirlwall law did not apply in Brazil meaning that balance of payment constraint is one of the real inhibitors of short run economic growth in the country. However, the long run model showed that there is a stable relationship between relative prices

and current account movement. This means that Thirlwall law holds in the long run. The paper also showed that including capital inflow explains the model balance of payment dynamics further thus recommending that Thirlwall hypothesis should be extended to accommodate capital inflow. The study also observed that if there is a significant co-integrating vector between series of actual growth rates calculated using estimated income elasticity from imports can be interpreted economically as the existence of an equilibrium growth rate around which two series fluctuates. In this case the regressions uses exponential growth rate of actual and hypothetical growth rates compatible with balance of payments and extend to include interest rate payments (Moreno-Brid, 2003).

Ozturk and Acaravci, (2010) utilized an Autoregressive Distribution lag model to investigate the Thirlwall law which states that balance of payment position constrained economic growth in South Africa. Using monthly time series data from 1984 to January 2006, the study found out that Thirlwall hypothesis was supported in South Africa meaning that equilibrium income was equal to the actual income growth in South Africa. The study also established that imports were co-integrated with relative prices and equilibrium growth rate. This implies that policies geared towards reducing import elasticity and enhancing export growth may lead to improvement of balance of payment.

Mudida *et al.* (2012) examined whether Marshal-Lerner condition was applicable in Kenya. Using fractional integration and co-integration methods, the study utilized quarterly data from 1996 to 2011. It was established that there exists a co-integrating relationship between balance of payment and real exchange rate and real income. The study also proved that although the

convergence process or J-curve effect was slow, the Marshal-Lerner condition was satisfied in the long run.

Fleming (1962) and Mundell (1963) explained that an increase in budget deficit induced upward pressure on interest rates, thereby causing capital inflows and an appreciation of the exchange rate that in turn increased the current account deficit. Volcker (1987), Kearney and Monadjemi (1990) and Smyth et al. (1995); among other researchers argued that government deficits may cause trade deficits through different channels.

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. Kumar (2007) concluded that FDI inflows appeared to be risky for developing countries' economies. FDI being foreign capital led to capital flight in times of extreme financial crisis. The study concluded that FDI may be accompanied with distress sale of domestic assets and proved harmful for the economy. The profits earned through the investment were repatriated to the countries of origin of that foreign investment that had exerted bad impact on current account balance. Mencinger (2008) discussed that the bigger the inflow of FDI led to higher current account deficit as FDI drives local competitors out of business, increases imports and decreases the efficiency acquired by firms from multinational firms. Bhagwati (1998) claimed that impact of FDI on growth appeared to be positive in case of export promoting countries not in case of small developing economies. This study also revealed that the FDI to

GDP ratio and current account balance to GDP ratio of eight transition economies had shown a negative relationship.

Goldberg, (1993) studies the impact of the exchange rate and its uncertainty on industry-level investment in the United States and finds that in the 1980s the real dollar depreciation (appreciation) was likely associated with investment contraction (expansion). Darby *et al.* (1999) examine real exchange rate uncertainty and aggregate investment for five OECD countries and finds mixed results in the sense that there were circumstances in which rising volatility would increase or decrease investment.

Cushman, (1985, 1988) in his studies of exchange rate risk (due to exchange rate volatility) finds a negative relationship between FDI flows from the United States and exchange rate risk. Goldberg and Kolstad, (1995), however, argue that if both the real demand and exchange rate shocks are assumed, exchange rate volatility tends to increase the FDI share even with identical costs of production across countries. In their empirical work using quarterly U. S. bilateral FDI flows to four countries from 1978-1991, they show that exchange rate volatility and the share of FDI in total investment are positively related. This finding supports their theoretical prediction that investors are risk averse. They also find that a depreciation of the source country currency leads to a reduction in FDI outflows but this effect is not very large.

Sung and Lapan, (2000) use the irreversibility literature in an open economy by Dixit and Pindyck (1994) and Abel (1983) to explore the impact of exchange rate uncertainty on FDI of a risk neutral multinational firm (MNF) which may open a plant at home or abroad. They show

that it can be profitable for the MNEs to open plants in two different countries with sufficient exchange rate volatility, essentially implying that FDI increases with exchange rate volatility. Roy and Viaene, (1998) developed a model in which FDI is motivated by strategic considerations. Their model incorporates intermediate inputs that are produced abroad in an oligopolistic market. This allows FDI firms to bid up the price of inputs to non-foreign investing competitors which increases the opportunity cost of non-investment and leads to bunching of FDI. Under such circumstances, exchange rate variability has a positive effect on FDI.

2.5 Overview of Literature

The literature reviewed shows that there is a clear evidence that effect of exchange rate and elasticity of exports and imports ultimately affect trade balance and economic growth of an economy through foreign income and investment. The supposition that the degree to which real exchange rate depreciation improves trade balance is subject to elasticity approach has gained popularity in both theoretical and empirical investigations. The balance of payment constraint model, otherwise known as the Thirlwall law, has been identified as a superior model as it combines neoclassical supply oriented approach with Keynesians' effective demand concept (Thirlwall, 1979 as cited by Ozturk, L. and Acaravci, 2010).

Balance of payment constraint model which assumes Marshal-Lerner (M-L) conditions have become the underlying assumptions for those who support devaluation or depreciation as a means to stabilize the foreign exchange market and to improve the trade balance. However, Thirlwall law aims at observing the long run relationship between economic growth, growth of exports and import elasticity and therefore offers a different and more superior basis of analyzing

the impact of real exchange rate on current account balance and economic growth both in the short run and the long run. Empirical literature significantly supports the assertion that developing countries have shown that devaluation or depreciation may cause a negative effect on the trade balance in short – run, but improvement in long – run.

While Fleming (1962) and Mundell (1963) explained that an increase in budget deficit induced upward pressure on interest rates, thereby causing capital inflows and an appreciation of the exchange rate that in turn increased the current account deficit. Cushman, (1985, 1988) in his studies of exchange rate risk (due to exchange rate volatility) finds a negative relationship between FDI flows from the United States and exchange rate risk. Goldberg and Kolstad, (1995), however, argue that if both the real demand and exchange rate shocks are assumed, exchange rate volatility tends to increase the FDI share even with identical costs of production across countries. In their empirical work using quarterly U. S. bilateral FDI flows to four countries from 1978-1991, they show that exchange rate volatility and the share of FDI in total investment are positively related. This finding supports their theoretical prediction that investors are risk averse. They also find that a depreciation of the source country currency leads to a reduction in FDI outflows but this effect is not very large.

Ogwuru, (2008) in his study used time series data from 1970 to 2005 to evaluate the impact of current account balance on the domestic interest rate, exchange rate, money supply and foreign capital flows in Nigeria. Using an error correction model, it was established that depreciation of Naira (Nigerian currency) which allegedly reduces in import demand and increase of Nigeria's export, does not act to improve the Nigeria's current account balance.

Thus far, the empirical review above has shown the relationship between foreign direct investment and economic development of a country as well as on the balance of payments with the foreign exchange rate being an influencing factor across. But these studies were done in different environments and hence the results may not be generalized to Kenya specifically. There is therefore a gap in literature as regards the foreign direct investment and the current account on foreign exchange rate. This is a gap the present study sought to bridge.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the methodology that was used in the study. The chapter covered research design, sampling design, target populations, data collection instrument and data analysis technique.

3.2 Research Design

According to (Mugenda and Mugenda, 2003), a research design helps researchers to lay out the research questions, methodologies, implementation procedures, and data collection and analysis for the conduct of a research project. Generally there are three types of research design: quantitative design, qualitative design, and mixed methods design. In this study the researcher will use the quantitative research design which includes the descriptive research design. The descriptive research design will be used in this study. The descriptive research design is suitable for the need to describe the interrelationship between foreign direct investment and current account on the foreign exchange rates in Kenya. The study will describe the major variables associated with foreign exchange rates in Kenya.

3.3 Data Collection

The study will use the Kenya Bureau of Statistics (KBS), the Central Bank of Kenya and the World Bank data bases as sources of information in the pursuit to establish the effects of foreign direct investment and current account on foreign exchange rates in Kenya. Data to be used will

3.6. Variables and Description

3.6.1. Dependent Variable

The dependent variable for this study is foreign exchange rate which is measured by units of local currency relative to U.S. dollar.

3.6.2. Independent variables

There are two independent variables in this study. These variables include:-

3.6.2.1. Foreign direct investment

Foreign direct investment refers to acquisition of foreign assets including foreign currency, credits, rights, property or benefits by foreigners in a local economy. Foreign direct investment leads to an increase in foreign currency thus resulting into appreciation of the local currency. Generally, an increase in foreign direct investment is expected to have a negative effect on foreign exchange rate.

3.6.2.2. Current Account

Current account balance (CAB) is a key component of the balance of payment (BOP) and of vital importance in macroeconomic analysis of an open economy. Current account balance measures current payments (cash outflows) and current receipts (cash inflows) between residents of a country and the rest of the world. A favorable current balance implies that cash inflows are more than outflows hence resulting to the appreciation of the local currency. A positive current account balance is expected to have a negative effect on foreign exchange rate.

3.7. Control Variables

A number of other factors are assumed to influence foreign exchange rate and among these factors include:-

3.7.1. Tax revenue

Tax revenue refers to the levies collected from economic agents. When tax increases, economic agents are left with less income which eventually leads to a decrease in imports. This implies a decrease in demand for foreign currency thus resulting to appreciation of the local currency. Generally, an increase in tax revenue is expected to have a negative effect on foreign exchange rate.

3.7.2. Government consumption

One of the government's roles is the provision of public goods for instance infrastructure. Using infrastructure for instance, expanding infrastructure, government consumption increases through the purchase of the material needed for the infrastructural expansion. Parts of these materials are imported thus creating pressure on the foreign exchange rate thus resulting to its depreciation. Generally, high government consumption is expected to have a positive effect on foreign exchange rate.

Summary of the variables and their expected signs is shown in table 3.1

Table 3.1: Variables and the expected signs

Variable	Expected Sign
Foreign direct Investment	-
Current Account	-
Tax Revenue	-
Government Consumption	+

Source: Author's Representation

3.8. Estimation Technique

The study uses ordinary least squares (OLS) in establishing the relationship between foreign exchange rate and the explanatory variables. OLS is the preferred estimation technique since it is straightforward and is easy to understand. However for OLS to be used, assumptions of classical linear regression model must hold. Stata version 12 will be the preferred econometric tool to run the required regressions since it is easier to understand and can handle time series data.

3.9. Diagnostic Tests

The study will carry out diagnostic tests as discussed below.

3.9.1 Heteroscedasticity

Heteroscedasticity refers to a situation where variance of the error term varies with change in the number of observation. Presence of heteroscedasticity does not have an impact on the unbiasedness and linearity of the regression coefficient since it only affects the best property of

OLS, which renders the conclusion made while testing hypothesis invalid (Gujarati, 2004). The study therefore tests for heteroscedasticity using Breusch-Pagan-Godfrey test.

3.9.2 Autocorrelation

Autocorrelation refers to a case where error term is related to its preceding value. Presence autocorrelation however, do not affect the unbiasedness of the estimates but render hypothesis testing inapplicable. Autocorrelation occurs mostly in time series data. The reason behind this is the fact that such data assumes a certain trend as the time changes. Autocorrelation does not affect the unbiasedness, linearity and asymptotic nature of the estimators. The only problem is that it violates the Best property of OLS which makes conclusion hypothesis testing wrong. This study therefore uses Breusch-Godfrey test to check whether data experience serial autocorrelation (Gujarati, 2004).

3.9.3 Multicollinearity

Multicollinearity is also common in time series data since variables may be following a particular trend. Multicollinearity refers to a situation where some of the explanatory variables are related. The variables may be increasing or decreasing over time. Multicollinearity makes the coefficient of regression to be indeterminate. Multicollinearity may be common among variables, but what matters is the degree (Gujarati, 2004). To check for the presence of multicollinearity, the study uses the variance inflation factors (VIF) test (Nachtsheim, 2004).

3.9.4 Stationarity Test

Stationarity refers to a case where the mean of the data is time independent. Unit root tests are used to detect non stationarity in all the variables. If variables are non- stationary, there is a tendency of the estimates to change over time. This characteristic leads to spurious estimates. Therefore, if variables are found to be non-stationary, successful differencing is applied until the bias is eliminated. The null hypothesis in this case is that the variable under consideration is non-stationary. Augmented Dickey Fuller (ADF) test is used in testing for stationarity (Gujarati, 2004).

3.9.5 Normality

One of the assumptions of classical linear regression model is that the error term must be normally distributed with zero mean and a constant variance denoted as $\mu (0, \sigma^2)$. The error term is used to capture all other factors which affect dependent variable but are not considered in the model. However, it is thought that the omitted factors have a small impact and at best random. For OLS to be applied, the error term must be normal (Gujarati, 2004). To confirm whether the error term is normal or not, the study will employ the Shapiro- Wilk test.

Table 3.2: OLS Assumptions and tests

OLS Assumption	Test
Heteroscedasticity	Breusch-Pagan-Godfrey
Autocorrelation	Breusch-Godfrey
Multicollinearity	Variance Inflation Factors
Stationarity	Augmented Dickey Fuller
Normality	Shapiro wilk

Source: Author's Representation

CHAPTER FOUR

EMPIRICAL RESULTS

4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research objective and the research methodology. The findings of the study are presented on the effect of foreign direct investment and current account on foreign exchange rate in Kenya. The data was collected from secondary source, which included the records at Central Bank of Kenya and Kenya National Bureau of Statistics Kenya Bureau of Statistics (KBS) and the World Bank Data bases.

The results of empirical analysis are then presented using descriptive statistics of the data, diagnostic tests and report on the regression results.

Table 4.1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
fexch	35	51.8264	28.60605	7.420187	88.81077
fdi	35	0.5350906	0.5661132	0.0047207	2.532351
taxrev	35	16.29983	3.671764	5	20.49433
govscons	35	4.179309	5.863383	-5.383619	29.39412
CAB	35	-6.041536	5.118496	-18.67982	0.8884503

The total observations considered in this study were 35 with five variables (one dependent and four independent variables). Foreign exchange rate deviates from its mean (51.8264) by 28.60605 but ranging between 7.420187 and 88.81077. Foreign direct investment inflows as a percentage of GDP deviate from its mean (0.5350906) by 0.5661132 but ranging between

0.0047207 and 2.532351. Current account balance as a percentage of GDP deviates from its mean (-6.041536) by 5.118496 but ranging between -18.67982 and 0.8884503. In general the standard deviation for each variable indicates the value by which a given variable deviates from its mean. Among the variables under study, foreign direct investment inflows as a percentage of GDP has the least standard deviation, an indication that it does not deviate much from its mean. Foreign exchange rate has the largest deviation indicating that it deviates much from the mean.

4.2 Correlation Matrix

Correlation of the variables is examined in the table shown below.

Table 4.2: Correlation matrix

	Fexch	fdi	Taxrev	govscons	CAB
Fexch	1.0000				
Fdi	0.1146	1.0000			
Taxrev	0.5687	0.0163	1.0000		
Govscons	0.1084	0.0854	0.0782	1.0000	
CAB	-0.0804	-0.0527	-0.1847	0.0211	1.0000

From Table 4.2, we observe the relationship existing between various variables used in this study. There is a positive association between foreign exchange rate and foreign direct investment as a percentage of GDP, tax revenue as a percentage of GDP, government consumption growth rate whereas current account balance exhibit negative association with foreign exchange rate. Foreign direct investment as a percentage of GDP has positive

association with tax revenue as a percentage of GDP and government consumption growth rate but negatively associated to current account balance. Tax revenue as a percentage of GDP has a positive association with government consumption growth rate but has a negative association with current account balance. Lastly, government consumption growth rate has a positive association with current account balance.

4.3. Diagnostic Test

4.3.1. Heteroscedasticity

Using Breusch-Pagan test results are as shown in table 4.3.

Table 4.3: Test for Heteroscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity
Ho: Constant variance
Variables: Fitted values of Foreign exchange rate
chi2(1) = 0.66
Prob> chi2 = 0.4163

The results reveal that the variances of the random error terms are constant across observations since the p-value of 0.4163 leads to acceptance of the null hypothesis of constant variance. This confirms absence of heteroscedasticity.

4.3.2. Autocorrelation

Breusch Godfrey test was applied in testing for serial correlation. The results are as shown in table 4.4.

Table 4.4: Autocorrelation

Breusch-Godfrey LM test for autocorrelation			
lags(p)	chi2	Df	Prob> chi2
1	23.916	1	0.0000
H ₀ : no serial correlation			

The test results reveal presence of serial correlation since the p-value of 0.0000 is significant thus leading to the rejection of the null hypothesis. As a remedy to this bias, robust standard errors will be used.

4.3.3. Multicollinearity

To test for multicollinearity, Variance Inflation Factors (VIF) was examined. For VIF values greater than 10, multicollinearity is deemed to be present (Nachtsheim, 2004). The VIF values are shown in table 4.5.

Table 4.5: Multicollinearity

Variance Inflation Factors

$$VIF = \frac{1}{1 - R^2}$$

Where VIF= variance inflation factor

R^2 = coefficient of determination

$1/VIF$ = tolerance

Variable	VIF	1/VIF
Taxrev	1.04	0.959145
CAB	1.04	0.961816
Govscons	1.02	0.985170
Fdi	1.01	0.989736
Mean VIF	1.03	

All the variables had VIF less than 10 (see Table 4.4(a)). To solve this, we differenced the variables with VIF greater than 10 implying absence of multicollinearity.

4.3.4. Stationarity Test

Stationarity means the variable is integrated of order zero and therefore inference is applicable. However, presence of a unit root lead to spurious regression which renders inference inapplicable and therefore the model cannot be used in forecasting. The unit root test was done by applying Augmented Dickey Fuller Test on the individual variables. The test results are as shown in table 4.6.

Table 4.6: Test for Stationarity in Levels

Variables	Test statistic	1% critical level	5% critical level	10% critical level
fexch	-0.942	-3.689	-2.975	-2.619
fdi	-6.891	-3.689	-2.975	-2.619
taxrev	-2.353	-3.689	-2.975	-2.618
govscons	-3.943	-3.689	-2.975	-2.619
CAB	-2.900	-3.689	-2.975	-2.619

Table 4.6 shows that foreign exchange rate, tax revenue as a percentage of GDP and current account balance as a percentage of GDP are non-stationary. On the other hand, foreign direct investment inflows as a percentage of GDP and government consumption growth rate are stationary. The non-stationary variables were differenced and the results are as shown in the table 4.7.

Table 4.7: Test for Stationarity (First Difference)

Variables	Test statistic	1% critical level	5% critical level	10% critical level
D1fexch	-5.438	-3.696	-2.978	-2.620
D1taxrev	-5.035	-3.696	-2.978	-2.620
D1CAB	-6.544	-3.696	-2.978	-2.620

Table 4.7 shows that all the variables which were non-stationary became stationary after first difference. Having subjected the data to diagnostic tests and stationary check, robust regression was adopted on stationary series. The results are as shown in table 4.8.

4.4. Empirical Findings

Table 4.8: Regression Results after Differencing

Dependent Variable	D1fexch			
Method	OLS			
Sample	35			
Variable	Coefficient	Standard error	t-statistic	Prob
Constant	0.9452536	1.393419	0.68	0.503
Fdi	3.679432	1.645513	2.24	0.033**
D1taxrev	-0.345424	0.3600672	-0.96	0.345
govscons	-0.0965223	0.159608	-0.60	0.550
D1CAB	0.0797414	0.2171359	0.37	0.716
R ²	0.2140			
F statistic	0.0023			

Where ** indicates significance at 5% level of significance.

From the Coefficient table, the following regression equation was obtained:

$$fexch = 0.9452536 + 3.679432fdi + 0.0797414CAB - 0.345424tax\ rev \\ - 0.0965223govscons$$

4.5. Interpretation of the Results

The results above indicate that regression did well in terms of overall significance since the F statistic (0.0023) is significant at 5% level of significance. The results further show that the explanatory variables in the model explain 21.4% of the variation in foreign exchange rate. The results further show that when all the independent variables in the model assume the value of zero, foreign exchange rate will be 0.9452536. Holding all other factors constant, foreign exchange rate will increase by 3.679432 units when foreign direct investment inflows as a percentage of GDP increase by one unit. When all other factors are held constant, foreign exchange rate will decline by 0.345424 units when tax revenue increases by one unit. When all other factors are held constant, foreign exchange will decrease by 0.0965223 units when government consumption growth rate increases by one unit. Finally, foreign exchange rate will increase by 0.0797414 units when current account balance improves by one unit holding all other factor constant.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter will establish the summary, conclusion, recommendation, limitations and areas of further study.

5.2 Summary

The exchange rate is a key element that best describe the state of an economy. Among the influential factors over the exchange rate are: the current account of the balance of payments, the relationship between the supply and demand of the currency, foreign direct investment, the interest rates, the purchasing power parity, government consumption, the country's tax policy, and the central bank intervention on the currency market. Economic theory states that between the exchange rate and the balance of payments there is a one-to-one relationship. That is, increase (depreciation) in the exchange rate stimulates an increase in exports, diminishes the imports and determines a tendency to stabilize the balance of payments. Decrease (an appreciation) in the exchange rate discourages exports, stimulates an increase in imports and generates instability in the balance of payments. Foreign direct investments have an impact over the evolution of the exchange rate where the more the currency of a state is stable, the higher the foreign investments inflow.

The objective of the study was to analyze the relationship between foreign direct investment, current account and the foreign exchange rate in Kenya. The foreign exchange rate was

established as the dependent variable while the independent variables were foreign direct investment, the current account, and tax revenue and government consumption. The study sought to understand the relationship between the independent variables and dependent variable. The co-efficient of multiple determinations R-square value is 0.2140 meaning that about 21.4% of the variation of the response variable which is foreign exchange rate can be explained by the predictor variables in study. This however implies that the chosen variables for the years between 1980 to 2014 has an effect to the foreign exchange rate by 21.4% and therefore 78.6% effects of the foreign exchange rate was associated with other unexplained factors. The regression results also indicate that the relationship among the current account and the foreign direct investment against the foreign exchange rate is very significant at 0.05 level of significance level with a p-value of 0.0139.

5.3 Conclusions

From the findings above the study concludes that there is direct relationship between the foreign direct investment, the current account and the foreign exchange rate in Kenya. That is such that, keeping all factors constant, as a unit increase of foreign direct investment causes a more than three folds increase in the foreign exchange rate hence leading to an appreciation in the local currency. The exchange rate affects the prices at which a country trades with the rest of the world and is integral in the analysis of an open economy and in policy formulation.

The study further established that public debt in Kenya has been rising over the study period due to increased government consumption in form of infrastructure and increased technology and use of modern machinery in agricultural activities. From the findings, an increase in both the foreign

direct investment inflows and current account leads to increase in the country's foreign exchange rate. Thus therefore the study concludes that there is a direct relationship between the foreign direct investment and the current account on the foreign exchange rate in Kenya.

5.4 Policy Recommendations

The study would recommend that the government should undertake rigorous reforms towards improving inflows of the foreign direct investment key among them being corruption. Relatively huge foreign direct investment inflows play a very integral part in the currency evaluation and the exchange rate in Kenya. Other than government consumption in the form of rapid infrastructural developments verses the mechanization of agriculture, the government needs put more focus in her education so as to improve the efficiency and manpower resource. Well educated labor force has an effect in the sense that the quality of work done is high hence reflecting on work efficiency and effectiveness. Either, the government should consider giving incentives to these locals abroad by opening up investments packaged specifically for diaspora people. Equally, more incentives should be given to international companies towards establishing companies in the country through among them the giving of tax breaks and other incentives. Local industries producing for export as well as those companies that assemble locally which help curb demand for imports should also be considered by being encouraged to do more exports by way of being exempted for exports tax.

5.5 Limitations of the Study

The first and very common limitation is the time constraint of the study and that of gathering of secondary data information was encountered while carrying out this study. This was because the

data was not readily available in the public domains and therefore the researcher had to seek for permission with relevant authority to seek access such information. Second limitation of the study is that the foreign exchange rates data existing in the country at some points had forced the Central Bank to intervene through open market operations which then interfered with Forex equilibrium established by the market forces and consequently affecting the current account of the balance of payment. Equally, it has not been an easy task in developing statistical presentation since the researcher was not very conversant with most of the data analysis tools. This required some extra training on the package to enable proper usage of these research tools so as to enable in putting up good and most logical statistical presentations for the data. More importantly sourcing data for such a long period of time has proved tedious and involved huge use of resources.

5.6 Suggestions for Further Research

The study suggests that future research should consider incorporating more variables into the model so as to be able to capture the unexplained bit of the foreign exchange rate in Kenya. Other than Kenya, the study recommends that another study be conducted on the effects the effects of the foreign direct investment and current account on the foreign exchange rates within the east Africa region. This will have more reaching effect on the current debate on the benefits of trading as east Africa block rather than as individual countries within block.

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