

**EFFECT OF INFLATION AND INTEREST RATES ON FOREIGN
EXCHANGE RATES IN KENYA**

BY

MARTIN MUCHIRI

D61/79190/2015

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE
OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF
BUSINESS, UNIVERSITY OF NAIROBI**

NOVEMBER 2017

DECLARATION

This research project is my original work and has not been submitted to another college, institution or university

Signature Date

Martin Muchiri

D61/79190/2015

This research project has been submitted for examination with my approval as the university supervisor

Signature Date

Dr. Mirie Mwangi

Senior Lecturer, Department of Finance and Accounting

School of Business

University of Nairobi

ACKNOWLEDGMENT

Many people assisted and contributed in different ways in this study. I would like to express my greatest gratitude to my supervisor, Dr. Mirie Mwangi, who guided me through the research. I would also like to thank my financial seminar lecturer, Dr. Cyrus Iraya who helped me learn the know-how of doing academic study and my class mates and colleagues for their encouragement.

DEDICATION

I dedicate this study to the almighty God, my loving wife, Anne, and my beloved family for their tireless support and encouragement throughout this study.

TABLE OF CONTENTS

DECLARATION.....	ii
ACKNOWLEDGMENT	iii
DEDICATION.....	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABBREVIATIONS AND ACRONYMS.....	x
ABSTRACT.....	xi
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background of the Study	1
1.1.1 Inflation	2
1.1.2 Interest Rates	4
1.1.3 Foreign Exchange Rates	5
1.1.4 Inflation, Interest Rates and Foreign Exchange Rates	6
1.1.5 Inflation, Interest Rates and Foreign Exchange Rates in Kenya.....	7
1.2 Research Problem.....	8
1.3 Research Objective.....	10
1.4 Value of the Study	11
CHAPTER TWO: LITERATURE REVIEW.....	12
2.1 Introduction	12
2.2 Theoretical Review.....	12
2.2.1 Purchasing Power Parity Theory	12
2.2.2 International Fishers’ Effect.....	13

2.2.3 Interest Rate Parity theory	14
2.3 Determinants of Exchange Rates	15
2.3.1 Economic Growth.....	15
2.3.2 Money Supply	16
2.3.3 Foreign Direct Investment.....	17
2.4 Empirical Review	18
2.5 Conceptual Framework	22
2.6 Summary of Literature Review	23
CHAPTER THREE: RESEARCH METHODOLOGY	24
3.1 Introduction	24
3.2 Research Design	24
3.3 Data Collection.....	24
3.4 Diagnostic Tests	25
3.5 Data Analysis	25
3.5.1 Analytical Model.....	25
3.5.2 Test of Significance.....	26
CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION	27
4.1 Introduction	27
4.2 Descriptive Statistics	27
4.3 Diagnostic Tests	32
4.4 Correlation Analysis.....	34
4.5 Regression Analysis	35
4.5.1 Model Summary	35

4.5.2 Analysis of Variance	36
4.5.3 Coefficients	36
4.6 Interpretation of the Findings	37
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS ..	40
5.1 Introduction	40
5.2 Summary	40
5.3 Conclusions	41
5.4 Recommendations	43
5.5 Limitations of the Study	44
5.6 Suggestion for Further Research	45
REFERENCES.....	46
APENDICES	51
Appendix I: Research Data.....	51

LIST OF TABLES

Table 4.1 Summary Statistics	27
Table 4.2 Normality Test	32
Table 4.3 Multicollinearity Test	34
Table 4.4 Correlations.....	34
Table 4.5 Model Summary	35
Table 4.6 Analysis of Variance.....	36
Table 4.7 Coefficients.....	36

LIST OF FIGURES

Figure 2.1 Conceptual Model	22
Figure 4.1 Exchange rates.....	28
Figure 4.2 Consumer price Index.....	29
Figure 4.3 Lending Interest Rates.....	29
Figure 4.4 Gross Domestic Product.....	30
Figure 4.5 Money Supply	31
Figure 4.6 Foreign Direct Investments	32
Figure 4.8 Residual Plot.....	33

ABBREVIATIONS AND ACRONYMS

CPI	:	Consumer Price Index
FDI	:	Foreign direct investment
GBP	:	Great Britain Pound
GDP	:	Gross Domestic Product
IFE	:	International Fisher Effect
IRP	:	Interest Rate Parity
KSA	:	Kingdom Saudi Arabia
PPP	:	Purchasing Power Parity
UAE	:	United Arab Emirates
USD	:	United States Dollar
WPI	:	Wholesale Price Index

ABSTRACT

Exchange rates, inflation rates and rates of interest are indispensable variables of macroeconomic, which can change the growth pattern and direction of economic stability and development in a country. Over the years, the Kenyan Shilling has recorded significant volatility against the major currencies especially the Sterling Pound and the US Dollars. For instance, in July 2015, the Kenyan shilling depreciated at rate of 11.16% and 14.45% to the GBP and USD respectively. This study examined the effect of inflation and interest rates on foreign exchange rates in Kenya. A descriptive research design was employed to answer the research question. To attain the aim of the research, secondary data was entirely used. The research applied quarterly data for a period of 10 years from 2007 to 2016. The study also carried out tests on normality autocorrelation and multicollinearity. Analysis of data was done by the use of descriptive statistics, the multiple regression analysis and the Pearson correlation. The results found that the consumer price index significantly and positively affects foreign exchange rates while foreign direct investment significantly and negatively affects foreign exchange rates. Conversely, the study found that interest rates (IR) and the gross domestic product (GDP) had an insignificant and negative relationship with foreign exchange rates while money supply (M3) has an insignificant positive effect on foreign exchange rates. The study findings concluded that inflation has a direct effect on exchange rates and that forex rates in Kenya are inversely affected by foreign direct investments inflows. The study recommended that the central bank of Kenya and the Kenyan government should use the available monetary policy tools to control a rise in inflation rates and consumer prices. The study also recommended that the Kenyan investment authority should come up with policies that will market the country and attract more foreign direct investment inflows.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Exchange rates, inflation rates and rates of interest are indispensable variables of macroeconomic, which can change the growth pattern and direction of economic stability and development in a country (Moroşan & Zubaş, 2015). Exchange rates is among the major essential growth economy pointers of a country and its volatility has a noteworthy influence on international trade (Ali, Mahmood & Bashir, 2015). Exchange rate stability raises the need for concern in the determination of direction and quantum of commerce and foreign trade (Ramasamy & Abar, 2015). Similarly, inflation is a problem in the any economy, characterized by a continuous prices increase and a concurrent decline in the buying power of the nation's currency (Moroşan & Zubaş, 2015). Interest rate on the other hand as monetary policy instrument constitutes an important part of policy variables in aimed at dealing with unintended exchange rate fluctuations (Saraç & Karagöz, 2016).

The International Fishers' Effect, the interest rate parity and the PPP theory are the major theoretical underpinnings, which expounds the interconnection between inflation, exchange rates and rates of interest. The international Fishers' effect proposes that countries' with currencies having relatively high rates of interest are likely to lose value with rising nominal interest rates when contrasted to its trading associates, to reflect the anticipated inflation rates (Ebiringa & Anyaogu, 2014). The PPP theory implies that the rate of exchange between the currencies of two countries equals the ratio between the goods prices in such nations (Shalishali & Ho, 2012). The IPT theory indicates that the rate of exchange is at par, considering the variances between interest rates in the two countries is

compensated by the distinction between interest rates future and spot (Moroşan & Zubaş, 2015).

In Kenya, monetary policies and exchange rate are major tools in management of the economy and in the adjustment and stabilization action in countries that are developing, where international competitiveness and low inflation are key policy targets. The real exchange rate is a key determinant of international competitiveness, whereas inflation majorly comes from monetary policy, currency devaluation and other structural variables (Sambiri et al., 2014). In 1990s, the Government of Kenya gradually liberalized the financial, foreign exchange. The liberalization of forex rates was carried out gradually from a forex regime until 1982 then to a crawling peg from 1983 to 1993 then a floating rate regime was embraced in 1993. After the foreign exchange market liberalization, Kenya achieved monetary policy independence to mitigate pressures of inflationary though the country lost the nominal anchor to tie local prices down and therefore globalization effects are affect the country in equal terms (Kipyegon & Kiptui, 2008).

1.1.1 Inflation

Inflation is the persistent rise in the general price levels of products in an economy over a given time period Inflation is further defined as a general rise in price, where it reduces a currency's purchasing power (Semuel & Teddy, 2014). It is used to describe a rise of average prices via the economy. It indicates the losing value of money. The major reason is generally the extra amount of money is available to buy too few products/services, or otherwise economy demand is overtaking supply (Cecchetti, 2009). Inflation is the indication of excessive money chasing very few goods. In the period of inflation, there is

loss of purchasing power by the currency. It is usually a measure that is broad, for instance the general prices increase or the cost of living rise in any nation (Moroşan & Zubaş, 2015).

Inflation is an indicator that shows whether government policies monetary, fiscal, and legal are coordinated and lead to stability in consumer prices (Moroşan & Zubaş, 2015). It is among the basic insistent threats that may destroy or even undermine economic growth for decades if it is not controlled. Inflation also distorts the purchasing power for payers and recipients of fixed interest rates (Cecchetti, 2009). Inflation determines how much more expensive products have become as time passes, normally a year. Therefore, high inflation rates of erodes the purchasing power of an economy's currency. Inflation is mostly increases when total demand rises faster than the total supply, therefore raising the services and products' cost (Semuel & Teddy, 2014).

Inflation determination is an important to the monetary policy action. Indices developed by the central bank normally form the framework and foundation of inflation measurement. Such indices aid as decision-making plus they provide a key mechanism for holding self-regulating policy-makers responsible (Cecchetti, 2009). The key inflation indicators comprise of the Implicit Price Index (GDP deflator), Consumer Price Index (CPI) and the Wholesale Price Index (WPI) (Semuel & Teddy, 2014). The CPI is an overall price measure of prices charged by consumers for the several products they buy and services they consume. Retail price information on every product type is collected, and then measured in relation to its weighted importance in overall spending of consumer and then used to come up with the consumer price index. The Implicit Price Index is proxied by the ratio of real GDP to nominal GDP. It is an additional inflation measure, to the consumer price index (Stanford, 2008).

1.1.2 Interest Rates

Interest rate is described as the price of money. It's defined as a gain in value from the value of an investment or savings (Semuel & Teddy, 2014). It is also defined as the proportion of loaned funds that an investor demands for the usage of advanced funds (Khordehfrush & Tehranchian, 2015). A rate of interest is depicted as the charge paid by a borrower for the usage of cash he does not own, and wishes to approach a loan specialist who authorize the utilization, by giving a loan to the borrower. An interest rate, which is paid or charged for the cash utilization, is normally communicated as an annual rate (Hamid et al., 2017). Interest rates can be long term or short term. Short-term interest rates are impacted on by the Central Bank, therefore money is well monopolized. The long-term rates otherwise, indicate the current economy conditions and the inflationary tendencies (Semuel & Teddy, 2014).

Many governments employ interest rates as a monetary policy tool to regulate other macroeconomic variables like investment, inflation and unemployment. High levels of interest rates normally provide money lenders with relatively higher returns. Thus, interest rates, that are higher cause a rise in exchange rates and appeal to foreign capital (Hamid et al., 2017). High level of the rates of interest increase the demand for money which leads to currency appreciation and rises the fiscal deficit which in turn depresses the national output (Hnatkowska, Lahiri & Vegh, 2013). In the case where domestic rates of interest reduces, the demand for foreign currency increases and the domestic currency value on the other hand depreciates (Khordehfrush & Tehranchian, 2015). The rates of interest in an economy is usually determined by all the commercial banks using the weighted average lending rate in that specific country (Semuel & Teddy, 2014).

1.1.3 Foreign Exchange Rates

Exchange rate is the value of a particular foreign currency as compared to home currency. It is the rate at which a domestic currency will be converted for another different currency. It's also viewed as the net worth of a specific country's currency as compared to another currency (Ramasamy & Abar, 2015). Exchange rate can also be termed as the value at which a domestic currency is trading for another country's currency (Obura & Anyango, 2015). Exchange rates can either be flexible rate of exchange or fixed rate of exchange. In a fixed exchange rate, the value of the currency is determined by the government, while a flexible exchange rate is market determined and the government does not play any role towards the stabilizing the value of the currency (Semuel & Teddy, 2014).

Exchange rate is among the key factors which in impact imports, balance of payments, exports, production, employment, and foreign exchange reserves (Khordehfrush & Tehranchian, 2015). A deteriorating exchange rate noticeably reduces the power of purchasing of income and capital gains resulting from investment returns. In addition, the forex rates affect other factors related to income like capital gains from domestic securities, interest rates and inflation (Lagat & Nyandema, 2016). A forex rate that is overvalued represents indicates a continuous price misalignment between a countries and other countries across the world. The price misalignment affects the production patterns, the level of expenditure allocation, the structure and sizes of trade flows, other factor payments, the international reserves levels and external debts (Saraç & Karagöz, 2016).

Exchange rates have an important role to play in international trade. Forex rates are used in fixing the prices and defining the hedging nature to be organized to mitigate forex risks. Exchange rates influence, exports direct investments, imports, numerous sectors of service

like tourism, education, insurance, banking (Ramasamy & Abar, 2015). Since exchange rates are fundamental economy prices, their flexibility and level affect the growth and allocation of resources (Lagat & Nyandema, 2016). Thus, exchange rates fluctuations is one of the main obstacles that developing economies face in the macroeconomic management especially during the periods of economic and financial crisis (Saraç & Karagöz, 2016). The level of Kenya's economy exchange rate is usually determined against the US dollar.

1.1.4 Inflation, Interest Rates and Foreign Exchange Rates

The association between interest rates, inflation and exchanges rates is theoretically explained by several theoretical underpinnings. The PPP theory for instance states that; as soon as the rate of inflation in a country increases comparative to another country's rates, the country's exports decreases and imports increases, thus reducing the country's currency value (Ebiringa & Anyaogu, 2014). The International Fishers' Effect theory proposes that a specific country's currency having a comparatively higher rate of interest will reduce in value due to nominal interest rates that are high reflecting the anticipated rate of inflation. The IFE theory assumes that the real rate of return is similar or identical across countries, thus the variances in the rates of interests among counties is due to the differences in the anticipated inflation rates (Shalishali & Ho, 2012). The interest rate parity theory links the variance between domestic and foreign rates of interest with the future and spot exchange rates difference (Saraç & Karagöz, 2016).

According to Ramasamy and Abar (2015), interest rates of host and home countries are key determinants of exchange rate. The rates of interest are adjusted in quarterly basis by the Central Bank as an economic management strategy. High rate of inflation at the home

makes the home currency lose value and vice versa hence, exchange rates and inflation rates are negatively correlated. A lower inflation country displays a growing value of currency and vice versa. Moroşan and Zubaş (2015) posits that inflation, exchange rates and interest rates are all highly interconnected such that when interest rates manipulation are carried out by Central Banks exchange rates and inflation are affected. Higher interest rates bring in foreign capital, that determines the currency appreciation and the rate of interest impact is also attenuated.

In their study, Mahmoud, Bashir and Ali (2015) explored the effect of inflation, interest rate, and supply of money on volatility of exchange rate. The results revealed a long run relationship between exchange rate volatility and inflation and that a rise in rate of interest elevates inflation, leading to a rise in volatility of exchange rate. Hamid et al. (2017) evaluated effect of interest rate, inflation, and GDP on the volatility of exchange rate in Pakistan and observed that interest rate, inflation rate and GDP are significantly related with exchange rates. However, Saraç and Karagöz (2016) studied the impact of short-term interest rate on exchange rate and found no evidence that higher interest rates cause to a weakening of exchange rate.

1.1.5 Inflation, Interest Rates and Foreign Exchange Rates in Kenya

The exchange rate plays a vital role in the Kenyan economy since it participates in the stock market, foreign exchange market and also affects international trade, which includes export and import of goods and services (Kibiy & Nasieku, 2016). The Kenya shilling to US Dollar exchange rate from 1967-2009 was designated by the crawling peg error, the floating error and the fixed exchange rate error (Musyoki, Pokhariyal & Pundo, 2012). However, Kenyan exchange rates have fluctuated over the past years with an increasing

trend. Along with the CBKs data, the US dollar exchange rate was 63.3 in 2007, 78.0 in 2008, 75.4 in 2009, 80.6 in 2010 and 80.6 in December 2011. Several factors like inflation rates, interest rates, have been cited as the major causes of these fluctuations terms of trade, and public debt (Otuori, 2013).

Historically, the Kenya's inflation rates have been relatively stable but sharp rises in inflation had been witnessed in some years (Musembi, 2013). For instance, Kenya experienced high inflation rates in 2011, which was attributed to poor harvests in the agricultural sector which drove prices higher, high international oil prices, a weakened shilling (Mbaya, 2013). In terms of interest rates, the country has witnessed high interest rates since the liberalization of the financial sector in 1992 (Kiptui & Kipyegon, 2008). Rates of Interest were liberalized due to financial instability, decreasing growth of the economy, inflationary pressure, the failure to tolerate fiscal discipline, lack of appropriate sequencing of the shift to apply tools of monetary policy (Sambiri et al., 2014). A paper by Musembi (2013) examined the counteracted association between interest rates, exchange rates and inflation rates in Kenya from 1985 to 2010 and observed the existence of a long-run relationship between macroeconomic variables of rates of interest and inflation and exchange rates.

1.2 Research Problem

Exchange rate is among the key tools of the economy used to make correct numerous economic misalignments a country may be facing. Forex rates are extensively in most countries across the world as a structural adjustment program (Ebiringa & Anyaogu, 2014). Forex rates affect the imported goods prices in local markets and the locally manufactured goods value in foreign markets and impacts on countries 'competitiveness (Khordehfrash

& Tehranchian, 2015). Therefore, exchange rate instability is a big concern to the governments, investors, analysts and other stakeholders because it results to uncertainty of employment, trade, investment, cash flows, profits and economic growth (Musyoki, Pokhariyal, & Pundo, 2012). However, the stability of exchange rates is affected by different macroeconomic factor among them interest and inflation which increase exchange rates volatility (Khordehfrosh & Tehranchian, 2015).

Over the years, the Kenyan Shilling has recorded significant volatility against the major currencies especially the Sterling Pound and the US Dollars. For instance, in July 2015, the Kenyan shilling depreciated at rate of 11.16% and 14.45% to the GBP and USD respectively (CBK, 2016). According to Maana, Kamau and Kisinguh (2015) similar to other East Africa region currencies, the Kenya Shilling exchange rate in contrast to the United States dollar experienced a worth mentioning volatility over the years that is attributable to various factors including, inflation, wide existing account deficit due to a high import bill and the lending rates. Kibiy and Nasieku (2016) also posited that Kenya has witnessed in recent years a continuous trend of unpredictable fluctuations of the Shillings. Such currency fluctuations have affected economic growth movement in the country by hindering firms from participating in investment, innovation and trade especially for exporting companies as compared to the domestic firms.

Numerous studies have been undertaken on the existing connection between inflation, interest rates and exchange rates. For example, Ebiringa and Anyaogu (2014) examined the long-run connection between inflation, exchange rate and interest rate and found that a substantial long-run positive connection between exchange rate and inflation while interest rate exhibited a negative relationship which was insignificant. Samuel and Teddy (2014)

assessed the influence of interest rates, exchange rates, and inflation, on the Indonesia GDP and established a noteworthy negative interest rates relationship on gross domestic product and a substantial positive relationship of the exchange rates on the gross domestic product, whereas inflation has no a major effect on gross domestic product. The studies however provide contradicting results and their findings may not be generalized to the study context since inflation, exchange rates and interest rates vary among countries.

A series of studies have also been carried out in Kenya. Mbaya (2013) for instance explored the interest rate impact in stabilizing rates of exchange in Kenya and revealed that interest rates had a positive relationship with exchange rates but the study ignored inflation. Musyoki, Pokhariyal and Pundo (2012) examines real exchange rate volatility in Kenya from 1993 to 2009 and found that real exchange rate was very volatility which implied that the international competitiveness of the country declined over the period of study. Kibiy and Nasieku (2016) analyzed the determinants of exchange rate volatility of the Kenyan Shilling and revealed that money supply had a negative effect on the volatility of exchange rates while external public debt had a positive effect. From the sampled studies, it is clear that most studies in Kenya separately focus on either inflation or interest rates and their effects on exchange rates. This study seeks to deviate from the norm and examine the combined effects of interest and inflation rates effects on exchanges rates. The study therefore intends to answers the query: what is the impact of inflation and interest rates on foreign exchange rates in Kenya?

1.3 Research Objective

The key objective of this study is to assess the effect of inflation and interest rates on foreign exchange rates in Kenya. The specific objectives of the study were to:

- i. Examine the effect of inflation and interest rates on foreign exchange rates in Kenya.
- ii. Establish the extent to which other factors, other than inflation and interest rates, determines foreign exchange rates in Kenya.

1.4 Value of the Study

The research will add value to finance theory, to policymaking institutions and the Kenyan government. In the policy sector, Government institutions, which are tasked with policy formulation, may use the findings as a basis for policy generation. The policy making institutions can also use the study recommendation make policy changes and to mitigate the impact of interest and inflation rate fluctuations on rates of exchange. In finance theory, the, the study will provide more knowledge on interest rates, inflation and exchange rates. The study will form a basis for future studies and also recommend areas which may require additional investigation.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section illustrates the theoretical underpinnings of the research, the various foreign exchange rates determinants, the review of past studies, a reviewed literature summary and a conceptual model.

2.2 Theoretical Review

The purchasing power parity theory, the international Fishers effect and the interest rate parity theory will be explored as the key theories guiding this study.

2.2.1 Purchasing Power Parity Theory

The PPP is associated with Cassel (1918) and it's an exchange rate determination theory and relates the average products prices between countries. The Purchasing Power Parity theory implies that the ordinary equilibrium exchange rate between two currencies that are inconvertible is defined by their purchasing power ratios; thus the exchange rate is likely to be conventional at the equality point between the PPs of the currencies (Ebiringa & Anyaogu, 2014). The PPP building block is the rule of a single price that simply proposes that in the nonexistence of a market structure that is competitive and the nonexistence of transport costs, tariffs, quotas and other trade obstacles, trade and arbitrage in goods markets in effect ought to certify price that are identical across different countries (Rehman & Rehman, 2012).

The Purchasing Power Parity theory assumes that market of goods arbitrage matches international prices as soon as the goods prices are measured in the identical currency.

Purchasing Power Parity constantly functions as equilibrium form in the exchange rate determination theory and in the policy of exchange rate and is often used in determination of the connection between relative prices and rate of exchange (Rehman & Rehman, 2012). The PPP states that the impending spot frequency of a foreign currency will be different in proportion from the existing spot rate at equilibrium by a sum that matches an inflation disparity percentage between the foreign and home countries (Zhang & Dou, 2014). The PPP theory that suggest that variances in rates of exchange are instigated by differences in inflation rate, whereas nominal interest rates differences is accredited to expected inflation rates differences considering interest rates which are real are similar across several countries (Ebiringa & Anyaogu, 2014).

Purchasing Power Parity theory comprises of one of the important building blocks in forming the theories of determination of Exchange rates (Rehman & Rehman, 2012). In accordance with the Purchasing Power Parity theory when the inflation rate of a country increases comparative to that of a different country, increased imports and decreased exports dampen the high inflation currency because of worsening current and trade account balances. The PPP aids as a standard for figuring rate of equilibrium exchange and evaluating whether the real exchange rate shocks diminish within some time (Zhang & Dou, 2014). This study uses the Purchasing Power Parity theory as an attractive empirical and theoretical instrument for explaining the rise and fall in rates of exchange in a given time period.

2.2.2 International Fishers' Effect

The theory was established by Irving Fisher (1930). It proposes that changes in exchange rates are put in stability by changes in interest rates. The theory basically contends that real

interest rates among countries equal because of the arbitrage opportunities possibility which normally arises in the form of capital flows between financial markets. Real interest rate equality denotes that the higher interest rate country ought to possess an inflation rate that is higher which, sequentially, establishes the ideal currency value decrease of the country in a precise time period (Lagat & Nyandema, 2016). The IFE theory proposes that relatively high rates of interest in foreign currencies ought to disparage due to the nominal interest rates that are high reflecting the expected inflation rate. The IFE theory also suggests that spot exchange rate changes between two countries ought to equate their nominal interest rates differences (Ebiringa & Anyaogu, 2014).

The IFE theory proposes that higher interest rates currencies will devalue due to the higher nominal rates that replicate higher anticipated inflation. The International Fisher's Theory establishes connections between variances in interest rate of two nations and their conforming differences in inflation, to the level that high inflation rates countries would possess nominal interest rates that are higher than the ones with lower inflation rates (Ebiringa & Anyaogu, 2014). The IFE states that the future foreign currency spot rate will be different in proportion from the current/existing spot rate by a quantity that equals the nominal interest rate differential percentage between the foreign and home countries. This study uses the IFE theory to link the nominal risk free rates of interest comprises of a real return rate and the expected inflation

2.2.3 Interest Rate Parity theory

The IRP theory is associated with Keynes (1923). The IRP describes the relation amid the rate of interest rate and the rate of exchange of two nations. It adopts that the two countries exchange rates will be impacted by their interest rate differentials (Ebiringa & Anyaogu,

2014). IRP is a condition of no arbitrage that represents a state of equilibrium where investors are indifferent to the rates of interest present in two countries bank deposits. This condition of parity says that the domestic interest rate should be the same as the foreign interest rate and the expected change of the exchange rates. Risk-neutral investors with expectations that are rational are more likely to have future rates of exchange that adjust perfectly given the current rate of interest differential (Zhang & Dou, 2014).

IRP assumes two unique forms, that is, uncovered interest rate parity which is the parity state in which contact to risk of foreign exchange is not habited, and covered interest rate parity which is the state in which a forward contract has been applied to eradicate experience to risk of exchange rate (Zhang & Dou, 2014). This study adopts the IRP theory since the theory regularly used method in forecast of exchange rates. The theory is also adopted since it makes predictions on the relationship between the rates of interest and the spot exchange rates in the domestic and foreign countries.

2.3 Determinants of Exchange Rates

Economic growth, money supply and foreign direct investment will be explored as the major determinants of exchange rates

2.3.1 Economic Growth

This can be explained as the rise in the capability of a nation or region in caring for the needs of the population's economy. Low or high growth in the economy can be gotten by computing the GDP (Semuel & Teddy, 2014). Economic growth enables a country to predict trends in business in long-term run and relate policies from different governments. It shows the economy's direction. Instability of the economic can mean GDP growth

volatility, volatility in inflation, interest rates volatility, volatility in the exchange rate and other economic variables. Economic growth stimulates demand and determines its appreciation (Moroşan & Zubaş, 2015).

GDP is the measure of the growth in the economy and indicates the income of a nation and output for the economy of a particular country. The GDP is the same as a country's total expenditures for the entire finished services and goods it produces in a given time. GDP is a good indicator of a country's development and status in the micro economy (Moroşan & Zubaş, 2015). GDP can be looked at from two different views as the income approach and the expenditure approach. If the GDP of a country is small the government faces a budget deficit in which leads to collection of more revenue through higher tax rates. If the public dislikes the government locally borrows through bond issuing or through borrowing from financial institutions from foreign places to close the gap (Ramasamy & Abar, 2015).

2.3.2 Money Supply

These are the demand deposits in the banking system from the private sector and the currency outside banks. Monetarist theories indicate that the rates of exchange amid currencies that are different is influenced by demand and supply of money, on the money market. Therefore, oversupply of currency drives depreciation this is according to the fisher effect (Moroşan & Zubaş, 2015). Money supply growth rate increase results in inflation increase and nominal interest rate increase, which will match the increase in the inflation rate (Lagat & Nyandema, 2016).

Money growth impacts inflation developments in the long-run as advocated by the quantity theory of money, in line with which growth of money precedes equal modifications in the overall price level rate of growth (Vladova & Yanchev, 2015). A surplus money supply, implies a similarly, high demand for alternate, assets that bring interest. If money supplies of a country increase its currency depreciates and vice versa. A study by Akinbobola (2012) found that exchange rate and the supply of money have noteworthy inverse impacts on inflationary pressure, whereas real output growth and foreign price changes have direct impacts on inflationary pressure.

2.3.3 Foreign Direct Investment

FDI is an international flow of capital that offers a parent company or multinational enterprises with control over foreign affiliates. It's seen as an essential tool for the flow of resource through countries and it improves performance of the economic, international and industrial competitiveness, and exports (Jaratin et al., 2014). Rates of exchange can affect the allocation of this investment spending across a series of countries and also the total amount of foreign direct investment that takes place. Expected moves in the exchange rate may be shown in a larger charge of funding the project of investment, since IRP settings align expected rates of returns that are risk-adjusted across countries (Goldberg, 2007)

FDI is a significant source of capital inflows with positive effects on the host country's economy because of advances in technology, transfer of technology directly, business environment that are competitive, international trade integration, and human capital development. The direction of the relationship between FDI and exchange rate moreover differs with some results showing a favorable outcome of rate of exchange on FDI as advanced in most of the finance studies (Jaratin et al., 2014). If a currency devalues, this

exchange rate movement has two probable effects for FDI. To begin with, it lowers a country's wage and cost of production comparative to those of its foreign neighbors. Additionally, depreciation in the exchange rate increases the general return rate to foreigners thinking about an out of the country investment project in a country (Goldberg, 2007).

2.4 Empirical Review

Ndoricimpa (2017) examined Africa's inflation-growth nexus non-linearity. The study employed a dynamic panel threshold regression to take care of the possible biases of endogeneity in the model. The conclusions established nonlinearities exist in the nexus. The study found that 6.7% of the inflation threshold was projected for the entire sample, for the low-income countries sub-sample it was 9% and for middle-income countries it was 6.5%. The conclusions propose that for the sub-sample of middle income countries, low inflation enhances growth but does not affects the whole samples or the sub-sample of low-income countries economic growth.

Amata, Muturi and Mbewa (2016) studied the connection amid the rate of interest, volatility of the stock market and inflation in Kenya. The research employed a monthly interval series data for 14 years from 2001 January to December 2014. The study used the vector error correction model to analyze time series data for the lengthy causal relation amid, rate of interest, inflation and stock market volatility and the granger causality test was used to analyze the short run relationship. The results revealed the existence of a positive and significant long run relation concerning the rate of inflation and stock market volatility and a positive and significant short run relationship between inflation and volatility of the market of stock. The study discovered that relation amid stock market

volatility and interest rate was negative and weakly significant in both the long and short run.

Khordehfrosh and Tehranchian (2015) investigated the effect of policies concerning money on the rate of exchange of certain upcoming nations from 2001 to 2010. The study adopted a methodology of panel data that is dynamic founded on the widespread moments method. The research findings established that the variable, lag of exchange rate, had a optimistic and substantial outcome on the rate of exchange. The results of the research also found that the liquidity's coefficient acting as a pointer of monetary policy was significant and positive. Additionally, the study found that inflation, GDP, and services and goods export had effects that were positive, negative, and affected the exchange rate negatively, in that order and were all significant statistically.

Obura and Anyango (2015) examined moderating interest rates effect on association between foreign rate of exchange fluctuation and the Nairobi securities exchange market performance. The research adopted a correlational research design and collected secondary data from 2006 to 2010. Using a hierarchical regression the authors established a vital change in R² of 0.085 confirming moderation. It concluded that rates of interest control the relationship and endorses governing policies of the interest rates regulations should be articulated as it aids in moderating the connection.

Yung (2014) explored if the yield curve priced rate of interest risks impacted different pairs of countries' foreign exchange movements. The research used a term structure model that's dynamic under no markets that are complete and arbitrage, currency returns to model the ratio of two countries' log stochastic discount factors. The inferred risk premium

established a relationship that was not linear between exchange and interest rates that covers for the uncovered interest parity failure and compensates investors for the likely reduction of the domestic currency. The study also found that factors concerning interest rate explained fluctuations of around half of one-year of the exchange rate for diverse countries.

Otuori (2013) examined the factors that determined the rates of exchange and their impacts on commercial banks performance in Kenya. The author used a descriptive design and collected data via questionnaires. The findings indicated that on performance, the rates of interest and debts from the outside had a significant and positive effect while external debt and inflation rate had adverse and significant impacts. Based on the findings the paper resolved that higher interest rates levels lead to a bigger profit gaining in Kenyan commercial banks and that higher inflation rate levels lead to lower profitability country's banks. In addition, the paper concluded that higher debt levels from external sources cause lower profitability in Kenyan banks.

Abuogi (2013) examined the impact of political risk on Kenyan exchange rates in with a daily time series data of 3 currencies for the period May 2010 to April 2013. The study adopted an event study methodology and utilized interbank rate to calculate Abnormal Returns and Cumulative Abnormal Returns. The t-test was employed to determine the statistical significance. The study revealed that politically risky events had a statistically significant effect on exchange rates for USD. The study recommended that the makers of policies should create techniques of preventing political risk like creation of a Central Bank that's both independent and private.

Mgammal (2012) investigated if exchange rates and stock prices are connected. The study explored both the long and short term relationship between the factors and applied quarterly and monthly data on two countries from gulf region. This was from January 2008 to December 2009. It included (UAE) United Arab Emirate and (KSA) Kingdom Saudi Arabia. The results found that there was positive influence by the exchange rate on UAEs stock market price index and there is no association between them for KSA for the short term association. Additionally, it was found that the influence was negative by the rate of exchange on stock market price index for the UAE but there was no connection between these variables in KSA in regards to the long term association study.

Abbas Iqbal and Ayaz (2012) studied the connection between, inflation, GDP, and the exchange rate in regards to the real rate of interest. The study focused on ten African countries and collected data for a duration of 15 years since 1996 to 2010. The study used inflation, interest rate and GDP as the independent variables and rate of exchange fluctuation as the dependent variable. The findings of the research revealed that the GDP had a valuable connection with the rate of exchange whereas inflation and interest had a not so valuable relation with African rates of exchange.

Kipyegon and Kiptui (2008) assessed Kenyan real exchange rate movements and external shocks. An error correction model was adopted. The model was used to measure the short and long-run dynamics of the effects of shocks from the external on the real exchange rate including net foreign exchange flows, terms of trade and openness founded on data collected on a monthly basis from 1996 to 2007. The model also incorporated domestic variables like interest rates differential, real GDP growth, and government spending. The study found that though domestic factors like government spending, real output, and

interest rate differentials influence real rates of exchange, factors that are external have a habit of playing a important role. External shocks in a big way affect real exchange rate as indicated by the important trade terms and openness in the short and long-run estimations.

2.5 Conceptual Framework

A conceptual model is a tool used in research to aid the person conducting the research achieve understanding and consciousness of the condition under study and be able to communicate it. It helps illustrate the causal relationships between the independent variable(s) and the dependent variable. The conceptual model for this study comprises of inflation and interest rates as independent variables and foreign exchange rates as the dependent variables. Economic growth, money supply and foreign direct investment make up the control variables. The conceptual diagram is developed as follows

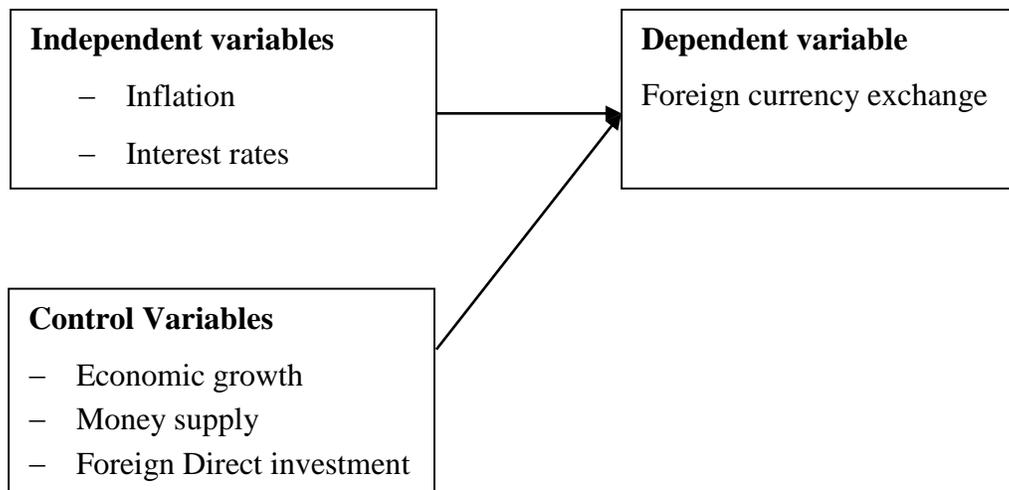


Figure 2.1 Conceptual Model

2.6 Summary of Literature Review

This section explored the theory of PPP, the IFE and the IRP theory. The PPP states that differentials in the inflation rate cause exchange rates variations, whereas difference in from foreign places with relatively high rates of interest have a habit of depreciating due to the fact that high nominal interest rates reflect the expected inflation rate. The IRP theory contends that domestic interest rate should be the same as the rate of interest from foreign countries and the exchange rates expected change.

A number of empirical studies have also been reviewed. Yung (2014) explored if the yield curve priced rate of interest risks impacted different pairs of countries' foreign exchange movements. Abbas Iqbal and Ayaz (2012) studied the link between, inflation, GDP and real interest rate with the exchange rate. Khordehfrosh and Tehranchian (2015) investigated the effect of policies involving money on selected countries, still developing, exchange rates from 2001 to 2010. Amata, Muturi and Mbewa (2016) studied the connection between interest rate, inflation and stock market volatility in Kenya. Obura and Anyango (2015) studied moderating outcome of rates of interest on the connection between performance of NSE market and foreign exchange rate fluctuation. The above studies however provide contradicting findings. Additionally, inflationary conditions, exchanges rates movement, fluctuations, and interest rates changes are country specific and the findings may not be applicable to the study context.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section outlines the design employed to conduct the research, method of collecting data and method of analyzing it, which comprises of the analytical model and the statistical significance tests

3.2 Research Design

The design employed for research aids in structuring the study and shows the major parts of the research project and explains their input in dealing with the main issue in the research and also addresses the key questions of the research (Troachim, 2008). To examine the connection between inflation, rates of interest and foreign rates of exchange in Kenya the study used a descriptive study design. Such a descriptive design research is normally the best for collecting data and shows the connections and explains phenomena, the way it is (Troachim, 2008). A descriptive research tries to explain the features of some groups, make an estimate of persons with specific characteristics and predict things concerning the study.

3.3 Data Collection

To attain the aim of this research, secondary data was entirely used. Secondary data on the weighted lending interest rates, money supply and foreign exchange rates was sourced taken from the Kenyan Central bank. Data on the consumer price index (inflation), Gross domestic product (economic growth) and foreign direct exchange was obtained from the Kenya National Bureau of Statistics. The research applied quarterly data for a period of 10 years from 2007 to 2016.

3.4 Diagnostic Tests

The study also carried out tests on normality autocorrelation and multicollinearity, which is a situation where variables in explanation, two or more, in a model of multiple regression are related highly linearly and was tested using correlation analysis and the variance inflation factors. Normality was tested using kurtosis and skewness while autocorrelation (independence of observations) was tested using the Durbin Watson test.

3.5 Data Analysis

Analysis was done by use of descriptive statistics, the multiple regression analysis and the Pearson correlation. Descriptive statistics aided in summarizing the research data while correlation was used to assess the association among the variables and to identify the closely related variables. The multiple regression model worked to establish existing connections between the independent and dependent variables.

3.5.1 Analytical Model

The regression model was established in the following manner

$$EX = \beta_0 + \beta_1 CPI + \beta_2 IR + \beta_3 GDP + \beta_4 MS + \beta_5 FDI + \varepsilon$$

Where

EX is the quarterly value of the Kenyan shilling to US dollar as a measure of exchange rates

CPI is the quarterly consumer price index as a measure for inflation

IR is the quarterly weighted average lending interest rates

GDP is the quarterly Gross domestic product as a measure for economic growth

MS is the quarterly broad money supply as a measure for money in circulation

FDI is the natural log of foreign direct exchange inflows on a quarterly basis

$\beta_1 - \beta_5$ = Beta coefficients of the regression equation

β_0 is the constant or the intercept

ε is the Error term

3.5.2 Test of Significance

The t test statistics was used to test the significance of the variables that are independent while the F test statistic and ANOVA was employed to test the regression equation's significance. The coefficient of determination was used to determine the variation explained by the independent variables.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

This section presents the data analysis results, discussions and interpretations. The chapter provides the descriptive statistics and graphical presentations, correlations, regression and the findings interpretation.

4.2 Descriptive Statistics

The descriptive statistics will present findings on the summary statistics and the graphical presentation of the variables trend.

4.2.1 Summary Statistics

Table 4.1 Summary Statistics

	EX	CPI	IR	Real GDP	MS	FDI
Mean	83.81351	125.4706	15.78775	824287.6	1513157	525046.5
Median	84.87117	130.0851	15.33	812199.4	1507538	158039.6
Std. Deviation	11.49323	29.03479	2.068132	134419.6	691402	541927.3
Kurtosis	-.67351	-.21035	-.27742	-.83411	-.90479	-.42209
Skewness	-.04134	.007125	.738205	.477128	.341207	.944626
Minimum	62.646	78.45777	12.87	633710	557650	77732.68
Maximum	103.8947	175.18	20.34	1094567	2761800	1766730

Source: Research findings

The results on table 4.1 show that the average foreign exchange rate value on the country for the period between 2007 and 2016 was 83.81 and the average CPI was 125.47 respectively. The tables also indicate that the average lending rates by commercial banks

over the period were 15.78 while the average real GDP was 824,287.6 respectively. Finally, the average values of money supply and foreign direct investments were 1,513,157 and 525,046.5 respectively. The skewness and kurtosis values ranged between negative one and positive one thus the conclusion that the data was normally distributed.

4.2.2 Graphical Presentations

4.2.2.1 Exchange Rates

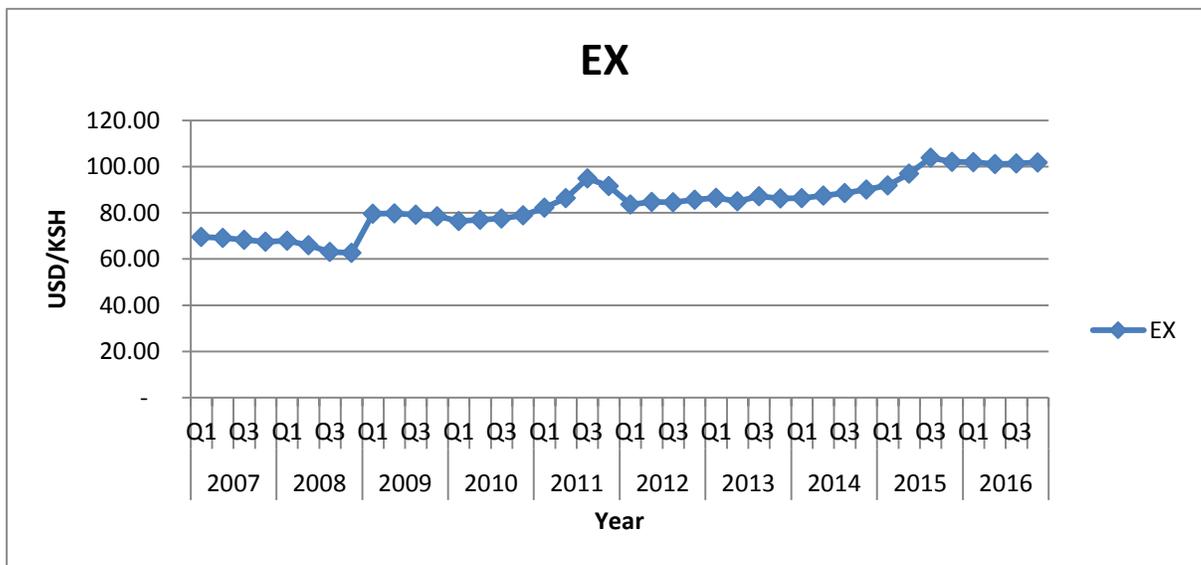


Figure 4.1 Exchange rates

Source: Research findings

The findings on figure 4.1 show that exchange rates have been rising steadily from 2007 although to 2016 tough some declines were experienced in the fourth quarter of 2008 and 2011 respectively.

4.2.2.2 Consumer Price Index

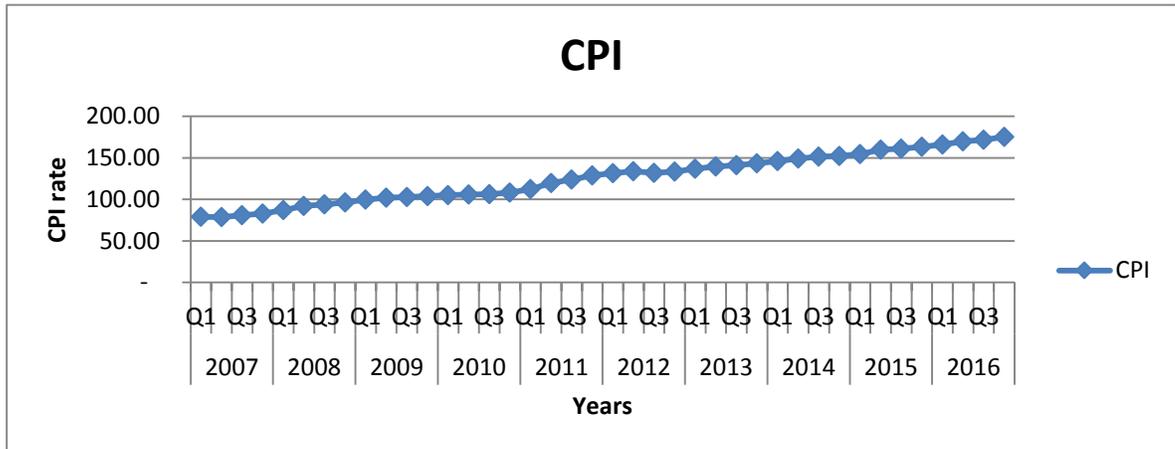


Figure 4.2 Consumer price Index

Source: Research findings

Figure 4.2 shows that the trend of consumer price index in Kenya has been steadily increasing from 2007 to 2016. This index the prices of consumer goods have been increasing although in the country from 2007 to 2016.

4.2.2.3 Lending Interest Rates

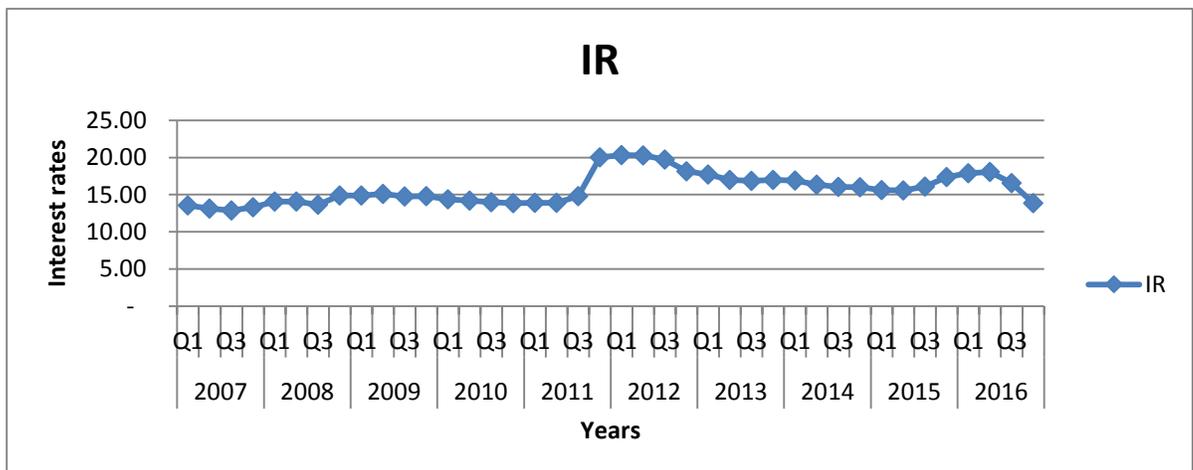


Figure 4.3 Lending Interest Rates

Source: Research findings

The findings on figure 4.3 show that the trend of lending rates in Kenya have been increasing and falling in some quarters of specific years. For instance, the figure shows there was a gradual increase in lending rates from the third quarter of 2007 up to 2010 then there was decline in lending rate in the first and second quarter of 2011 but a sharp increase occurred in the third quarter of 2012.

4.2.2.4 Gross Domestic Product

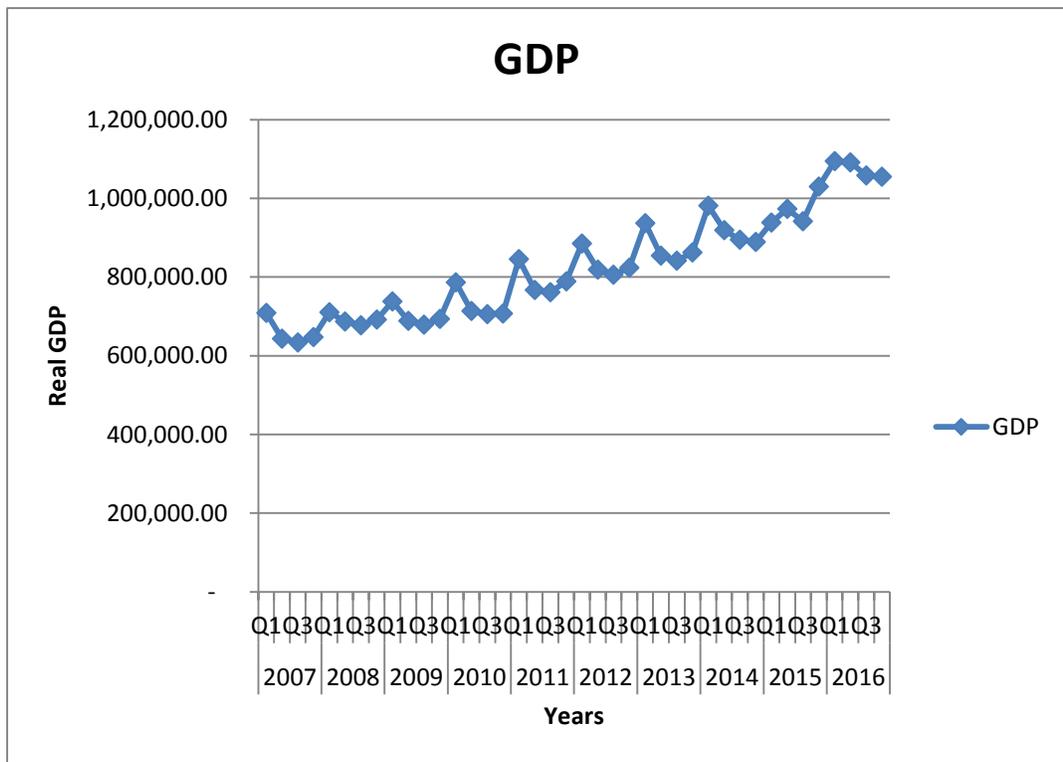


Figure 4.4 Gross Domestic Product

Source: Research findings

Figure 4.4 indicates that the trend of the gross domestic product in Kenya had been gradually increasing from 2009 to 2016 although in some quarters GDP declined and increase gain but the trend shows an increase in GPD through the period.

4.2.2.5 Money Supply

Figure 4.5 shows the graphical presentation of the amount of money supplied (M3)

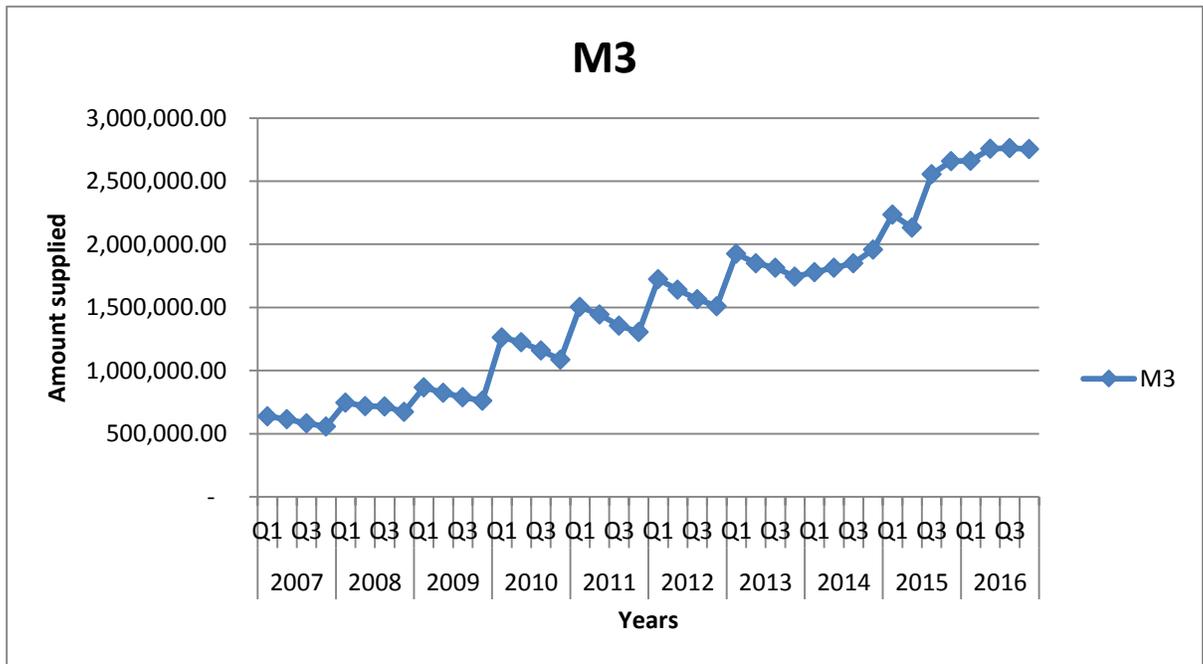


Figure 4.5 Money Supply

Source: Research findings

Figure 4.5 shows that the trend of the currency supplied had been gradually increasing in the country though there little fluctuations in some quarters for instance in fourth quarter of 2009, 2010 and 2012 respectively.

4.2.2.6 Foreign Direct Investments

The graphical trend for foreign direct investment inflows is show by figure 4.6

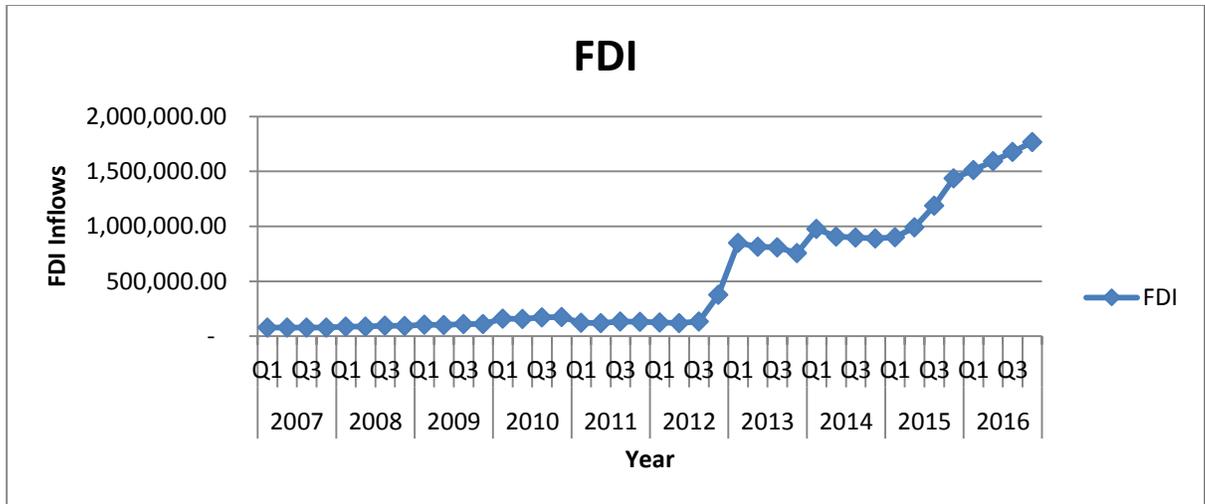


Figure 4.6 Foreign Direct Investments

Source: Research findings

Figure 4.6 indicates that there was a gradual increase in foreign direct investment inflows from 2007 although up to the third quarter of 2012. Thereafter, the country witnessed a steady increase in foreign direct investments from the fourth quarter of 2012 all the way to the fourth quarter of 2016.

4.3 Diagnostic Tests

4.3.1 Normality Test

Table 4.2 Normality Test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
EX	.103	40	.200*	.953	40	.094
CPI	.120	40	.152	.945	40	.051
IR	.134	40	.070	.943	40	.043
Ln GDP	.145	40	.034	.950	40	.073
Ln M3	.117	40	.181	.927	40	.013
Ln FDI	.232	40	.010	.828	40	.019

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Source: Research findings

The Kolmogorov-Smirnov and Shapiro-Wilk results on table 4.2 shows that all the p values are more than the significance value of 0.05 hence an indication that the data was normally distributed.

4.3.2 Test for Homogeneity of Variances

A residual plot was used to assess to the homogeneity of variances. Figure 4.8 shows the results

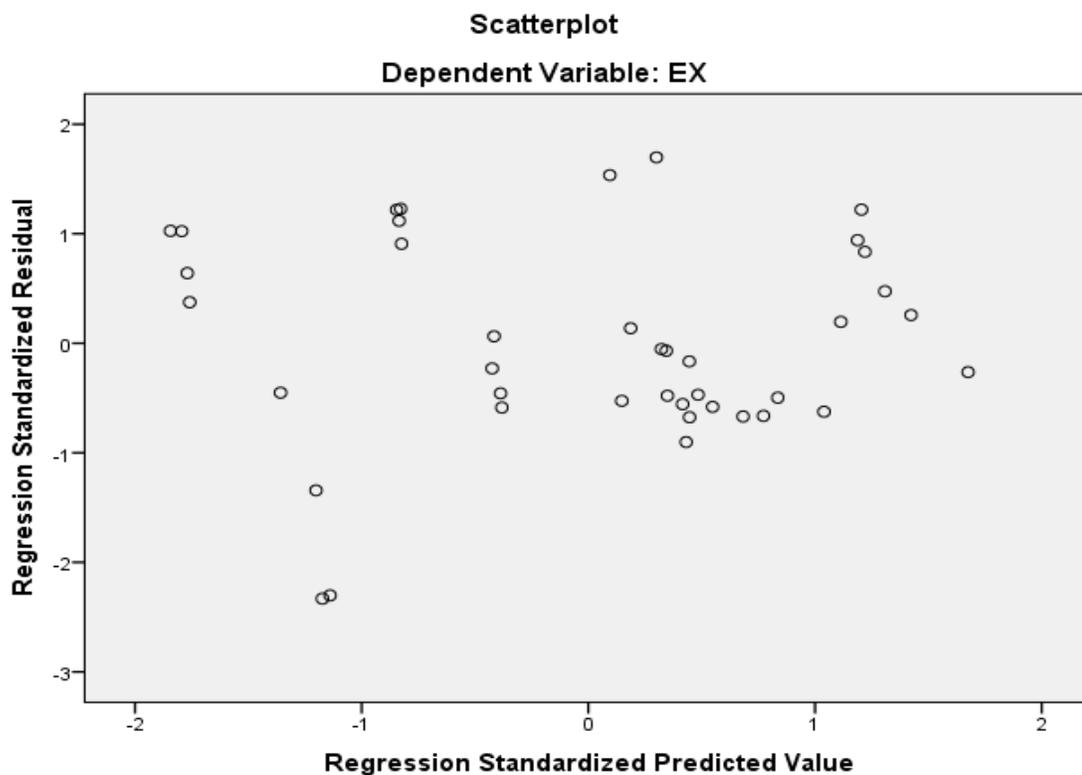


Figure 4.7 Residual Plot

The residual plot on figure 4.7 indicates that the plotted residual do not converge on a specific point hence an indication that there is no heteroscedasticity and the assumption of homogeneity of variances is not violated.

4.3.3 Multicollinearity Test

The variance inflation factors were used to assess for multicollinearity. The results were as follows

Table 4.3 Multicollinearity Test

	Tolerance	VIF
CPI	.350	2.857
IR	.475	2.107
GDP	.742	1.348
M3	.539	1.855
FDI	.973	1.027

Source: Research Findings

The findings also indicate that there was no multicollinearity among the independent variables as indicated by VIF values, which are less than 10. In addition, all the tolerance values are more than 0.2 respectively.

4.4 Correlation Analysis

Table 4.4 Correlations

	EX	CPI	IR	GDP	M3	FDI
EX	1					
CPI	.523**	1				
IR	.511**	.581**	1			
GDP	.573**	.651**	.549**	1		
M3	.515**	.567**	.579**	.448*	1	
FDI	.512**	.622**	.372*	.307*	.381*	1

** . Correlation is significant at the 0.01 level (2 tailed).

* . Correlation is significant at the 0.05 level (2 tailed).

Source: Research findings

Table 4.4 indicates the correlation results. According to the table, the correlations between exchange rates, consumer price index, interest rates, gross domestic product (GDP), broad money supply and foreign direct investments are strong and positive. The correlations are also less than 0.7, which implies that there is no multicollinearity among the variables since the variables are not closely related.

4.5 Regression Analysis

4.5.1 Model Summary

Table 4.5 depicts the model summary

Table 4.5 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.938 ^a	.879	.862	4.27400	1.907

a. Predictors: (Constant), FDI, IR, M3, GDP, CPI

b. Dependent Variable: EX

Source: Research findings

The findings on table 4.5 indicate that the coefficient of determination (r square) is 0.879 while the overall correlation coefficient value is 0.938. The r square indicates that 87.9% of the variation in the dependent variable is explained by the independent and control variables considered by the research. The r values indicates that there is a strong overall correlation between the considered variables while the Durbin Watson statistics value indicate that there is no serial correlation since the value lies between the recommended values of 1.5 and 2.5 respectively.

4.5.2 Analysis of Variance

Table 4.6 Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4530.107	5	906.021	49.599	.000 ^b
	Residual	621.080	34	18.267		
	Total	5151.187	39			

a. Dependent Variable: EX

b. Predictors: (Constant), FDI, IR, M3, GDP, CPI

Source: Research findings

The findings of the research found that the p value and the F value were 0.000 and 49.599 respectively. Since the p value (0.000) is less than the significance value (0.05) the regression model is significant and a good predictor of the existing relationship between the dependent and independent variables. In addition, the findings indicate that the model is fit.

4.5.3 Coefficients

Table 4.7 Coefficients

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	1.609	1.820		.884	.930
	CPI	.425	.126	1.074	3.373	.002
	IR	-.793	.480	-.143	-1.652	.108
	GDP	-2.404	1.736	-.034	-1.384	.379
	M3	7.705	5.965	.334	1.292	.205
	FDI	-3.912	1.923	-.389	-2.034	.049

Source: Research findings

From the results on table 4.7 the following equation was formulated

$$EX = 1.609 + 0.425CPI - 3.912FDI + \varepsilon$$

The coefficients findings on table 4.5 show that the consumer price index (CPI) significantly and positively affects foreign exchange rates in Kenya. The findings also show that foreign direct investment (FDI) significantly and negatively affects foreign exchange rates in Kenya. However, the findings show that interest rates (IR) and the gross domestic product (GDP) have an insignificant and negative relationship with foreign exchange rates while money supply (M3) has an insignificant positive effect on foreign exchange rates.

4.6 Interpretation of the Findings

The findings revealed a significant and positive effect between inflation and foreign exchange rates in Kenya. This indicates that that inflation has a direct effect on exchange rates and a unit increase in inflation increases exchange rates in Kenya. A study by Khordehfrosh and Tehranchian (2015) found that inflation had a positive and significant relationship with forex rates. Moroşan and Zubaş (2015) also posits that inflation, exchange rates and interest rates are all highly interconnected such that when interest rates manipulation are carried out by Central Banks exchange rates and inflation are affected. Additionally, Ramasamy and Abar (2015) posit that high rate of inflation at the home makes the home currency lose value and vice versa hence, exchange rates and inflation rates are negatively correlated and a lower inflation country displays a growing value of currency and vice versa.

The findings established that there is a significant negative effect between foreign direct investments and foreign exchange rates in Kenya. This indicates that forex rates are inversely affected by foreign direct investment and a unit reduction in foreign direct investments inflows negatively affects exchange rates in Kenya. Obura and Anyango (2015) also found that the rates of interest had a moderating effect on exchange rates fluctuation. Yung (2014) concluded that interest rate fluctuations affected foreign exchange rate in several countries. Jaratin et al. (2014) support that rates of exchange can affect the allocation of this investment spending across a series of countries and also the total amount of foreign direct investment that takes place. Goldberg (2007) indicates that depreciation in the exchange rate increases the general return rate to foreigners thinking about an out of the country investment project in a country.

The results further found that there is an insignificant negative relationship between interest rates and foreign exchange rates in Kenya. This is an indication that there is no significant relationship between interest rates and foreign exchange rates in Kenya. Mahmoud, Bashir and Ali (2015) however revealed a long run relationship between exchange rate volatility and inflation and that a rise in rate of interest elevates inflation, leading to a rise in volatility of exchange rate while Hamid et al. (2017) observed that interest rate, inflation rate and GDP are significantly related with exchange rates. In addition, Ramasamy and Abar (2015) support that interest rates of host and home countries are key determinants of exchange rate hence the rates of interest are adjusted in quarterly basis by the Central Bank as an economic management strategy.

The results also found that there is an insignificant relationship between gross domestic product and foreign exchange rates in Kenya. This is an indication that there is no

significant relationship between gross domestic product and foreign exchange rates in Kenya. As such, Abbas Iqbal and Ayaz (2012) revealed that the GDP had a valuable connection with the rate of exchange whereas inflation and interest had a not so valuable relation with African rates of exchange. According to Moroşan and Zubaş (2015) instability of the economic can mean GDP growth volatility, volatility in inflation, interest rates volatility, volatility in the exchange rate and other economic variables.

The finding established money supply had an insignificant positive relationship with foreign exchange rates in Kenya. This is an indication that there is no significant relationship between money supply and foreign exchange rates in Kenya. A study by Akinbobola (2012) however found that exchange rate and the supply of money have noteworthy inverse impacts on inflationary pressure, whereas real output growth and foreign price changes have direct impacts on inflationary pressure. Moroşan and Zubaş, 2015 argues that monetarist theories indicate that the rates of exchange amid currencies that are different is influenced by demand and supply of money, on the money market. Therefore, oversupply of currency drives depreciation this is according to the fisher effect.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary, the conclusions of the research, the recommendation, the limitations and the suggestions for further research.

5.2 Summary

The research aimed at assessing the effect of inflation and interest rates on foreign exchange rates in Kenya. A descriptive research design was employed to answer the research question. To attain the aim of this research, secondary data will be entirely used. The research applied quarterly data for a period of 10 years from 2007 to 2016. The study also carried out tests on normality autocorrelation and multicollinearity. Analysis of data was done by the use of descriptive statistics, the multiple regression analysis and the Pearson correlation.

The results on summary statistics established that the average foreign exchange rate was 83.81 and the average CPI was 125.47 respectively. The finding obtained that the average lending rates by commercial banks were 15.78 while the average real GDP was 824,287.6 respectively. The study also found that the average values of money supply and foreign direct investments were 1,513,157 and 525,046.5 respectively. The skewness and kurtosis values ranged between negative one and positive one thus the conclusion that the data was normally distributed.

The graphical presentations established that exchange rates had been rising steadily from 2007 although to 2016 though some declines were experienced in some quarters of the year and the trend of consumer price index in Kenya has been steadily increasing. The study also observed that the trend of lending rates in Kenya have been increasing and falling in some quarters of specific years and that the trend of the gross domestic product in Kenya had been gradually increasing from 2009 to 2016. The trend of the currency supplied and foreign direct investments inflows had been gradually increasing in the country though there little fluctuations in some quarters.

The study also found that the correlations between exchange rates, consumer price index, interest rates, gross domestic product, broad money supply and foreign direct investments are strong and positive. The R square values established that 87.9% of the variation in the dependent variable is explained by the independent and control variables considered by the research and that the regression model was significant and a good predictor of the existing relationship between the dependent and independent variables.

The coefficients results found that the consumer price index significantly and positively affects foreign exchange rates while foreign direct investment significantly and negatively affects foreign exchange rates. Conversely, the study found that interest rates and the gross domestic product had an insignificant and negative relationship with foreign exchange rates while money supply has an insignificant negative effect on foreign exchange rates.

5.3 Conclusions

The findings of this research revealed a significant and positive effect between inflation and foreign exchange rates in Kenya. This means an increase in the rate of inflation in

Kenya comparatively to another country will result to a significant decrease in exports and an increase in imports. This finding leads to the conclusion that inflation has a direct effect on exchange rates and therefore a unit increase in inflation increases exchange rates in Kenya.

The findings of the research established that there is a significant negative effect between foreign direct investments and foreign exchange rates in Kenya. This means an increase in foreign direct investment in Kenya will result to a significant decrease in the number of units of Kenya shillings required to convert to one unit of the foreign currency. This finding leads to the conclusion that forex rates in Kenya are inversely affected by foreign direct investments inflows.

The results of the study further revealed that there is an insignificant negative relationship between interest rates and foreign exchange rates in Kenya. This indicates an increase in interest rates in Kenya comparatively to a foreign country will result to an insignificant decrease in the number of units of Kenya shilling required to convert into one unit of the foreign currency. This finding leads to the conclusion that there is no significant relationship between interest rates and foreign exchange rates in Kenya.

The results also found that there is an insignificant negative relationship between gross domestic product and foreign exchange rates in Kenya. This indicates a rise economic growth in Kenya comparatively to a foreign country will result to an insignificant decrease in the number of units of Kenya shilling required to convert into one unit of the foreign currency. This finding leads to the conclusion that there is no significant relationship between gross domestic product and foreign exchange rates in Kenya.

Finally, the study established an insignificant and positive relationship between money supply and foreign exchange rates in Kenya. This indicates an increase in money supply will insignificantly increase the number of units of Kenyan currency required to convert into one unit of the foreign currency. This finding leads to the conclusion that there is no significant relationship between money supply and foreign exchange rates in Kenya.

5.4 Recommendations

The researcher made the conclusion that inflation has a direct effect on exchange rates in Kenya. The recommendation to this conclusion is that the central bank of Kenya and the Kenyan government should use the available monetary policy tools to control a rise in inflation rates and consumer prices.

The study made the conclusion that forex rates in Kenya are inversely affected by foreign direct investments inflows. The study therefore recommends that the Kenyan investment authority should come up with policies that will market the country and attract more foreign direct investment inflows.

The study also concluded that interest rates do not significantly affect exchange rates in Kenya. The study however recommends that the government and the central bank of Kenya should ensure the rates of interest rates charged by banks do not have adverse effect on other macroeconomic factors, which might affect exchange rates.

The study also concluded that the gross domestic product does not significantly affect exchange rates in Kenya. The study however recommends that the government and the central bank of Kenya should ensure that the economy is good and well functioning since economic performance affects other factors, which influence exchange rates.

The study also concluded that money supply does not significantly affect exchange rates in Kenya. The study however recommends that the government and the central bank of Kenya should ensure adequate money supply since money supply might affect FDI and inflation, which in turn may affect currency rates.

5.5 Limitations of the Study

This study focused on interest rates and inflation as independent variables while economic growth, money supply and inflation were used as control variables and foreign exchange rate was the dependent variable. The findings are therefore based on the considered macroeconomic factors and applicable to only those factors.

Secondly, this study used secondary data, which is quantitative in nature and does not incorporate the qualitative aspects that affect exchange rates in the country. To measure exchange rates the study used the Kenya shilling against the US dollar despite the fact the Kenyan currency is also pegged against other currencies like the Euro and the British pound, which are also major currencies.

The recommendations of the study are also made as per the study findings and have been derived from the conclusions. The recommendations have also been directed to specific users and their applicability will be based only on the examined variables.

In addition, the conclusions of the research are based on the studied variables and not all macroeconomic factors. The findings are based on the studied period, which covered quarterly data for a period of 10 years from 2007 to 2016.

5.6 Suggestion for Further Research

This research focused only on interest rates and inflation as the independent variables and added money supply, FDI and broad money supply as control variables to examine their effects on forex rate. The study recommends an additional study using moderating and intervening variables that may influence exchange rates in Kenya.

The study also recommends a similar study, which will cover other macroeconomic variables, government policies, regulations and fiscal policies to determine their effect on exchange rates in Kenya. Further, an additional study can be carried out on the relationship between interests, inflation and exchange rates among the East African countries.

This study used the United States dollar versus the Kenyan shilling to measure exchange, CPI as a measure of inflation, Real GDP as a measure for Economic growth. Therefore, this study recommends an additional research using different measures using others like inflation growth rate, GDP growth rate and different exchange.

REFERENCES

- Abbas, Q., Iqbal, J., & Ayaz, L. (2012). Relationship between GDP, Inflation and Real Interest Rate with Exchange Rate Fluctuation of African Countries. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 2(3), 132-141.
- Abuogi, S. O. (2013). The Effect of Political Risk on Exchange Rates in Kenya. *Unpublished Msc Project*. University of Nairobi
- Akinbobola, T. O. (2012). The dynamics of money supply, exchange rate and inflation in Nigeria. *Journal of Applied Finance and Banking*, 2(4), 117-141
- Ali, T. M., Mahmood, M. T., & Bashir, T. (2015). Impact of Interest Rate, Inflation and Money Supply on Exchange Rate Volatility in Pakistan. *World Applied Sciences Journal*, 33(4), 620-630.
- Amata, E. O., Muturi, W., & Mbewa, M. (2016). The Causal Relationship between Inflation, Interest Rate and Stock Market Volatility in Kenya. *European Journal of Business, Economics and Accountancy*, 4(6), 10-23
- Cecchetti, S. G. (2009). *Monetary Policy and the Measurement of Inflation: Prices, Wages and Expectations*. Bank for International Settlements
- Ebiringa, O. T. & Anyaogu, N. B. (2014). Exchange Rate, Inflation and Interest Rates Relationships: An Autoregressive Distributed Lag Analysis. *Journal of Economics and Development Studies*, 2(2), 263-279

- Goldberg, L. S. (2009). Exchange rates and foreign direct investment. *The Princeton Encyclopedia of the World Economy*, 1, 393-396.
- Hamid, M., Shahzad, A., Saqib, M. H., & Maqbool, B. (2017). Impact of inflation, interest rate and GDP on the Exchange rate volatility in Pakistan. *International Journal of Research in Management and Business*, 2(4), 65-72
- Hnatkovska, V., Lahiri, A., & Vegh, C. A. (2013). Interest rate and the exchange rate: A non-monotonic tale. *European Economic Review*, 63, 68-93.
- Khordehfrush D, A., & Tehranchian, A. M. (2015). The Impact of Monetary Policies on the Exchange Rate: A GMM Approach. *Iranian Economic Review*, 19(2), 177-191.
- Kibiy, J., & Nasieku, T. (2016). Determinants of Exchange Rate Volatility of the Kenyan Shilling Against World Major Currencies. *International Journal of Social Sciences and Information Technology*, 2, 1181-1202
- Kiptui, M., & Kipyegon, L. (2008). *External shocks and real exchange rate movements in Kenya*. A paper Prepared for Presentation at the 13th Annual Conference on Econometric Modeling in Africa to be held at the University of Pretoria, 9-11 July 2008
- Lagat, C., & Nyandema, D. (2016). The Influence Of Foreign Exchange Rate Fluctuations On The Financial Performance Of Commercial Banks Listed at the Nairobi Securities Exchange. *British Journal of Marketing Studies*, 4(3), 1-11.

- Lily, J., Kogid, M., Mulok, D., Thien Sang, L., & Asid, R. (2014). Exchange rate movement and foreign direct investment in asean economies. *Economics Research International*, 14, 1-10
- Maana, I., Kamau, A., & Kisinguh, K. (2015). Modelling extreme volatility in the daily exchange rates of the Kenya shilling against the US dollar. *Journal of Economics and International Finance*, 7(9), 192-203
- Mbaya, C. W. (2013). Effect of Interest Rates in Stabilizing Foreign Exchange Rate in the Kenyan Economy. *Unpublished MBA Project*. University of Nairobi
- Mgammal, M. H. H. (2012). The Effect of Inflation, Interest Rates and Exchange Rates on Stock Prices Comparative Study among Two GCC Countries. *International Journal of Finance and Accounting*, 1(6), 179-189.
- Moroşan, G. & Zubaş, I. M. (2015). Interest Rate, Exchange Rate and Inflation in Romania. Correlates and Interconnection. *Journal of Public Administration, Finance and Law*, 8, 146-160
- Musembi, C. M. (2013). A Cointegration between Exchange Rates, Inflation and Interest Rates in Kenya. *Unpublished Thesis*. Western Illinois University
- Musyoki, D., Pokhariyal, G. P., & Pundo, M. (2012). Real exchange rate volatility in Kenya. *Journal of Emerging Trends in Economics and Management Sciences*, 3(2), 117-122

- Ndoricimpa, A. (2017). Threshold Effects of Inflation on Economic Growth in Africa: Evidence from a Dynamic Panel Threshold Regression Approach. *Working Paper No. 249*. African Development Bank
- Obura, J., & Anyango, C. (2015). Moderating Effect of Interest Rates on Relationship between Foreign Exchange Rate Fluctuation and Performance of Nairobi Securities Exchange Market. *Universal Journal of Accounting and Finance*, 4(2), 27-34
- Otuori, O. H. (2013). Influence of exchange rate determinants on the performance of commercial banks in Kenya. *European Journal of Management Sciences and Economics*, 1(2), 86-98.
- Ramasamy, R., & Abar, S. K. (2015). Influence of Macroeconomic Variables on Exchange Rates. *Journal of Economics, Business & Management*, 3(2), 276-281.
- Rehman, M., & Rehman, S. (2012). *Relationship of Exchange Rate with Various Macro Economic Variables*. Mohammed Ali Jinaah University, Islamabad
- Sambiri, M. J., Otieno, O. D., Maurice, M., Ongiyo, C. O., & Rombo, K. (2014). Lending Rates and its impact on Economic Growth in Kenya. *Development*, 5(19), 89-97
- Saraç, T. B., & Karagöz, K. (2016). Impact of Short-term Interest Rate on Exchange Rate: The Case of Turkey. *Procedia Economics and Finance*, 38, 195-202.
- Semuel, H., & Teddy, S. D. (2014). *Analysis of the Effect of Inflation, Interest Rates, and Exchange Rates on Gross Domestic Product (GDP) in Indonesia*. Proceedings of the International Conference on Global Business, Economics, Finance and Social

Sciences (GB15_Thai Conference) ISBN: 978-1-941505-22-9 Bangkok, Thailand,
20-22 February 2015

Shalishali, M. K., & Ho, J. C. (2012). Inflation, Interest Rate, and Exchange Rate: What is the Relationship? *Journal of Economics and Economic Education Research*, 3(1), 107-115.

Stanford, J. (2008). *A How-To Guide: Understanding and Measuring Inflation*. Canadian Centre for Policy Alternatives.

Troachim, W. M. K. (2008). *Research Methods: Knowledge Base*. Mason OH.

Vladova, Z., & Yanchev, M. (2015). *Empirical Evidence on the Relationship between money supply dynamics and prices in Bulgaria*. Working paper. Bulgarian National Bank

Yung, J. (2014). *Can interest rate factors explain exchange rate fluctuations?* Federal Reserve Bank of Dallas

Zhang, J., & Dou, Y. (2014). The Effectiveness of Interest Rate Parity. *Journal of Emerging Issues in Economics, Finance and Banking*, 3, 14-24

APENDICES

Appendix I: Research Data

Year	Quarter	EX	CPI	IR	GDP	MS	FDI
2007	Q1	69.60	78.90	13.56	709,240.00	638,440.00	77,732.68
	Q2	69.16	78.46	13.14	643,248.00	615,595.00	78,605.92
	Q3	68.35	80.90	12.87	633,710.00	581,440.00	79,947.08
	Q4	67.45	82.68	13.32	647,553.00	557,650.00	79,727.76
2008	Q1	67.88	87.18	14.06	710,887.00	747,127.00	87,260.49
	Q2	65.93	92.14	14.06	687,316.00	719,543.00	88,308.36
	Q3	63.03	93.75	13.66	677,124.00	716,890.00	96,575.49
	Q4	62.65	96.38	14.87	691,916.00	673,720.00	94,320.18
2009	Q1	79.58	99.50	14.87	737,906.34	866,800.00	105,891.66
	Q2	79.81	101.91	15.09	688,912.00	824,550.00	102,529.09
	Q3	79.25	102.90	14.76	678,697.00	789,807.00	111,698.27
	Q4	78.45	104.07	14.80	693,523.00	761,007.00	111,764.92
2010	Q1	76.49	105.01	14.39	786,481.00	1,261,646.00	160,365.15
	Q2	76.98	105.65	14.19	713,363.99	1,224,547.00	155,713.95
	Q3	77.58	106.32	13.98	705,260.19	1,160,438.00	171,786.15
	Q4	78.94	108.07	13.87	707,158.87	1,086,504.00	173,867.40
2011	Q1	82.21	112.41	13.92	845,860.78	1,505,853.00	123,414.39
	Q2	86.33	119.56	13.91	767,418.00	1,444,592.00	119,398.95
	Q3	94.85	123.88	14.79	761,159.00	1,355,670.00	132,548.13
	Q4	91.52	128.81	20.04	789,245.00	1,305,511.00	131,165.76
2012	Q1	83.54	131.36	20.34	885,368.19	1,723,349.00	125,179.84

	Q2	84.76	133.63	20.30	818,825.41	1,640,561.00	119,608.96
	Q3	84.61	131.78	19.73	805,573.48	1,564,173.00	134,531.20
	Q4	85.71	133.35	18.15	823,766.04	1,509,222.00	376,557.41
2013	Q1	86.50	136.72	17.73	936,746.19	1,924,700.00	848,424.44
	Q2	84.98	139.46	16.97	854,348.30	1,849,167.00	814,689.64
	Q3	87.17	140.99	16.86	841,814.39	1,815,433.00	808,316.00
	Q4	86.15	143.25	16.99	862,535.49	1,744,233.00	755,467.76
2014	Q1	86.33	145.99	16.91	981,001.70	1,779,118.00	976,378.68
	Q2	87.43	149.27	16.36	918,833.17	1,814,700.00	906,091.16
	Q3	88.49	151.62	16.04	895,161.45	1,850,994.00	899,465.92
	Q4	90.04	152.09	15.99	889,416.35	1,957,492.20	888,717.84
2015	Q1	91.81	154.48	15.62	938,452.24	2,234,800.00	899,928.00
	Q2	97.01	159.71	15.57	973,401.23	2,133,400.00	989,921.00
	Q3	103.89	160.93	16.09	941,388.53	2,556,000.00	1,187,905.00
	Q4	102.08	163.27	17.35	1,029,804.84	2,658,200.00	1,437,000.00
2016	Q1	101.90	165.92	17.87	1,094,567.00	2,662,200.00	1,513,161.00
	Q2	101.04	169.76	18.06	1,091,008.00	2,755,900.00	1,593,358.53
	Q3	101.34	171.56	16.55	1,058,375.00	2,761,800.00	1,677,806.54
	Q4	101.73	175.18	13.88	1,055,138.00	2,753,500.00	1,766,730.28